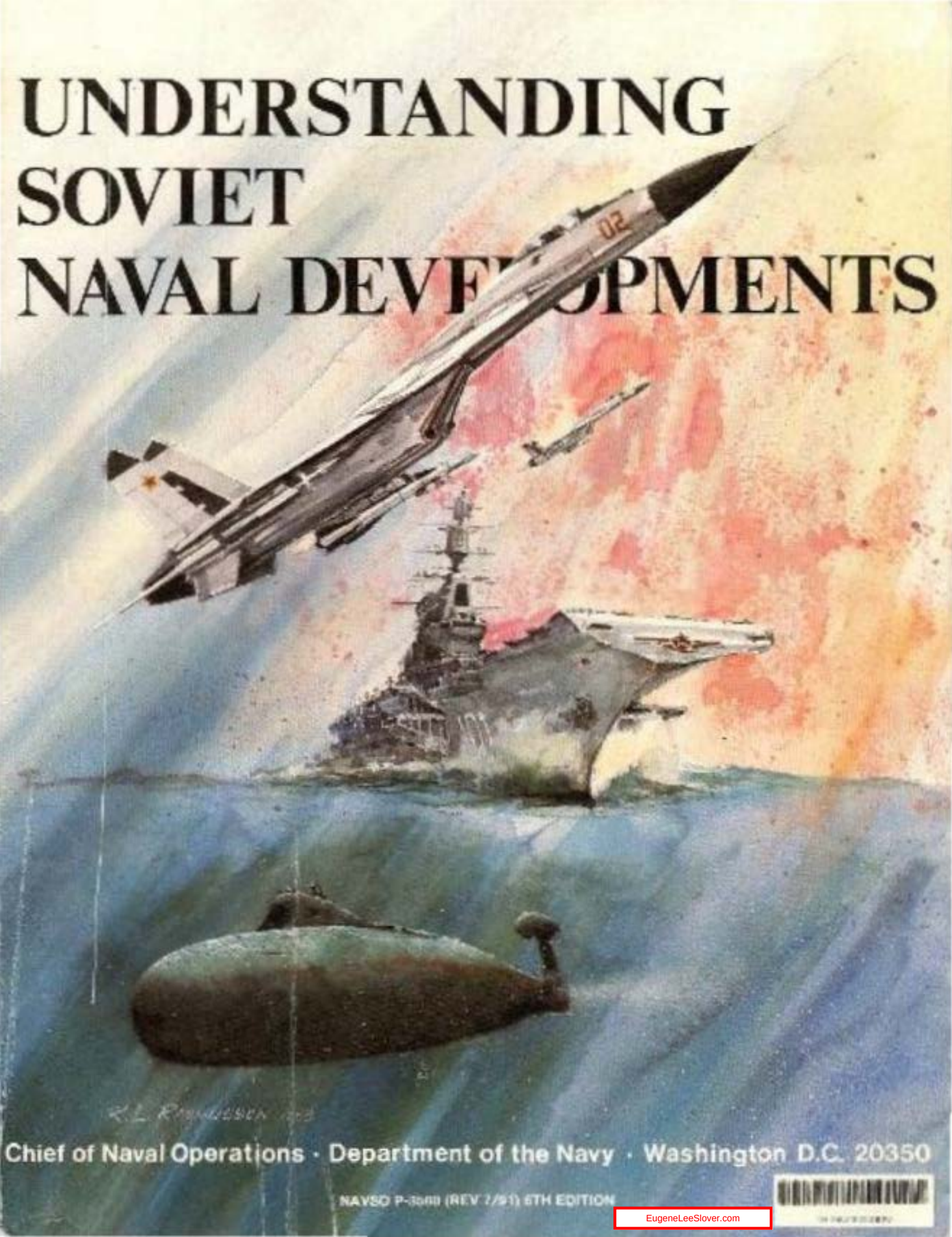
UNDERSTANDING SOVIET NAVAL DEVELOPMENTS



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Front cover painting by CAPT R. L. Rasmussen, USN (Ret.) depicts the USSR's first large-deck aircraft carrier, ADMIRAL FLOTA SOVETSKOGO SOYUZA KUZNETSOV; an AKULA class nuclear attack submarine; and the Su-27 FLANKER fighter aircraft.

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Understanding Soviet Naval Developments

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IN REPLY REFER TO

UNDERSTANDING SOVIET NAVAL DEVELOPMENTS

Change is sweeping the Soviet Union and affecting Soviet military power. The political structure is evolving erratically from autocracy toward pluralism, creating many views about the utility and requirements for military power. Domestic economic problems are having a major impact on defense industry. Soviet military doctrine, strategy, policy and plans are in a state of flux.

It is tempting to see in these changes the disappearance of any potential threat from the Soviet Union. Thus, a clear understanding of Soviet naval developments is more important than ever before.

The fact is that neither we nor the Soviets can say with certainty where the current political turmoil will take the Soviet Union or in what form that "Union" will survive. We can say, however, whatever regime emerges will remain a nuclear power with very capable military forces at all levels and will remain the world's second most powerful maritime power into the next century. Furthermore, technological advances and the utility of "smart" weapons demonstrated during the Gulf War will press security planners to commit resources for force modernization -- even at the expense of force size, maintenance and operations. Resource limitations and the evolution of "defensive doctrine" will cause a rethinking of the Navy's role and utility as a component of the country's military arsenal.

The Soviet Navy's ability to put a strategic nuclear strike force to sea and to undertake a seaward defense of the homeland ensures it a fundamental role in the new "defensive" Soviet strategy. However, those missions also support the requirement for a balanced fleet capable of both offensive wartime operations and peacetime maritime operations in support of military and political objectives. It seems unlikely that such flexible forces will be written off by Soviet decision-makers. Indeed, the Soviet efforts to promote naval arms control suggest a continuing interest in maintaining their naval capabilities to perform such wartime and peacetime missions by restricting the corresponding Western capabilities.

I trust this publication will be useful, as we move into the 1990s, in maintaining a realistic and balanced picture of the Soviet Navy. It contains the most current unclassified information on the history, missions, global activities, hardware, and personnel of the contemporary Soviet Navy.

F. B. Kelso II

F. B. Kelso II
Admiral, U.S. Navy

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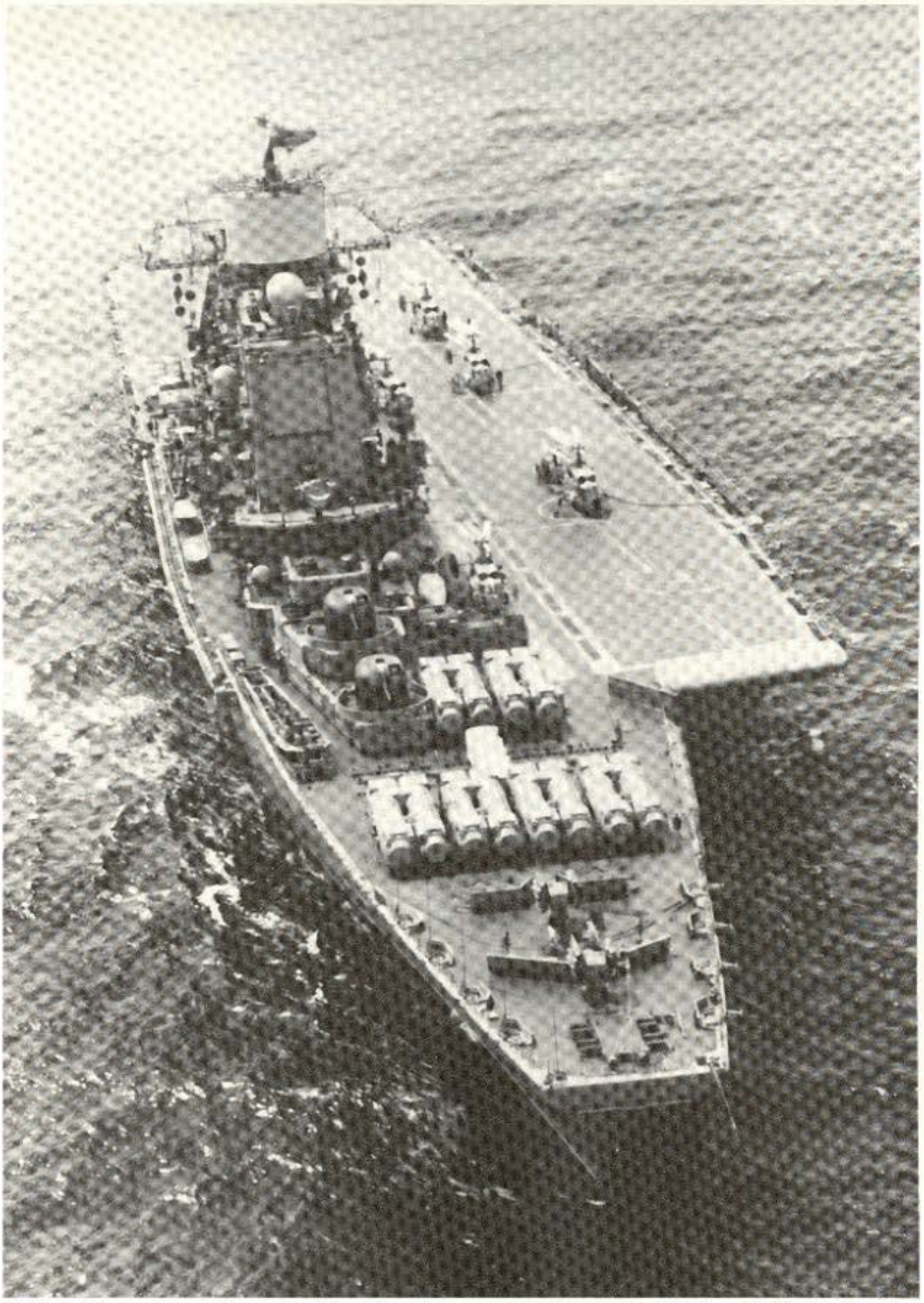

Admiral Flota Sovetskogo Soyuza Gorshkov (formerly named Baku), the fourth KIEV class VTOL aircraft carrier, was completed in 1988 and joined the Soviet Northern Fleet.

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The UDALOY class guided-missile destroyer is designed to carry two HELIX A antisubmarine helicopters.

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The guided-missile cruiser SLAVA with its 16 SS-N-12 launch tubes prominently displayed.

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SECTION 1. PURPOSE

The decisions of the Central Committee of the Communist Party aimed at further development of the Navy were based on a careful consideration of the characteristics of the scientific-technical revolution . . . that opened up the possibility of developing fundamentally new warships and weapons systems. Over two decades have passed since that time, and in this relatively short historical period the Soviet Navy has been transformed into an important strategic factor . . . into a force capable of opposing aggression from the sea and of accomplishing major operational and strategic missions on the world oceans.

—S. G. GORSHKOV (1910–1988), Admiral of the Fleet of the Soviet Union, former Commander-in-Chief of the Soviet Navy, and former Full Member of the Central Committee of the Communist Party of the Soviet Union

The growth of Soviet naval and maritime strength has been one of the most dramatic military developments of the post-war period, especially from the perspective of American security interests. From the end of World War II until the early 1970s, the United States maintained unquestioned naval supremacy, providing one of the West's primary shields against the threat of aggression and affording great flexibility in foreign policy. Today, despite the unprecedented good relations between our countries, the Soviet Union's existence as a sea power continues to pose a potential challenge to the United States Navy.

The pattern of Soviet naval development has been deliberate and sustained since World War II. At the beginning of that period, the Soviet Navy concentrated on submarines, believing that they could achieve strategic goals in a war at sea despite constantly improving antisubmarine weapons. Further, Moscow recognized that the larger conventional surface fleets of the other navies were expensive and required a large supporting shipbuilding industry beyond the Soviets' means. In contrast, submarines offered a relatively inexpensive and rapid means of increasing Soviet naval power. Thus, during the decade 1945-55, the Soviets built over 450 diesel attack submarines. The Soviets were also aware that a force composed predominantly of submarines had technical and strategic limitations, however, and they started to develop the large shipbuilding industry needed to construct and maintain a balanced fleet.

In addition, the Soviet Union began to make important technological advances in naval construction around 1955, including the introduction of nuclear power in submarines. Despite

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The guided-missile cruiser KIROV is a symbol of the larger classes of warships which the Soviets added in the 1980s with more sophisticated weapons and sensors than their predecessors. The KIROV class is the Soviets' first nuclear-powered surface combatant and is the largest non-aircraft carrier warship built by any navy since the end of World War II.

design and safety problems experienced with their first nuclear submarines, these developments laid the critical technological foundation upon which today's fleet is built. Complemented by advances in surface combatants and Soviet Naval Aviation, the Soviet Navy had begun the process of transformation from an essentially coastal defense force into a modern, oceangoing fleet.

After introducing many missile-armed destroyers and nuclear-powered submarines in the 1960s and early 1970s, the Soviets moved steadily toward a significantly higher level of sophistication. Today, they put to sea in ships like the cruiser KIROV (their first nuclear-powered surface warship), the cruiser SLAVA, and destroyers UDALOY and SOVREMENNYY. All of these combatants are larger and more heavily armed than their predecessors, with a variety of antisubmarine, antiair and antisurface capabilities. The sustained level of Soviet technological achievement is also represented by the 25,000 metric ton (submerged) TYPHOON, the largest submarine ever built, and the 65,000 metric ton aircraft carrier ADMIRAL FLOTA SOVETSKOGO SOYUZA KUZNETSOV (formerly TBILISI), the Soviet Navy's largest warship, with a sister carrier, VARYAG (originally named RIGA), launched and a third larger carrier, UL'YANOVSK, laid down. The carriers-based air wings will be augmented by a continually improving land-based air arm, including improved BEAR F antisubmarine aircraft, BACKFIRE C strike bombers, FROGFOOT ground attack aircraft and FENCER advanced

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strike and reconnaisance aircraft. BLACKJACK, the Soviet Air Force's newest supersonic bomber, may also eventually be assigned a maritime attack role.

These improvements make the Soviet Navy today more capable than at any time in its history. Yet the Soviet Union itself is struggling through its greatest crisis since the Second World War. President Gorbachev is guiding major efforts to restructure the Soviet political-economic system and its foreign relations. In the process, he is confronting ethnic unrest, economic stagnation, and political hurdles of daunting proportions. These concerns notwithstanding, the Soviet leadership continues to maintain the world's largest military machine. Unilateral and negotiated reductions are shrinking its size, but modernization programs proceed apace. To maintain strategic parity in peacetime, and to prepare for achieving a favorable outcome in any global or regional conflict, the Soviet military continues to grow in technological complexity and proficiency, with capabilities for accomplishing a broad range of nuclear or conventional warfighting tasks. While the Soviet Navy may be smaller in the future, it will certainly be a more capable force overall.

It is thus important for US Navy personnel to be professionally knowledgeable about the Soviet Navy and its development. Further, it is not enough that just we in the Navy understand this subject. We must also assist in illuminating for the American public the issues surrounding this unprecedented peacetime expansion of naval power. This Sixth Edition of *Understanding Soviet Naval Developments* is intended to provide the necessary background information to enable naval personnel and the general public to discuss the Soviet Navy intelligently.

The BACKFIRE is an intermediate-range, supersonic bomber capable of delivering anti-ship cruise missiles.

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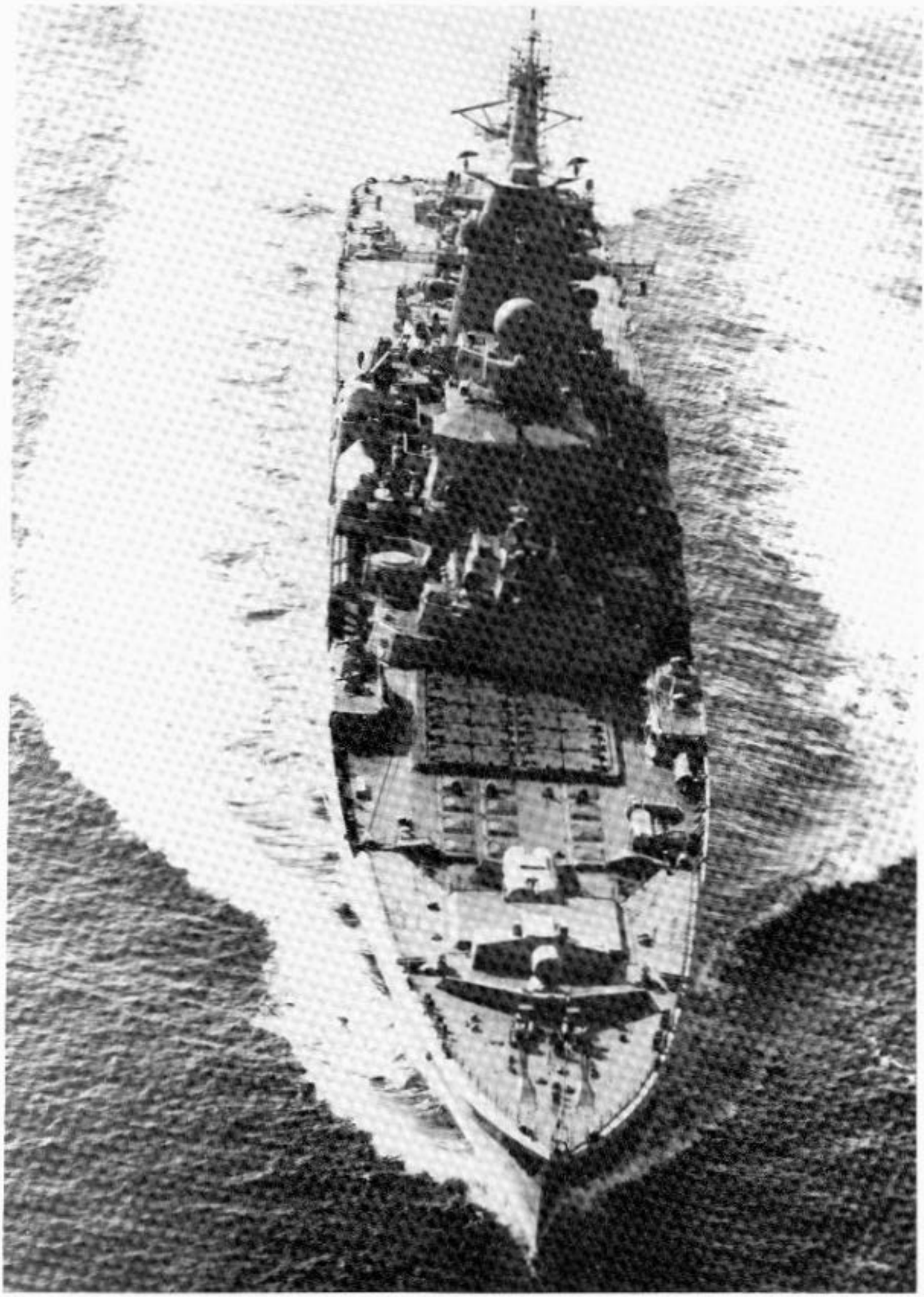

The KIROV CGN was the Soviets' first nuclear-powered surface combatant.

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SECTION 2. THE BACKGROUND OF SOVIET NAVAL DEVELOPMENT

The 27th Congress of the CPSU assigned the Soviet Armed Forces, including the Navy, the mission of comprehensively raising combat readiness and their vigilance against the imperialists' schemes, and to stay in perpetual readiness to defend the great gains of socialism.

—V. N. CHERNAVIN, Admiral of the Fleet, Commander-in-Chief of the Soviet Navy

The development of the Soviet Navy reflects the influence of geographic and historical conditions as well as shifting military requirements. A maritime perspective on the Soviet Union is bound today, as it was in Russia before, by significant geographic constraints. In terms of overall security, these constraints have dictated a fundamental concern for continental land defense, validated by a repetitive history of invasion and occupation. Complicating this problem for naval development are a variety of natural limitations—"choke points"—in the major operating areas of the Atlantic and Pacific Oceans and the Baltic and Black Seas. Much of the Soviet access to the open sea is through waters that are to some extent frozen for significant portions of the year, or from ports that are far removed logistically from industrial and population centers.

Still, despite these physical and strategic constraints, Russian and Soviet history testifies to a sustained interest in extending national influence through sea power, an interest that dates back nearly 300 years. Essentially begun under the early Tsars, this interest has continued, with varying emphasis, throughout the expansion of the Russian Empire and its successor, the Soviet Union. Sometimes manifested through exploration and research activities, at other times by merchant and fishing activity, and often by the Navy itself, Soviet pursuit of maritime interests is now characterized by a combination of all these elements on a global scale.

A. The Development of the Imperial Russian Navy

The Soviet Navy remains strongly and consciously conditioned by its history—not only by the events that followed its creation after the 1917 Revolution, but also by the traditions and experiences of its predecessor, the Imperial Russian Navy. The origins of the modern Soviet Navy can be traced to the early 1700s, when Tsar Peter the Great founded St. Petersburg, a city on the Neva marshes at the eastern end of the Gulf of Finland, and built a fleet to fight Sweden. An earlier effort by Tsar Ivan the Terrible to build a navy had been abandoned after Sweden expelled Russia from the Baltic coast. Employing British and Dutch shipbuilders and officers, Peter achieved major victories with his new fleet and established Russia as a power in the Baltic region. At the same time, he also laid the foundation for Russian naval power in the Black Sea.

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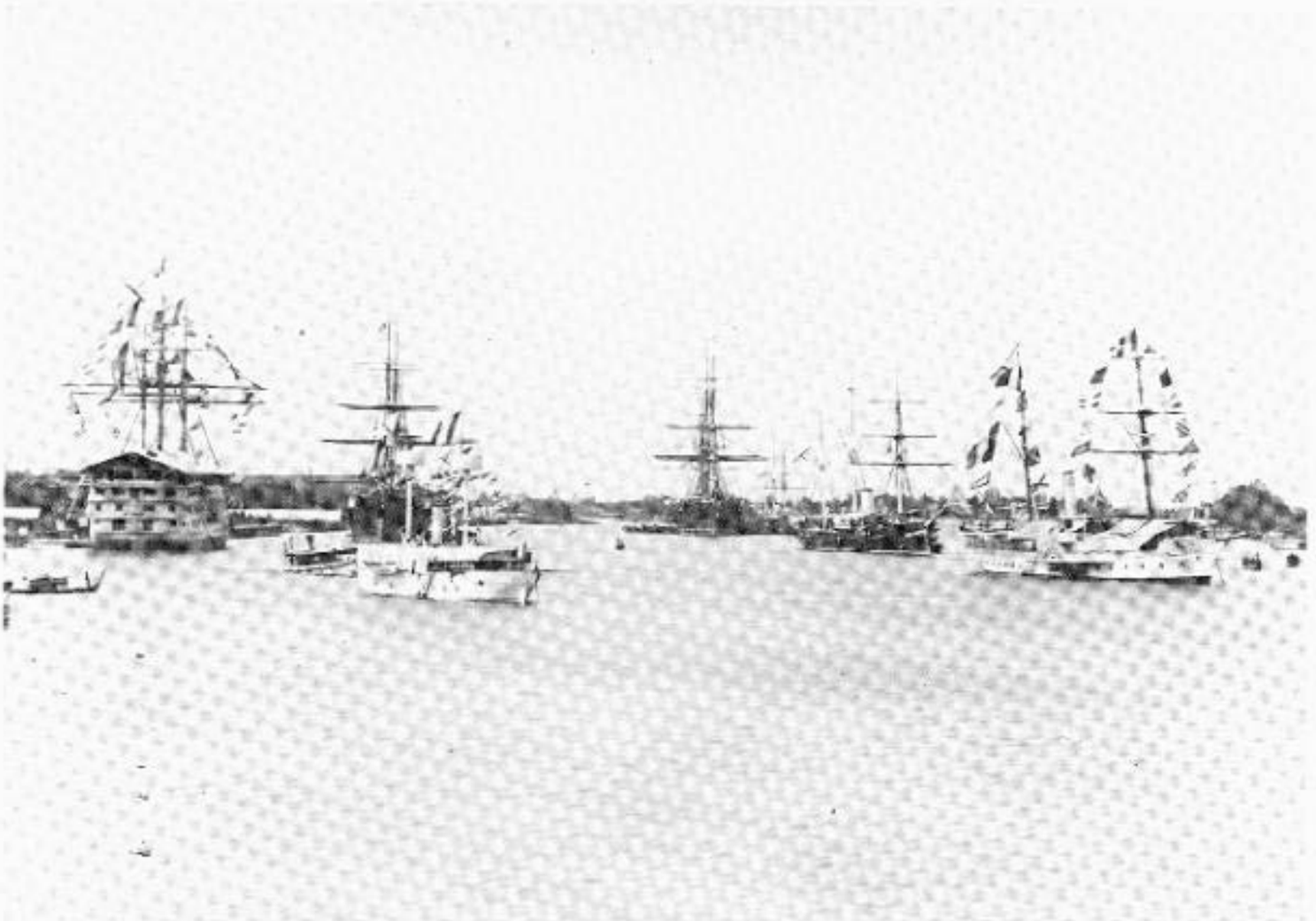

French and Russian warships at anchor at Saigon during the late 1880s.

From the middle of the eighteenth century to the beginning of the twentieth, however, there were few victories at sea about which Russian naval forces could boast. The Russian Navy suffered the same dilemma facing other continental powers of the era. While national interests compelled these nations to maintain large and modern fleets, in times of stress, their navies were always subordinated to the needs of their ground forces. This usually resulted in risk-minimizing strategies, uneven training and maintenance, poor morale, and ultimate defeat in battle. The standard set by the far-ranging British fleet, in the competitive environment of the eighteenth and nineteenth centuries, forced nations to face the problem of having to maintain a number of separate naval establishments, from the English Channel and the Atlantic Ocean to the Mediterranean Sea and Indian and Pacific Oceans. For the Tsarist Navy, the considerable difficulty of such geographic separation, reaching from Europe to the Pacific, proved especially acute, and it is a problem still encountered by the modern Soviets.

While Russia nonetheless gained some naval victories in the eighteenth and nineteenth centuries, particularly against the Turks, Russian naval ambitions in the Mediterranean and elsewhere were thwarted. During the Crimean War (1853-56), British and French naval forces were even able to bottle up the Black Sea Fleet, land an expeditionary force on Russian soil, and capture the important Russian port and naval base of Sevastopol. The Royal Navy also blockaded St. Petersburg and launched raids against outlying suburbs of the capital and the nearby naval base at Kronshtadt.

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In spite of this uneven record of naval success, however, the nineteenth century also represented an era of tremendous technological change and innovation in Russian maritime development. Explorers such as Bellinghausen and innovators such as Admiral Makarov achieved well-deserved international renown.

The Soviet Navy still studies closely the conditions that brought about the early Russian victories and defeats. Particularly relevant to modern naval warfare were the overwhelming defeats inflicted on the Russian fleet by the Japanese Navy in 1904-05, dramatically demonstrating Russian shortcomings—a lack of preparedness, poor tactical coordination, and an inability to sustain prolonged operations on the high seas. An important lesson learned, the results of which are becoming more evident even today, was the need for a strong, independent Pacific Fleet not dependent on Western fleets for crisis or wartime reinforcement.

During World War I, the Russian Navy began to recover from the effects of its defeat in the Far East. New construction battleships, cruisers, destroyers and submarines reflected the best technological standards of the day. While fighting the Imperial German Navy in 1914-17, the Russian Navy executed a very effective mine warfare campaign as well as some limited coastal defense operations. In the Black Sea, Russian naval forces conducted bold operations against a German squadron operating with the Turks, and pioneered amphibious operations in an effort to link up with British forces at Gallipoli and later in Mesopotamia. The main body of the Russian Navy—assigned to the Baltic Fleet—was, however, constrained by fear of defeat, as was the German High Seas Fleet; neither wanted to risk the loss of its capital ships, the symbols of prestige and the valued instruments of national policy. Both navies thus remained "fleets in being," a concept of preserving ships as symbols of national power and prestige, too valuable to be exposed to combat. This situation did not contribute either to high morale or to distinguished combat records. Indeed, because of rising discontent among their underutilized personnel, both fleets were to become the torchbearers of revolution. But, while the German sailor-mutineers failed, their Russian counterparts did not. Russian sailors played a critical part in the Bolshevik Revolution of 1917.

B. The Bolshevik Revolution and the Emergence of the Soviet Navy

The Russian Revolution and subsequent internal turmoil all but destroyed the Czarist navy and other maritime resources, including the country's shipbuilding capability. With the exception of a few small units able to flee inland by river, the entire Black Sea and Northern Fleets fell into the hands of counter-revolutionaries and their allied supporters. Many Baltic Fleet ships were badly damaged during the heroic Ice Cruise of 1918, undertaken to prevent seizure by the Germans during the negotiation of the Treaty of Brest-Litovsk. The naval command structure was also devastated by the revolution. During the subsequent Civil War (1918-21), it became obvious that many years would be required to train naval officers loyal to the Communist Party. In the interim, most command and staff jobs were filled by former Imperial Navy officers, who were seldom trusted by either the Party or their own men and were subject to close scrutiny by both. Political unreliability among the revolutionary sailors added to problems of discipline and divided command. Several major incidents resulted, the most serious of which involved sailors from Kronshtadt who had played such a vital role in establishing Bolshevik rule in 1917. Dissatisfied with the events of the intervening three years, they flared into open revolt in March 1921, demanding political freedom, civil rights, and an end to the Communist Party's dictatorship. The Soviet

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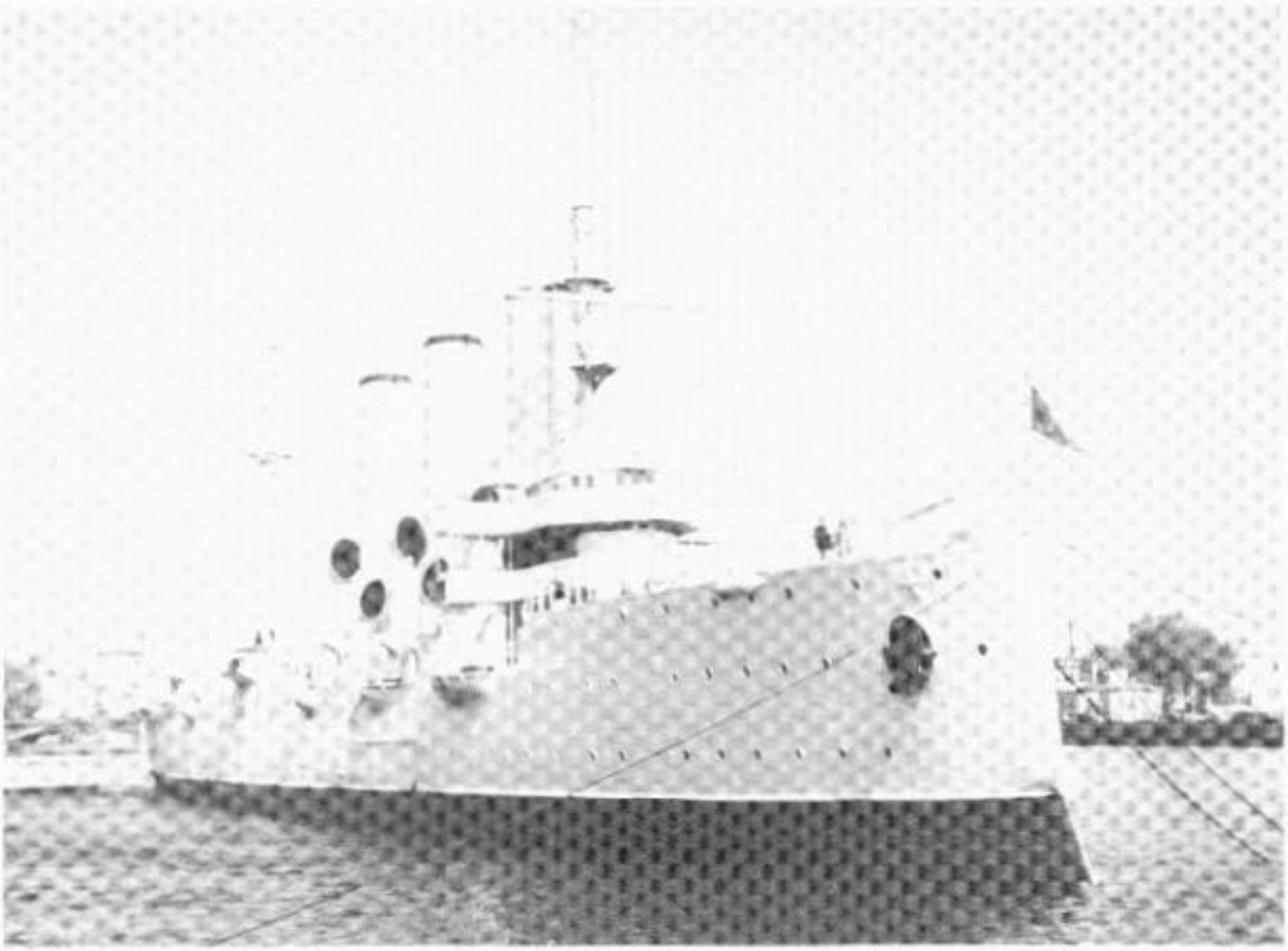

The Soviet cruiser AURORA, moored at Leningrad, is maintained as a Soviet monument. The ship fired at the Winter Palace in 1917 to signal the start of the Bolshevik takeover of the provisional government.

authorities put down the revolt by shooting dozens of the former "heroes" and imprisoning most of the survivors.

The rebuilding of the Navy began anew in the late 1920s. By the early 1930s, the Soviets had established minimal coastal defense fleets in the Baltic Sea, the Black Sea, the Pacific Ocean, and Arctic Ocean (Northern Fleet). Nevertheless, the historical and political realities inherited from the old Russian Empire by the USSR, together with geography, dictated that the Soviet Navy take a back seat to the Red Army.

Stalin's drive for broad military power strengthened the Navy's status. By the late 1930s, an extensive shipyard expansion program enabled construction of large surface combatants and submarines. Although relatively few ships produced by this construction activity had been completed before the outbreak of World War II, Stalin's program sought to correct critical weaknesses in the Soviet military, as revealed by interwar crises such as the Spanish Civil War. Land-based naval aviation also grew dramatically, with over 1,300 reconnaissance, fighter and attack aircraft of various models in service by 1939. In some respects, the naval program instituted by Joseph Stalin in the 1930s anticipated the large Soviet Navy buildup in the 1970s and 1980s.

Institutionally, however, in the late 1930s, Stalin adopted an approach that proved to have

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grave military consequences. While he was correcting material deficiencies in the Soviet Navy, just as with the Army, he was physically eliminating those experienced command personnel who failed to meet his expectations—most of them as it turned out. Among those who perished in the Great Purges of the Thirties, together with thousands of less prominent naval officers, were the Commander-in-Chief of the Soviet Navy, his former Deputy, the Commanders of the Baltic, Black Sea, and Northern Fleets as well as the Azov Flotilla Commander, and the eminent naval theorists, Stashevich and Petrov, of the Naval Academy. An entirely new Naval High Command was then established to implement naval programs and to provide Stalin with absolute control over naval policy and construction.

In order for the Soviet Union to achieve its full potential, Stalin asserted that it must have "the most powerful Navy in the world." Tremendous material resources and manpower were mobilized in 1938 to accelerate the planned fleet expansion. Stalin employed the *Komsomol* (the Communist Party Youth Organization), the NKVD (as the Soviet Secret Police was then called), and one of his favorite and most ruthless lieutenants, A.A. Zhdanov, to oversee the activity and maintain control. Italian and US designs, German fire control systems, and US guns and heavy machinery were sought. The development program focused on big gun battleships and battle cruisers, as well as appropriate numbers of smaller cruisers and destroyers. By early 1940, sources of assistance dried up except for Nazi Germany. During the period of the Nazi-Soviet Non-Aggression Pact, Stalin asked Hitler for two heavy cruisers, 15-inch and 11-inch gun turrets, fire control equipment, the plans for the battleship BISMARCK, plans for U-boats, and machine tools and construction assistance. The Soviets received the incomplete 8-inch gun cruiser LÜTZOW, some technical help, and some plans. In return, the Soviet Union provided the Germans with a secret naval base west of Murmansk and hundreds of thousands of tons of oil for the Nazi naval war effort.

Stalin's efforts to build a strong naval force were frustrated by the German invasion of the Soviet Union in the Second World War. Although the Soviet Navy was on alert and did not lose a single ship in the surprise Nazi invasion in 1941, the rapid German advances along the Baltic and Black Sea coasts soon deprived it of badly needed bases and supplies. This desperate situation was aggravated by the need to cope with German air superiority, inadequate command and control, poor training, outmoded tactics, and, in the Baltic, heavy German minelaying. Consequently, the Soviet Navy suffered huge losses.

Nevertheless, some elements were able to contribute to the war effort, especially in the Black Sea. Rear Admiral Sergei Gorshkov, the most successful Soviet naval commander of the war, pioneered tactics for supporting the ground forces from the sea, especially in fire support and in the use of amphibious landings to encircle enemy troop concentrations. Still, on the whole, the Soviet Navy played only a peripheral supporting role in the conflict. The great battles that contributed significantly to the defeat of Hitler's Germany were won by the Red Army, not the Navy.

Although the experience of the Second World War left the Red Navy without any large scale, strictly naval victories to its credit, it did provide critical opportunities for its postwar architect, Admiral Gorshkov, to form personal and political alliances, notably with Marshal Grechko, future Defense Minister, and Leonid Brezhnev, future political leader of the Soviet Union. These alliances proved very beneficial to the development of the modern Soviet Navy.

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Symbolic of the technology investment in the Soviet Navy and its growing size and complexity is the 30-35,000 ton SSV-33, a nuclear-powered auxiliary.

C. The Postwar Soviet Navy

After the Second World War, Stalin revived his plans for building a large ocean-going navy for the Soviet Union. High priorities were given to this task and, by the late 1940s, the nation's shipbuilding industry had been rebuilt sufficiently (in part by using German technology and engineers) to resume work on submarines, battleships, cruisers, and destroyers. Even the construction of aircraft carriers was envisioned at the time of Stalin's death in 1953. With Stalin removed from the scene, however, the plans for a larger fleet were shelved by the new leadership. Only 14 of 24 projected SVERDLOV class light cruisers were finished, and none of the larger surface units was ever completed.

When Nikita Khrushchev emerged as Moscow's new leader in the mid-1950s, he initiated policies that radically affected the size and composition of the entire Soviet military. In a pattern that seems to be repeating itself under Gorbachev, the number of Soviet ships and personnel were dramatically reduced, while the plans for a completely new fleet were laid. The Soviet General Staff formulated a new strategic military doctrine which took into account the "revolution in military affairs" brought about by the creation of nuclear weapons. By the standards of that doctrine, surface fleets not configured to operate in a nuclear environment where they could exploit the advantages of surprise and preemption that nuclear weapons afford, were considered obsolete. In 1956, to implement nuclear doctrine in the Navy, Khrushchev turned to Sergei Gorshkov, a 45-year-old naval officer with a record of combat effectiveness, who had attained the rank of Rear Admiral at the age of 31, to be Commander-in-Chief of the Soviet Navy.

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Later, in his major work, *The Seapower of the State*, Gorshkov succinctly describes this period:

> *"Major efforts to build a powerful ocean-going nuclear missile Navy were begun in our country by around the mid-1950s in accordance with a decision by the Central Committee of the CPSU. This began the second stage in the development of the Soviet Navy."*

This "second stage" marked the beginning of the modern Soviet Navy. Gorshkov scrapped the pre-World War I battleships, the cruisers built in the 1920s and 1930s, and most of the German and Italian war prizes worn out after extensive post-war trials and operations. (His actions paralleled those of the Western navies, which had eliminated much of their pre-World War II inventory by the 1950s as well.)

Further efforts were directed toward fulfilling the distinct role established for the Soviet Navy within evolving post-war Soviet military strategy—defense of the homeland from the oceans. In place of Stalin's planned ocean-going fleet, Admiral Gorshkov was directed to develop a missile-armed navy of smaller ships and submarines that could defend the Soviet Union from possible Western aggression. The hope was that comparatively inexpensive cruise missiles could counter the US naval forces which had been rebuilt and expanded as a result of the Korean War (1950-53) and heightened US-Soviet tensions of the Cold War.

In their view of "possible Western aggression," Soviet military planners were particularly concerned about US aircraft carriers, which could launch planes carrying nuclear bombs against the Soviet Union while still several hundred miles at sea as well as strike targets ashore around the Soviet periphery. In response to this concern, the Soviet Union built several hundred medium bombers (many designed as cruise-missile carriers) and assigned them to Soviet Naval Aviation (SNA).

Admiral of the Fleet of the Soviet Union Sergei Georgiyevich Gorshkov was the Commander-in-Chief of the Soviet Navy from 1956 until 1985. Under his leadership the navy was transformed from a coastal defense force into a blue-water navy and a formidable global strategic force which is now a flexible instrument of Soviet foreign policy. A Great Russian born 26 February 1910, Gorshkov joined the Navy in 1927, after graduation from the Frunze Higher Naval School. He served in destroyers in the Black Sea and Pacific Fleets through the 1930s and was appointed Rear Admiral in 1941, right after the Germans declared war on the USSR. He distinguished himself in several Black Sea commands during the war, including the Azov and Danube Flotillas. He was Commander of the Black Sea Fleet when he was chosen to become the Commander-in-Chief. Gorshkov was also a Deputy Minister of Defense and a Full Member of the Central Committee of the Communist Party. His different "hats" made him the approximate equivalent of both the Secretary of Navy, a civilian position, and the Chief of Naval Operations in the US Navy organization. Gorshkov published a number of works; best known are his series of articles entitled Navies in War and Peace, and his widely distributed book, The Sea Power of the State. In addition, before his death in 1988, Gorshkov wrote the forward to and edited another landmark book on the Soviet Navy, *The Navy: Its Role, Prospects for Development, and Employment*. He was succeeded by Fleet Admiral V.N. Chernavin.

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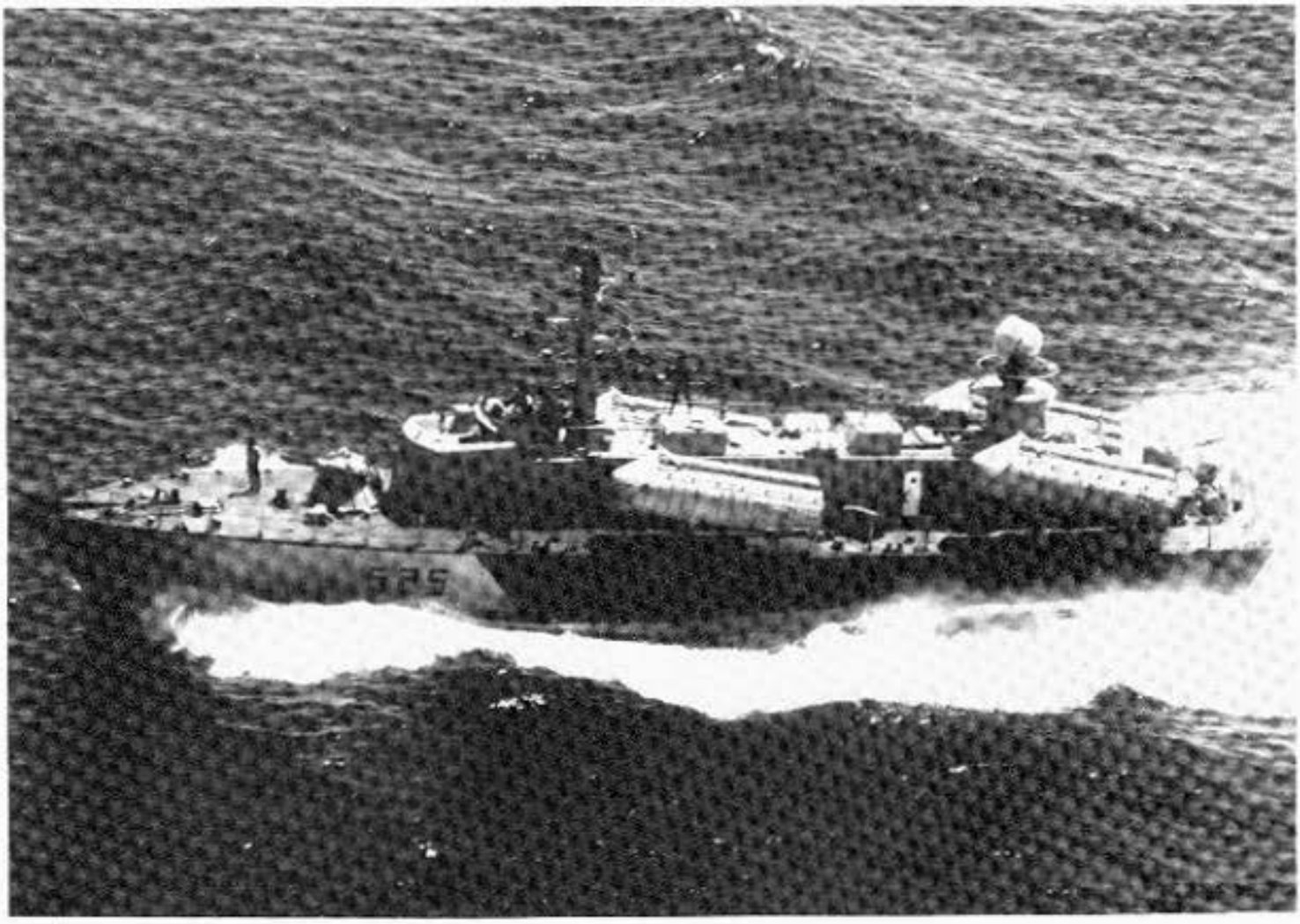
At the same time, they built cruisers, destroyers, submarines, and missile boats to operate in a coastal defense mission in waters peripheral to the Eurasian landmass. Most notable and numerous of these were the OSA and KOMAR missile boats, which carried SS-N-2 missiles.

Preeminent among the oceangoing missile-carrying ships were the KYNDA Class cruisers designed in the mid-1950s and commissioned in the early 1960s. Still in service today, KYNDAs have eight launching tubes plus eight reloads for the SS-N-3 antiship cruise missile. With target acquisition provided by either aircraft, submarine, or surface ship, this missile could deliver up to a ton of high explosives or a nuclear warhead against hostile ships some 250 miles away.

Cruise-missile-carrying aircraft, the KYNDAs, and the ECHO I/ECHO II nuclear-powered cruise-missile submarines (SSGNs) represented the Soviet Union's first expression of the new ocean-going Navy in an antisurface warfare role. The continued improvement of succeeding generations of these aircraft, surface combatants, and submarines indicates that the Soviet Navy still emphasizes its antiship mission.

The shifting strategic environment, however, soon required that Soviet planners turn their attention to the development and deployment of the US ballistic missile submarine force. Forty-one US nuclear-powered ballistic missile submarines were completed between 1960 and 1967, significantly complicating the Soviet



Admiral Gorshkov emphasized the development of antiship missiles. By the late 1950s, several types were at sea, including the SS-N-2 STYX. The STYX, in several forms and on a number of different platforms (here shown on a Soviet OSA II), is still a significant threat found in the inventories of numerous world navies.

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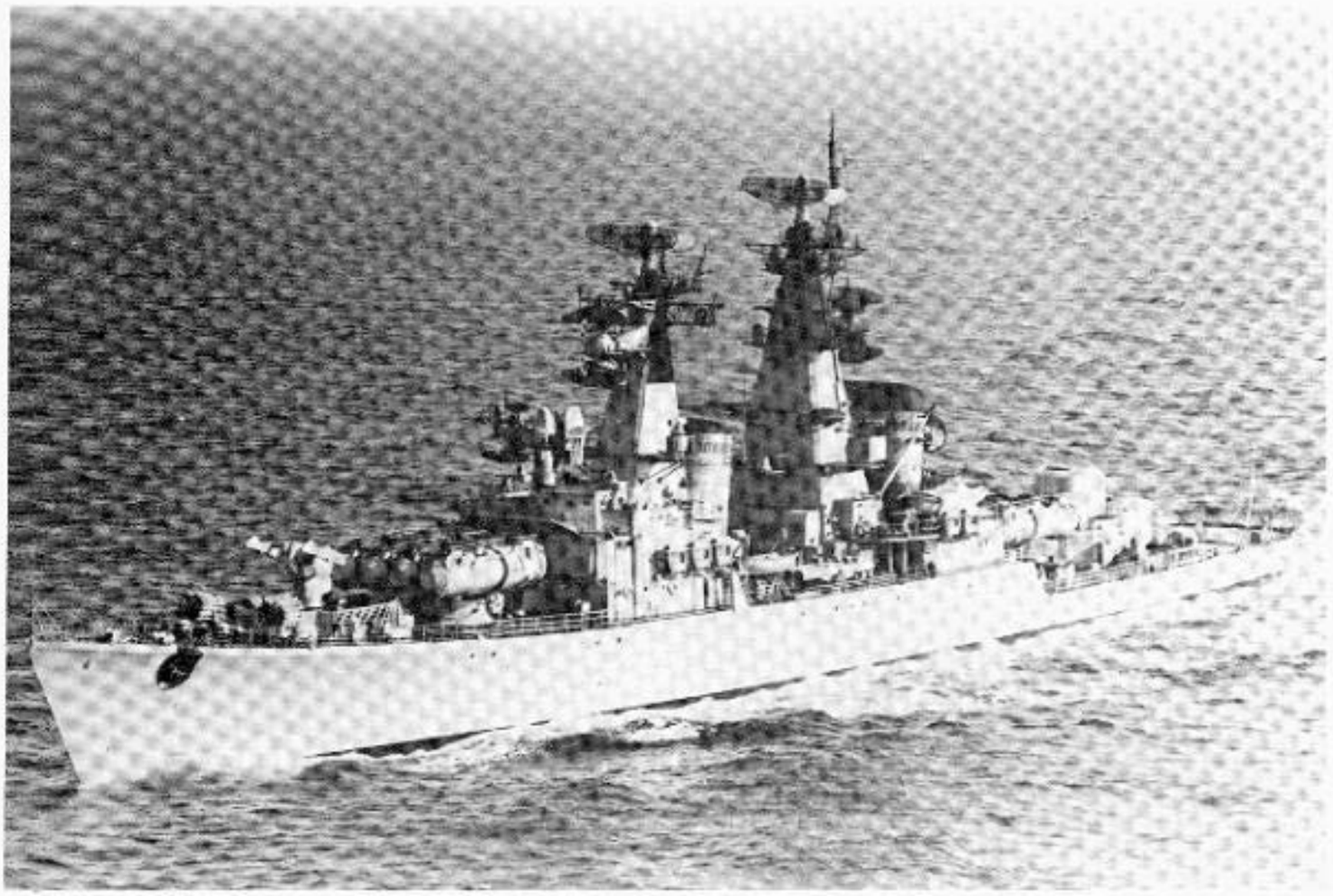

The KYNDA class guided-missile cruiser (CG) was one of the first major combatants to carry surface-to-surface missiles. They were loaded into two quadruple launchers, mounted fore and aft.

Navy's mission of defense of the USSR from the sea. The Soviet response to this development included construction of new types of antisubmarine aircraft and ships, among them the unique MOSKVA class helicopter-carrying missile cruisers. The two ships of this class are well-armed and carry up to 14 ASW helicopters fitted with submarine detection devices and capable of carrying depth bombs or torpedoes.

As it turned out, Admiral Gorshkov had not totally halted construction programs under Khrushchev. The shipbuilding and industrial base had been used to finish some of the light cruisers already under construction as well as to build new missile-armed destroyers, patrol boats, and submarines, both diesel and nuclear-powered. Once the Party and military had agreed on a new role for the Soviet Navy, this infrastructure was available for the construction of qualitatively improved surface ships. In the midst of these developments, the Soviets found their political-military objectives frustrated in the 1962 Cuban missile crisis. The lack of naval power to counter the US Navy in the Caribbean certainly underscored to the Soviet political and military leadership the importance of pushing forward with its ocean-going Navy program.

D. The Development of a Global Soviet Naval Presence

By 1963, the Soviet Navy had enough new ships, aircraft and submarines in service to establish a blue-water global presence. So, despite limitations in training, experience, and support capabilities, naval elements began operating beyond their traditional coastal areas and outside of their previous defensive perimeter. By mid-1964, Soviet warships maintained

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a continual presence in the Mediterranean Sea and began a program of port visits throughout the region.

In 1966, a contingent of Soviet submarines conducted a circumnavigation of the globe. Current Commander-in-Chief of the Soviet Navy, Admiral Chernavin, by his own account, took part in that venture as a navigator. During the Arab-Israeli war in June 1967, a steady stream of Soviet ships passed through the Turkish Straits until the Soviet Mediterranean Squadron numbered about 70 surface warships, submarines, and support ships. The Soviet ability to deploy naval forces rapidly to the Mediterranean area was again demonstrated during the Yom Kippur War of October-November 1973. Within a few days of the outbreak of hostilities, numerous Soviet warships were added to the Mediterranean Squadron. By early November, when the crisis reached its peak, there were 96 Soviet naval units in the Mediterranean (compared to 66 US Sixth Fleet units).

By the early 1980s, the Soviet Navy routinely maintained between 30 and 40 ships in its Mediterranean Squadron, with periodic increases as ships from the Black Sea Fleet and submarines from the Northern Fleet operated there for short periods of time with the units they were replacing. Since the mid-1980s, however, the total number of Mediterranean Squadron ships has slowly declined as resource constraints have forced the Soviets into adopting a "defensive" strategy based on intensified readiness in home waters.

The Soviet Union has also maintained a permanent naval presence in the Indian Ocean. During the Iran-Iraq conflict from 1980 to 1988, the Indian Ocean Squadron escorted

Soviet warships at the Kithira Anchorage in the Mediterranean Sea. The Soviet Navy maintains a continuous presence in the Mediterranean.

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numerous Soviet merchants and tankers in the Arabian Sea and Persian Gulf. The Soviet presence in the Indian Ocean was significantly reduced in 1989, however, as a direct result of the cease-fire between Iran and Iraq and the cessation of the Persian Gulf tanker war. In early 1990, the force consisted of a single major combatant, three minesweepers, an amphibious ship, and fifteen auxiliaries. The Indian Ocean Squadron was able to use facilities in Ethiopia's Dehalak Archipelago in the Red Sea as its primary source of logistics and maintenance support until it was forced out in late 1990 by the increasing encroachment of Ethiopian Tigrean revolutionaires. The Soviets have, however, maintained a floating logistics base in the Gulf of Oman that they can use to resupply the fleet, and they are also able to use facilities at Aden and, to a lesser extent, Djibouti.

Soviet naval ships in the South Atlantic used Luanda, Angola, as their primary logistics and maintenance base until the Soviet Navy departed the area in October 1990. During the Falkland Islands conflict in 1982, Tu-95 BEAR D reconnaissance aircraft from Luanda conducted limited surveillance of British naval forces en route Ascension Island. The Soviets, however, continued to maintain a fisheries protection flotilla at sea off the northwest coast of Africa into 1991.

Although the Soviets maintain no permanent naval presence in the Caribbean and have deployed there with combatant ships only twice since 1986, they are not strangers in the region. Soviet Navy task groups have made 29 deployments to Cuba since 1970, with port calls at Havana and Cienfuegos, and have conducted operations in the Gulf of Mexico. Approximately half of these deployments included one or two submarines. The task groups spent an average of 40 days in the Caribbean, with the longest deployment being 91 days in 1978. Since November 1981, the Soviet Navy has periodically used Cuba's San Antonio de los Banos military airfield for deployments of Tu-95 BEAR D reconnaissance aircraft and, since 1983, Tu-142 BEAR F antisubmarine warfare (ASW) aircraft, although the practice may have ceased in 1990. The Soviets also continue to maintain their signals intelligence site at Lourdes, and Soviet intelligence collection ships (AGIs) and other naval auxiliaries still operate off the east coast of the United States, with periodic upkeep at Cuban facilities.

Soviet ASW and reconnaissance aircraft routinely deploy to a number of facilities around the world, including Cuba, Vietnam, Libya, and Syria. Facilities at the entrance to the Red Sea, at Aden, allowed Soviet reconnaissance aircraft to operate as far south as the US Naval Facility on Diego Garcia, but despite their increasing support to the newly-united North and South Yemen in 1990-91, the Soviets appear to have ceased maritime reconnaissance patrols from Aden. At Cam Ranh Bay, Vietnam, the Soviets routinely supported (until 1988) 20 to 25 naval vessels and nearly 40 reconnaissance, fighter, strike, and ASW aircraft, representing a threat to other nations' units operating as far south as Malaysia or as far north as Hong Kong. By 1990, however, Moscow had withdrawn some of its naval combatants and most of its aircraft from Cam Ranh Bay while continuing to employ the facility as a vital support base for ships transiting to and from the Indian Ocean.

Despite an overall decrease in operational tempo or OPTEMPO and out of area deployments in recent years, the Soviet Union continues to maintain a naval presence in a number of strategically important areas of the globe. The Soviet Union actively employs its Navy to further its geopolitical interests, much the same as do the United States, Great Britain and other naval powers, and has greatly expanded the capability of its Navy since the mid-1960s in both scope and complexity of tasks assigned to it.

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The Soviet aircraft carrier ADMIRAL FLOTA SOVETSKOGO SOYUZA KUZNETSOV departs its berth in Nikolayev enroute sea trials in the Black Sea. KUZNETSOV is destined to become flagship of the Northern Fleet.

E. Some Current Developments

The Soviet Navy is a unique instrument for the Soviet state. It enables the USSR to promote its interests on all the world's oceans without forcing direct confrontation with the West. Equally important, the Navy continues to play a critical role in the strategic strike and homeland defense missions that are the foundation of Soviet military strategy. It also retains the capability to support Soviet ground forces from adjacent waters and, to a limited extent, around the world. The impact on the Navy of reallocation of Soviet military resources undertaken as a result of Gorbachev's current attempts to "restructure" the Soviet system will depend in part on the perceived continuing value of the Navy to carry out its missions.

The ongoing nature of Soviet reforms makes it difficult to predict the ultimate size and composition of the Soviet Navy. Nevertheless, despite reduced OPTEMPO and the current scrapping programs designed to eliminate the burden of maintaining obsolescent ships and submarines, the Soviet Navy is continuing to modernize, compensating for reductions in numbers with improved capabilities across the board. In that regard, the improved accuracy and range of sub-launched ballistic missiles (SLBMs) and the more secure operating areas of nuclear-powered ballistic missile submarines (SSBNs) (in less accessible and ice-bound Arctic regions) make the sea-based strategic strike arm of the Soviet Navy of the future an even more flexible and potent force. The deployment of new, long-range, nuclear-armed, land-attack cruise missiles (SLCMs) in modern submarines dramatically increases the potential threat axes

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and warheads available for use against both intercontinental and theater targets.

Capabilities for conventional warfare are also improving. The new ships, submarines, and aircraft entering the fleet as a result of the building programs of the 1980s and 1990s enable the Soviet Union to operate in generally higher maritime threat environments.

The introduction of seabased, high performance aircraft operating from the new Soviet aircraft carriers will contribute to the defense of the homeland. The new carriers' primary wartime functions are to augment air defense coverage of the Soviet Union against aircraft and cruise-missile attack from seaward axes and to provide integral air support outside the range of land-based defenses to the powerful mix of naval surface, subsurface, and air-launched missile platforms that represent the principal elements of Soviet seaborne strike potential.

The aircraft carriers also provide further SSBN protection by giving the Soviet Navy additional air cover from hostile ASW forces and defense for its own hunter-killer ASW groups. They also enable the Navy to range beyond its land-based air cover and improve Soviet ability to project power ashore in the Third World.

While maintaining a primarily defensive posture over the next decade, we can expect the Soviet Navy to continue to increase its capability to carry out a broad range of maritime tasks and to assist in the implementation of Soviet foreign policy objectives throughout the world.

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A SLAVA class guided missile cruiser is assisted by a US tug during a port visit to Norfolk, Va.

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SECTION 3. THE SOVIET NAVY TODAY

Our Navy is an inseparable part of the USSR Armed Forces which are defending the security of the motherland. The ships, aircraft, and shore-based units of the USSR Navy possess great firepower, high mobility, and the capacity to carry out combat in various regions of the world's oceans against aggressor ships at sea and at bases, as well as to destroy the aggressor's important land installations. The potential instigators of war are aware of this and have been forced to consider the combat might of the Soviet Navy.

—V. N. CHERNAVIN, Admiral of the Fleet, Commander-in-Chief of the Soviet Navy

The Soviet Navy serves to support the multi-theater goals and objectives of Soviet military strategy. As an essential component of the overall armed forces, Soviet naval forces maintain a large inventory of ballistic missile, cruise-missile and attack submarines, surface combatants, combat and reconnaissance aircraft, and supporting auxiliaries.

These forces regularly operate at sea, often at great distance from home waters. They train in demanding maritime environments where they envision future conflicts would require them to fight. Soviet operational performance reveals them to be a professional, disciplined force ready to pursue the military and political tasks that their Commander-in-Chief, Admiral Chernavin, has outlined for them. The continued construction of larger, more powerful warships and increasingly more sophisticated weapons and sensors helps ensure that the Soviet Navy remains prepared to fulfill its missions.

In carrying out its responsibilities, the Soviet Navy trains to operate in either a conventional or nuclear war environment, outside of home waters if necessary, and is able through its presence to support state interests effectively in peacetime. Addressing the wide range of naval missions, the current edition of the *Soviet Military Encyclopedic Dictionary* describes the Soviet Navy as:

> *. . . capable of delivering nuclear strikes against enemy ground targets, of destroying his naval forces at sea and in their bases, of disrupting enemy ocean and sea communications and protecting their own side's communications, of joint operations with ground forces in conducting operations in continental theaters of military operations, of conducting amphibious landings and preventing amphibious landings by the enemy, of transporting troops and materiel, and of fulfilling other missions.*

The notion of joint operations in this description is particularly important. In Soviet military combat operations, the Navy, like the other branches of the armed forces, is viewed as an integrated part of a combined arms team.

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Admiral of the Fleet V. N. Chernavin, who spent the majority of his career in the Soviet submarine force, succeeded Admiral Gorshkov in 1985. Since his takeover, his emphasis has been on realistic training, strict discipline, conservation of resources, and increased combat readiness.

A. Soviet Naval Missions

To understand Soviet naval missions properly, one must place them in the context of the overall Soviet view of war. The Soviet Union has declared since May 1987 that its national military policy is based on a new "defensive doctrine." As such, there is no longer a unified Soviet military strategy for achieving victory in a global war. However, Soviet writers are increasingly arguing that even a conventional war holds the twin dangers of escalation to a nuclear phase and the possibility that a conventional conflict could rival a nuclear conflict in terms of the resulting destruction. Nuclear weapons, however, remain vital in the Soviet view, both as a deterrent and as a war fighting instrument should such a conflict occur. Accordingly, a key factor in Soviet security policy is its strategic forces.

The Soviet Navy's contribution to strategic capability is its increasingly powerful ballistic missile nuclear submarine force. Strategic offensive strikes by the Navy therefore constitute one of its most important, if not its most critical tasks. A corollary mission to the strategic strike mission is the active protection of Soviet strategic strike assets, often referred to as "pro-SSBN". Increasingly, SSBNs are being operated in safe havens, or "bastions," close to Soviet coasts, under ice, or in restricted waters. They are being protected by ASW sensors, mine barriers, surface combatants, aircraft, and attack submarines formed into a series of echeloned defenses.

The common goal of all military forces is the defense of the Soviet homeland and this represents another of the Navy's critical missions. Soviet naval units play an increasingly important role in defending the Soviet Union against aircraft, cruise-missile, or ballistic-missile attack from seaward axes. Inherent in this task are antiair warfare, anticarrier warfare, and strategic antisubmarine warfare against US and Allied SSBNs and SLCM-carrying units.

In addition to the above strategic roles, Soviet literature lists the following tasks assigned to naval forces: support of other Soviet forces in designated theaters of military operations; interdiction of sea lines of communication (SLOCs) as required by the evolving combat environment; and support of state policy through sea power in situations short of general war. (See table 1.)

Participate in Strategic Strike Operations

The Soviet Navy's principal wartime role is to take part in strategic offensive strike missions. The modern SSBN force, assigned entirely to the Northern and Pacific Ocean Fleets, is the main instrument for accomplishing that mission. The bulk of the force operates in the protected bastions from where their long-range SLBMs can still strike targets in the continental US (CONUS). Some SSBNs would participate—along with intercontinental ballistic mis-

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Table 1

Missions of the Soviet Navy

Mission	Tasks	Assigned Naval Forces	Mutually Supporting Service
Strategic Offense:			
Operations Against the Shore.	Strategic strike	SSBN	SRF
	Withheld strike	SSBN	SRF
	Theater strike	SSB	SRF
		SNA strike	SAF
Pro-SSBN	Anti-SSN	SS/SSN	
		SNA ASW (VP/HS)	
	Anti-MPA	AAW surface ship	PVO
			SAF
Strategic Defense			
Anti-Naval Forces	Anti-carrier	SNA strike	SAF
		SSGN	
	Anti-SSBN	SSN	SAF
		SNA ASW (VP/HS)	
		ASW surface ships	
	Anti-ship/Anti-SLCM	SNA/CVG	SAF/PVO
		AAW surface ships	
	Anti-command and control, Installations	SNA strike	SRF
		SSGN	SAF
		SSBN	
Support of the Ground Forces:			
Army Flank Cover and Support.	Amphib assault	LPD/LST/LSM	SAF
		MSH/MSF/MSS	GF
		CL/DD/DDG/FFG	
		SNA strike	
		SNI	
	Anti-amphib	SNA strike	SAF
		SS/SSN/SSG/SSGN	GF
		CG/CVHG	SRF
		PG/PGT	
		BRAV	
	Gunfire/air support	SNA strike figher bomber	
		CL/DD/DDG/FFG	
	Anti-gunfire support	SNA strike	SAF
		SS/SSN/SSG/SSGN	GF
		PFF/PTG	(Missile Troops)
		BRAV	
	Transport	Merchant marine	
Interdiction of Sea lines of Communication: Anti-SLOC.	ASUW	SNA strike	SAF
		SS/SSG/SSN/SSGN	
		CG/CVHG	
		PGG/PTG	
		BRAV	
	MW	SNA strike/ASW (VP)	VTA
		SS/SSG/SSN/SSGN/surface combatants.	
	Anti-port	SNA strike	SAF
		SSB/SSBN	SRF
Pro-SLOC	ASUW	PG/FF/DD	SAF
		PC/PT	GF
		SNA strike/fighter bomber	(Missile Troops)
		BRAV	
	ASW	PG/FF/DD/PCS	
		SNA ASW (VP/HS)	
	AAW	PGG/FFG/DDG	PVO/SAF
	MW	MSH/MSF MS	
Support of State Policy		As appropriate	All Elements of Soviet Power

Definitions: SRF = Strategic Rocket Forces; SAF = Soviet Air Force; PVO = Aviation of Air Defense Forces; VTA = Military Transport Aviation; GF = Ground Forces; BRAV = Coastal Missile Artillery Units.

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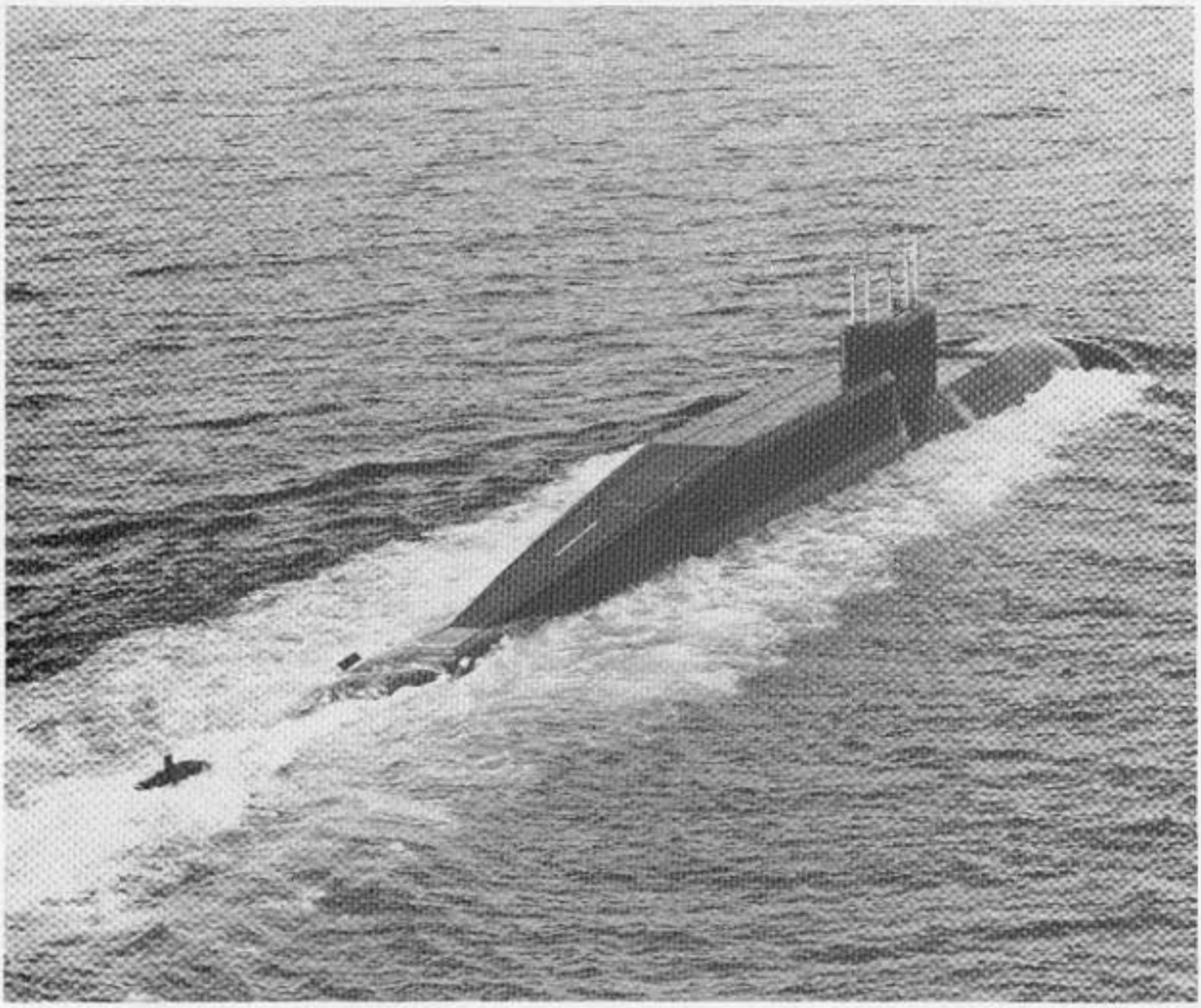

The Soviets have built over 40 of the DELTA series SSBNs (there are four classes within the series), some of which are capable of launching their strategic missiles at targets in the continental United States from Soviet home waters.

siles (ICBMs) and bombers—in the initial Soviet strategic strikes, while a sizable percentage would probably be retained for follow-on tasking.

In meeting its strategic strike responsibilities, the Soviet Navy maintains the world's largest ballistic missile submarine force. About 85 percent of the SSBNs, including those equipped with MIRVed warheads, have missiles with sufficient range to carry out their strike missions while still within their bastions, waters close to home, behind the protection of Soviet pro-SSBN forces. Indeed, these long-range missiles allow the Soviets to fire from home ports, if necessary, and still strike targets in the United States. Due to a combination of factors, including a START agreement and force modernization, the number of Soviet SSBNs is expected to decline by a third or more in the next decade. The SSBN force will remain capable of fulfilling its strike responsibilities.

The largest ballistic missile submarine in the Soviet inventory is the TYPHOON, six of which were built. Each carries 20 SS-N-20

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SLBMs, the Soviet Union's first solid-propellant, MIRVed SLBM. The TYPHOON is also the world's largest submarine, with a displacement of 25,000 tons, one third greater than the US OHIO class submarines. The TYPHOONs routinely operate under the Arctic ice cap, adding further to the protection afforded by the 4,600 nautical-mile (8,300 kilometer) range of their SS-N-20 SLBMs.

The on-going SSBN program that reflects the Soviet commitment to SSBN modernization is the DELTA IV, with at least six units launched to date. Significant improvements of this class over the DELTA III include the longer ranged and more accurate SS-N-23 SLBM, which became operational in early 1986. Modified versions of the SS-N-23 potentially give the Soviet SLBM force its first hard-target capability (e.g., against US ICBM silos and hardened command centers).

To comply with the provisions of the SALT I Interim Agreement, the Soviet Union has, since 1978, removed YANKEE I units from

The pod at the stern of this VICTOR III nuclear-powered attack submarine houses a towed acoustic array for detection of other submarines and surface ships.

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service as ballistic missile submarines so that newer SSBNs could be brought into the force within the 62 modern SSBN/950 SLBM limits. Rather than scrapping all of them, however, the Soviets have refitted some of the YANKEEs for service as attack, cruise-missile, or special-purpose submarines. Because of their age and the improved capabilities of the newer classes, YANKEE SSBN operations changed emphasis beginning in 1987 from routine deployments off the United States, to patrols in Eurasian waters with theater targeting responsibilities for the diminishing number of YANKEES remaining.

SSBN support developments include the deployment of a land-based, extremely low frequency (ELF) communications system and BEAR J very low frequency (VLF) communications aircraft that enable the Soviet military to contact the SSBNs under most operating conditions. They underscore Moscow's long-standing requirement for reliable, effective command and control of their forces, especially those employed for intercontinental attack.

The Soviet Union is also expected to continue to seek SLBM force improvements in weapon system reliability, higher ratios of warhead yield to reentry vehicle weight, larger throw weight, more reentry vehicles, and increased accuracy through navigation updating.

In addition to its SSBN/SLBM force, the USSR is developing new SLCMs with the capability to conduct strategic offensive missions. The SS-N-21 is similar to the strategic version of the US TOMAHAWK. It is capable of being launched from a torpedo tube, has a 1,600 nautical-mile (2,965 kilometer) range and carries a nuclear warhead. The Soviet navy recently completed a two-year improvement program for the SS-N-21 which probably focused on improving the SLCM's guidance and propulsion systems. Continued construction of AKULA class nuclear-powered attack submarines (SSNs) will add to the number of SS-N-21 capable units in the Soviet fleet. The Soviets have also worked on a larger, supersonic SLCM, the SS-NX-24, whose current status is unknown. Both missiles are assessed to be intended primarily for theater targets on the Eurasian landmass, but they could also play a role in intercontinental strike.

In the Soviet view, it is essential to provide "combat stability" for the SSBN force, ensuring its ability to survive, sustain high readiness, and maintain reliable two-way communications despite enemy actions in order to participate in strategic strike missions when required. They recognize that this would be a demanding task that would continue throughout the war. Thus, in order to enhance SSBN combat stability, a significant portion of the Soviet Navy's Northern and Pacific Fleet general purpose forces—attack submarines, surface combatants, and aircraft—would defend the SSBNs during operations within their wartime operating areas near the Soviet Union. This would provide an echeloned defense of the SSBN bastions. Some SSNs would escort SSBNs, particularly in areas where combined-arms ASW (air and surface) forces might not be available. Bastions would be further protected by mines and fixed acoustic sensors to detect and destroy intruding attack submarines.

In wartime, Soviet SSBNs not already at sea would begin deploying to planned wartime operating areas or disperse to secure basing and support areas to enhance their survival. Naval auxiliaries and logistics and repair ships would also disperse to SSBN support areas, including sheltered anchorages and bays well away from established naval bases. These dispersed basing areas would be used to prepare ships and submarines not operationally ready when the wartime deployment of forces began. Naval strike aviation would also ultimately disperse and then deploy to wartime operating bases and would be available to assist in the SSBN protection mission.

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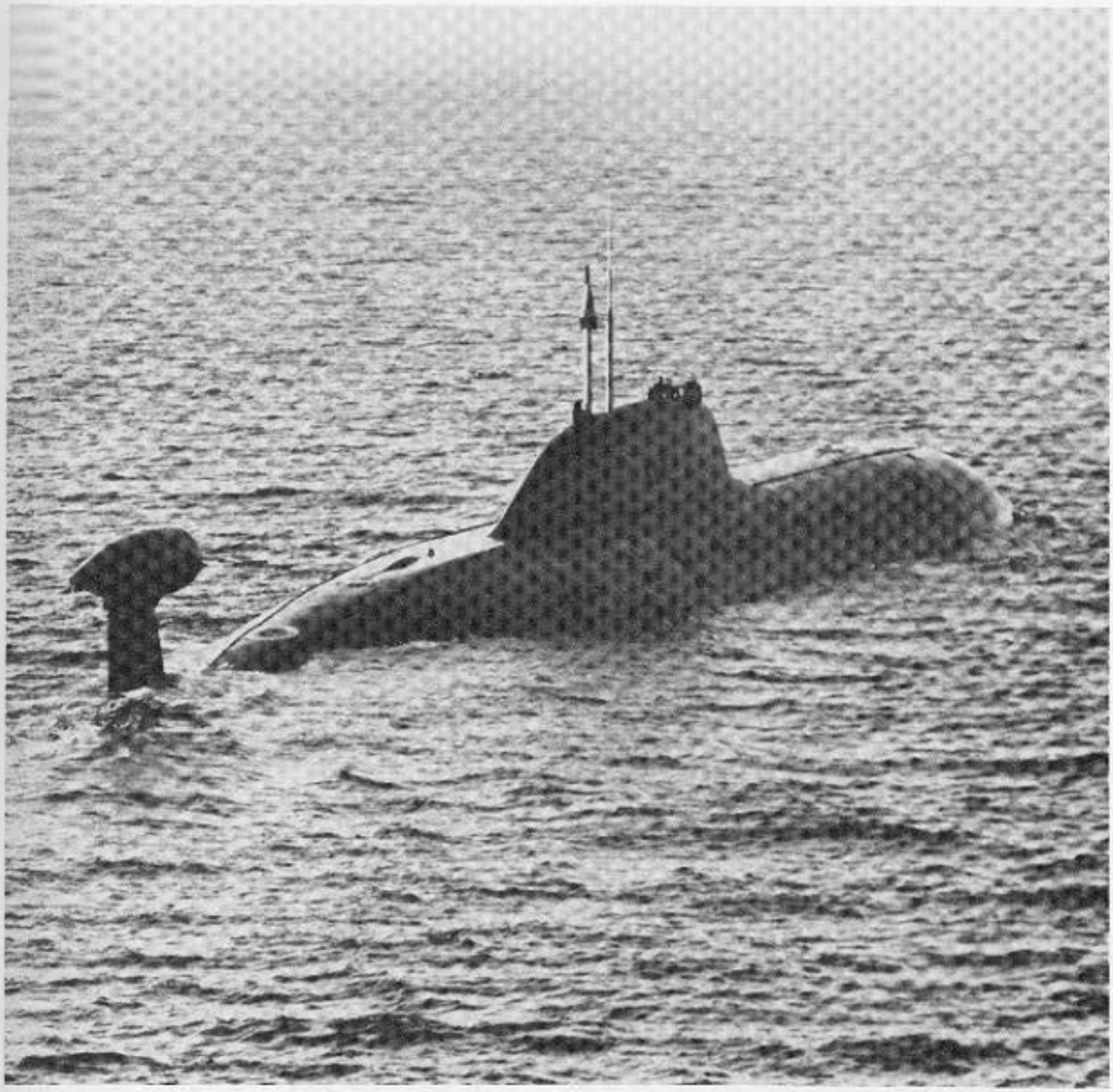

The AKULA SSN is one of the quietest ships in the Soviet submarine inventory. It is one of three classes of Soviet nuclear-powered attack submarines introduced since 1983.

Participate in Defense of the Homeland

A concentration on defense of the homeland is deeply entrenched in Soviet history and military tradition. In the contemporary environment, defense of the Soviet Union necessarily requires eliminating naval threats within strike range of Soviet territory.

At the heart of the Soviet Navy's defensive mission is the destruction of those enemy naval forces that pose a nuclear threat to the Soviet Union. The importance of that task is reflected in the Soviet book, *The Navy: Its Role, Prospects for Development, and Employment* (Moscow, 1988), edited and with a foreword authored by Admiral Gorshkov. It states that

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The Soviet KRESTA I class guided missile cruiser was designed primarily for an anti-carrier mission.

Soviet Navy's task becomes progressively more difficult, however, as the availability of longer-range missiles permits US missile submarines to patrol in ocean areas that are broader, thus providing potentially new strike axes and even less accessibility to ASW operations.

The Soviet Navy's task concerning US aircraft carrier battle groups (CVBGs) in wartime is to prevent them from coming within strike range of the Soviet Union. Moscow understands that US CVBGs will take vigorous offensive actions in the Norwegian, North, and Mediterranean Seas and in the northwest Pacific Ocean. To counter this threat, particularly in the western approaches to Soviet territory, the Soviets will employ coordinated anti-carrier strikes from a number of different platforms. The principal responsibility would fall to attack submarines and long-range strike aircraft (from both Soviet Naval Aviation and Soviet Air Force units). Recent evidence suggests the Soviets believe their anti-carrier warfare (ACW) mission is becoming ever more difficult in the face of steady improvements to US carrier battle group potency and operational sophistication. The Soviet Navy is expanding its ACW capabilities to include coordinated operations between surface units and sea-based aircraft at greater distances from the homeland. According to *The Navy: Its Role, Prospects for Development, and Employment:*

> *Air defense ships with powerful surface-to-air missile armament cooperating with the fighter aircraft of air capable ships will be capable of combating strategic and deck-based aircraft on distant barriers as well as destroying missiles targeted against shore installations.*

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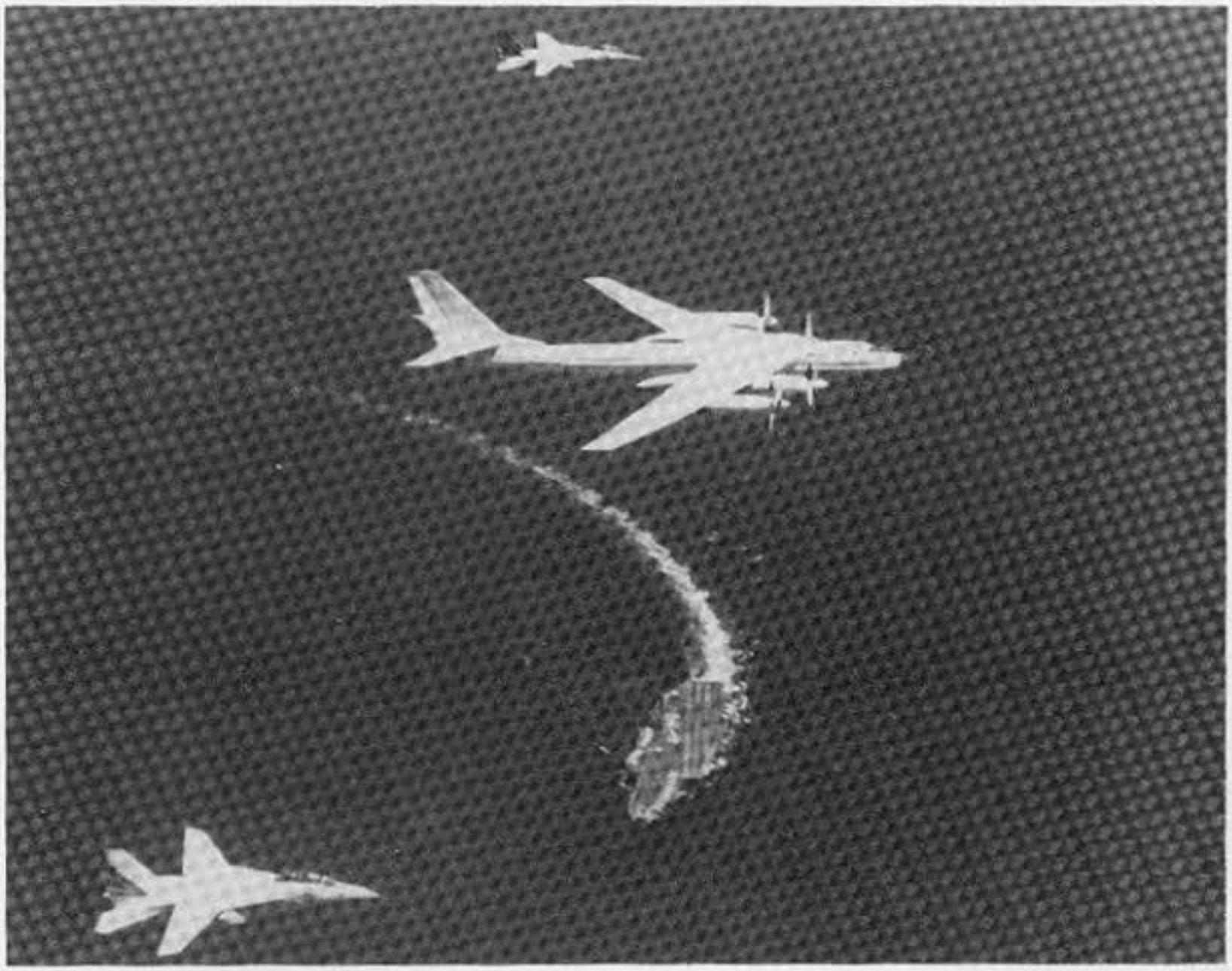

A Soviet Tu-95 BEAR bomber flanked by two US Navy F-14 TOMCATs above the aircraft carrier USS KITTY HAWK (CV-63).

The recognition of a threat from carrier-based air and long-range US TOMAHAWK SLCMs on a variety of surface ships and submarines has further complicated the Soviet Navy's homeland defense missions. The Soviets anticipate that enemy SLCM-equipped forces will operate in areas like the Norwegian, Barents, and Mediterranean Seas, in the Seas of Okhotsk and Japan, and in the Arabian Sea. Countering Western cruise-missile equipped surface ships will probably be addressed much like Soviet anti-carrier operations, and with the same high priority. The presence of enemy cruise-missile equipped submarines will also require the Soviet Navy to expand and enhance its strategic ASW operations. In both cases, the Soviets would need to extend operations farther from the Soviet homeland to engage US forces.

The Navy highlights the seriousness of the cruise-missile threat, stating that the United States plans on

> *. . . mass employment of missile weapons from ocean sectors for hitting ground targets in the interior of enemy territory. In this case, the cruise-missile launch areas can be situated in the ocean near the outer boundaries of the probable enemy's continental air defense. The mission of direct air defense penetration remains with cruise missiles and drones.*

Finally, in protecting the homeland, the Soviet Navy will play an increasingly important role in the growing air defense requirements of the Soviet Union. Once again, the

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Navy's principal contribution will be to increase its effective acquisition and intercept capability against penetrating strategic aircraft. Soviet surface combatants deployed along the seaward threat axes would be able to extend radar coverage and employ surface-to-air missiles to engage aircraft and missiles farther from Soviet territory. The Navy's operations will be coordinated with Soviet air defense forces in an effort to add overall wartime stability to all military operations.

Overall, according to the Gorshkov book on the Soviet Navy, "Repelling an enemy aerospace attack" is one of the key missions of the Navy—one that involves destroying missile and aircraft carrying platforms before they can launch nuclear weapons and, in the future, engaging missiles with weapons such as lasers and particle beams.

Support Operations of Other Forces Conducting Strategic Missions

Based on the principle of "combined arms" that guides Soviet military "operational art," the Soviet Navy is considered an integral component of overall military operations for which other services have primary responsibility. These forces conduct the joint operations that make up the Theater Strategic Operation (TSO)—frontal operations, air operations, anti-air operations, air-sea landing operations, airborne operations, and naval operations. Naval forces play a key role in the maritime portions of the TSO—naval and air-sea landing operations—while combat operations by naval forces play an integral role in each of the TSO's other subordinate components. In addition to protecting the seaward flanks from attack by enemy naval and amphibious forces, the Navy would provide gunfire and logistics support to land operations.

The Soviets maintain a credible short-range assault force of amphibious ships and naval infantry (marines) to help seize key coastal areas in support of ground operations. Soviet military doctrine calls for the small naval infantry force to be augmented by army units trained in amphibious operations. Several army divisions periodically practice amphibious landings, and a large, readily-adaptable merchant fleet (particularly roll-on/roll-off ships) is available to supplement the amphibious ships in supporting these movements. Airborne operations are often conducted in conjunction with amphibious exercises, and the transfer of four Army Motorized Rifle Divisions to Soviet Navy subordination in 1991 quintupled the number of Navy ground troops potentially available for amphibious warfare. At the same time, however, the "Defensive" doctrine in place since 1987 appears to place a lesser emphasis on an offensive amphibious warfare role for the Soviet Navy, and construction of new amphibious warfare ships and craft has tapered off.

The dwindling number of nuclear-powered submarines armed with older, shorter-range ballistic missiles have theater strike roles in support of ground operations. The 1600 nautical-mile (2965-kilometer) range of the SS-N-6 carried on YANKEE SSBNs has made that missile a theater threat when the YANKEEs assumed Eurasian targeting responsibilities in place of the discarded GOLF-II class submarines.

Interdict Sea Lines of Communication

The final wartime mission of the Soviet Navy remains the interdiction of sea lines of communication (SLOCs) of hostile forces. The principal focus of this effort would be to block the reinforcement and resupply of Allied/US forces in Europe and Asia during the conventional phase of hostilities. The priority assigned to this mission would depend on the success achieved in fulfilling other higher priority and competing strategic imperatives, especially strategic strikes and defense of the homeland. A major determinant of the extent of the

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interdiction mission would be the number of assets that could be freed from higher priority tasks, along with Soviet perceptions of the likely nature and length of the conflict.

Especially in the context of a protracted conventional war, disruption of SLOCs could cause critical shortages for enemy ground and air forces in the continental Theaters of Military Operations (TMOs), and would have a direct impact on the correlation of forces ashore. SLOC interdiction will be an element in the Soviet Supreme High Command's larger equation for disrupting European theater lines of communication.

Open-ocean SLOCs outside the Soviet sea denial perimeter (approximately 800 nautical miles, or 1500 kilometers, from shore) would initially be threatened by relatively few forces, so long as US/NATO carrier battle groups and other nuclear-capable units constituted a threat, or until resupply SLOCs became of strategic importance to the outcome of the conflict. If the Soviets calculated that their strategic missions could be fulfilled with fewer submarines and air assets, or if NATO's reinforcement and resupply effort during pre-hostilities warranted an intensified anti-SLOC campaign at the outset of war, the Soviets could assign more assets to open-ocean SLOC interdiction from the beginning of hostilities (possibly including some of their most modern torpedo-attack and cruise-missile submarines and strike aircraft). Otherwise, initial Soviet anti-SLOC efforts would principally involve mining and bombing of European and Far Eastern SLOC termini by submarines and aircraft. Merchant ships operating in approaches to resupply ports and areas proximate to war zones also would be attacked.

The importance of Soviet attack submarines to higher priority missions would probably severely limit their participation in mining operations against North American embarkation ports. Further, there is no evidence that the Soviets would use merchant ships to conduct significant offensive mining of North American ports.

Support State Policy in Peacetime

Based on the vision of Admiral Gorshkov and the confidence General Secretary Brezhnev had in him, the Soviet leadership in the last two decades has recognized that a powerful, modern navy is an effective instrument of state policy in peacetime as well as in wartime. Because of its operational flexibility and visibility and the lack of political restraint on the high seas, a fleet is eminently suited to demonstrate support for national objectives in distant areas. Of all the armed services, a navy is best suited for this worldwide role because it is not restricted by the sovereignty of airspace over land or by other territorial rights. In advocating this role, Admiral Gorshkov wrote that:

> *The mobility of the fleet and its flexibility in the event limited military conflicts are brewing permit it to have an influence on coastal countries, to employ and extend a military threat to any level, beginning with a show of military strength and ending with the landing of forces ashore.*

Taking Admiral Gorshkov at his word, the Soviet Union has employed its naval forces in recent years to support global policy interests. Soviet naval units have conducted port visits and bilateral exercises, asserted Soviet rights on the high seas, sought to protect the interests of Soviet merchant and fishing fleets, and demonstrated support for client states and other friends in times of crisis. Prime examples of such support are the 1967 and 1973 Arab-Israeli wars, the Bangladesh war of 1971, the Ethiopian-Somalian war of 1978, the 1979 Sino-Vietnam conflict, support to Syria against the United States and Israel in Lebanon in 1982-83, and active participation in the 1986 civil strife in South Yemen. Indeed, recent

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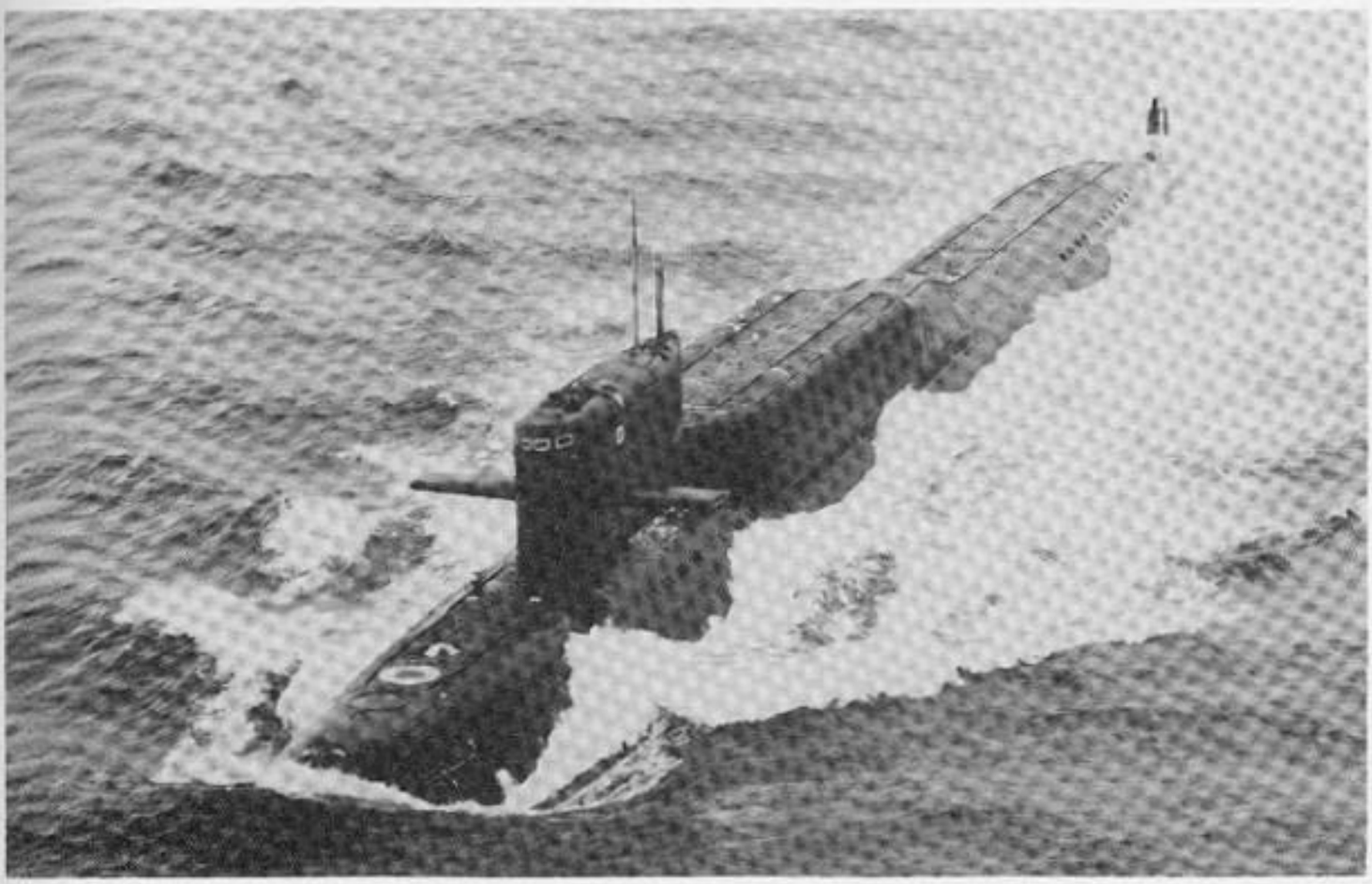
Soviet warship visits to Norfolk, Virginia and San Diego, California, illustrate that the Soviet Navy is supporting new, non-confrontational State policies through its benign presence.

There are now indications that, with the need to direct defense resources toward the civil sector to rebuild the Soviet economy in the context of a non-confrontational international environment, the Soviet leadership will, at least temporarily, downplay this role for the Soviet Navy. Nevertheless, given the USSR's great power aspirations and its averred reliance on political-diplomatic-economic means of gaining equality with the West, a recognition of the utility of worldwide peacetime naval presence and power will likely again arise.

B. Soviet Naval Operations

In the 1960s, the Soviet Navy began to experience the impact of changes in naval policy that had begun the previous decade. The strategic strike mission required forward deployment of SSBNs to bring their missiles within range of US targets. Surface action groups appeared globally to challenge the US Navy's dominance. Defense of the homeland took on an aggressive appearance, extending the reach of security policy and national interest thousands of miles beyond Soviet borders. Massive shipbuilding programs enabled a complete turnabout in the types and numbers of ships built for naval service. In the past two decades, the Soviets have increasingly emphasized sophisticated technology, multi-mission capability, and at-sea sustainability in their ships. Longer range in new SLBMs allow SSBN deployments closer to home waters, still able to target North America.

Since 1985 there has been a significant reduction in the number of units routinely deployed beyond Soviet home waters. In general, most ship types—including submarines, destroyers, frigates, corvettes, and mobile logistic ships—have been operating fewer days out-of-area. Although there have been deviations in this pattern, primarily because of regional crisis situations, these changes have been reflected uniformly (Figure 1).



The DELTA I SSBN carries 12 SS-N-8 submarine-launched ballistic missiles.

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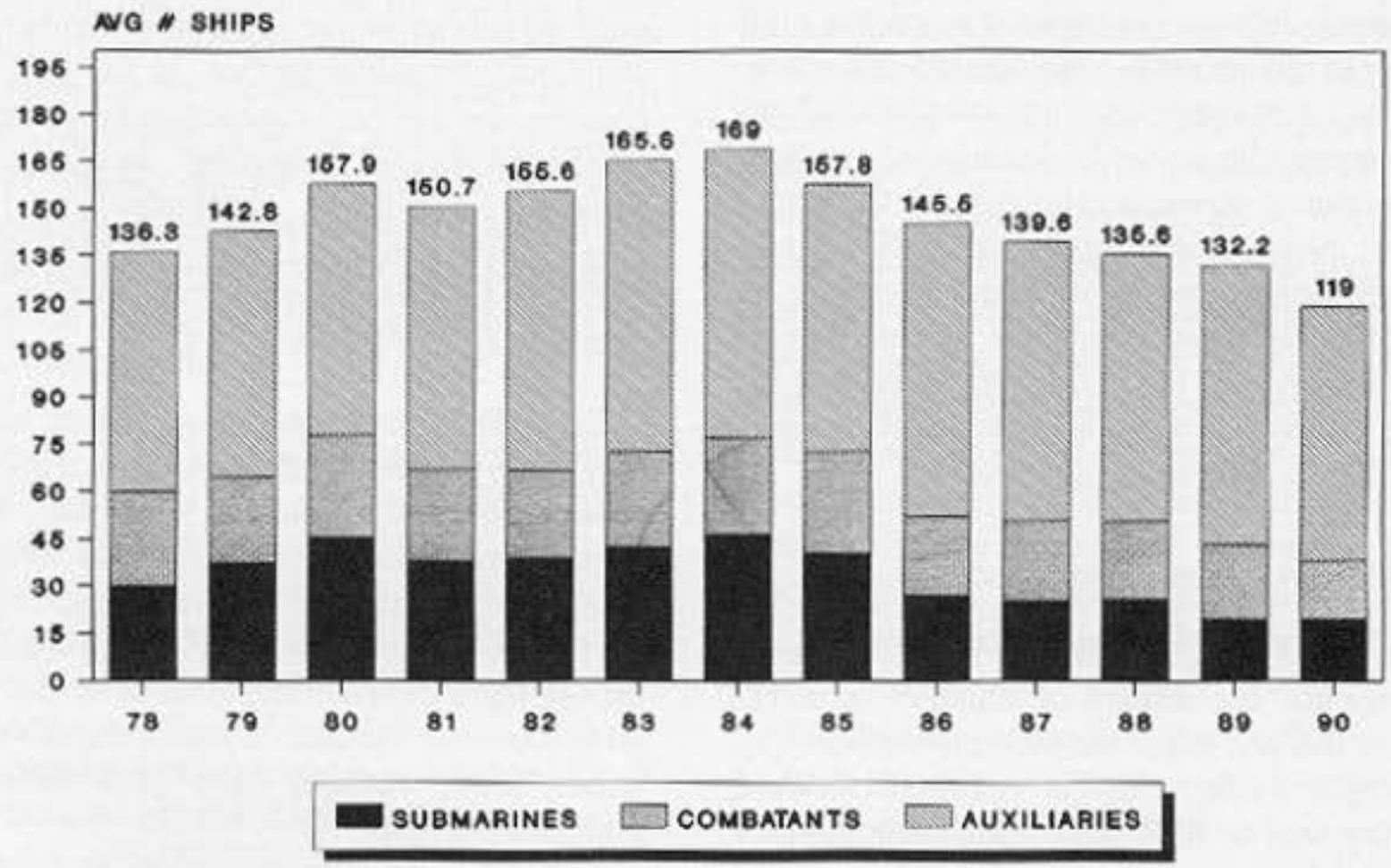
Figure 1



The changing operational patterns for the Soviet Navy probably reflect a number of different considerations. The Soviets themselves attribute the decline in out-of-area operational tempo (OPTEMPO) to Moscow's new "defensive doctrine" and the need to have forces immediately ready for combat in assigned operating areas. Other reasons probably include economic constraints (particularly a requirement to conserve fuel), increased emphasis on close-in combined arms operations, and, in general, a shifting strategic environment brought about in part by the new demands created by the US Maritime Strategy.

This OPTEMPO reduction has mixed effects on the Navy. Reduced OPTEMPO has a positive impact on the number of naval units ready to go to war on short notice—reduced operating time means Soviet naval units have fewer maintenance and logistical requirements, and the Soviet Navy may be able to maintain a higher percentage of its forces in combat readiness now than it did before 1986. By lowering steaming time, however, the Soviets risk sacrificing crew proficiency and training. They probably intend to keep personnel trained through an increase in local training and expanded use of shore based simulators. Trading off at-sea training for increased ship availability is not a swap most Western navies would willingly make, however, but the Soviet Navy has a long tradition of believing that it is more important to be *ready* to go to sea (on short notice) than it is to *be* at sea.

Patterns in Soviet aircraft out-of-area deployments have been more difficult to discern than the reduction in naval ship presence. The number of deployed Soviet aircraft was at a higher

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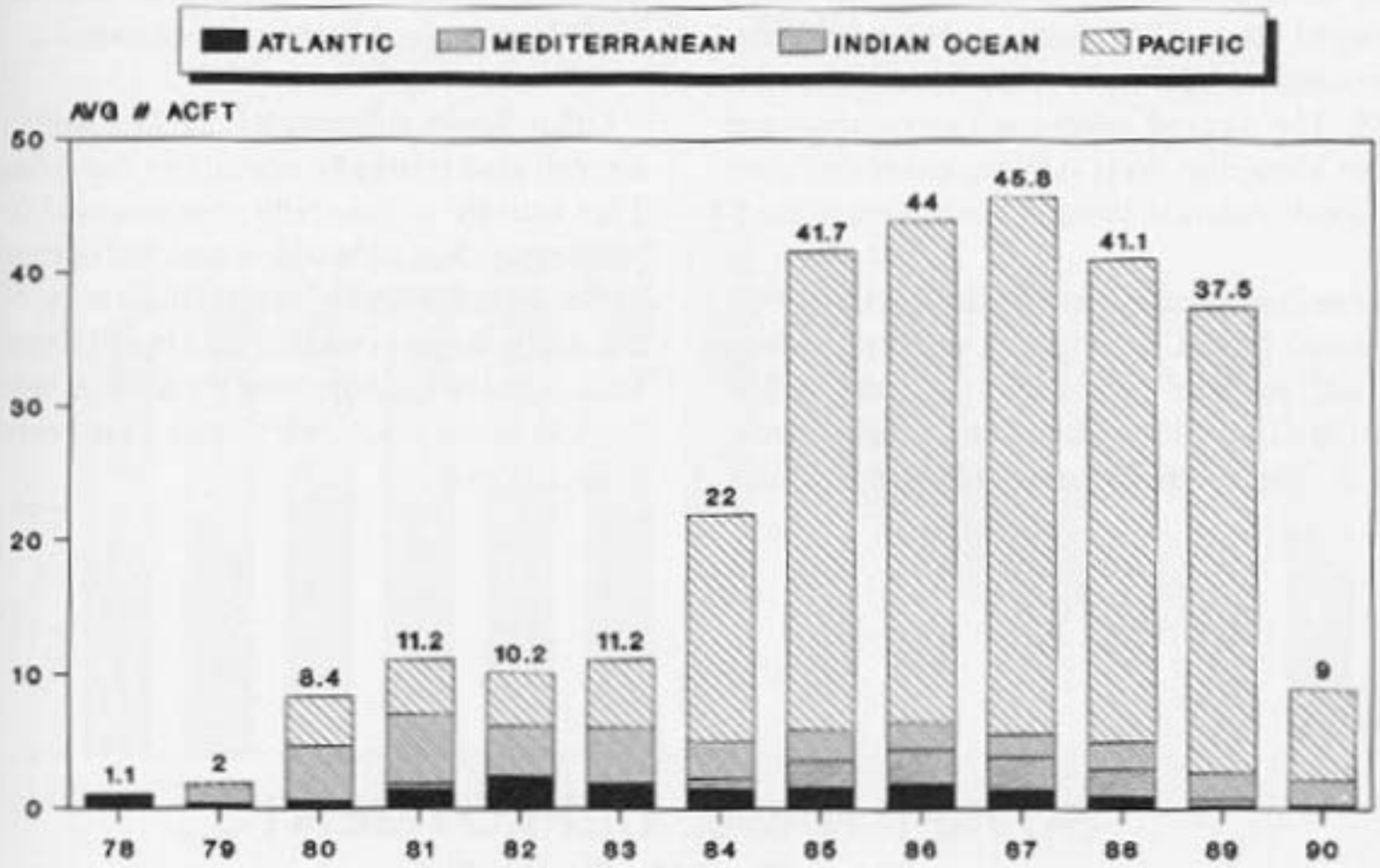
Figure 2

SOVIET NAVAL AIRCRAFT DEPLOYMENTS 1978 - 1990



level in both 1987 and 1988 than in any of the previous years, dating back to 1968 when such deployments began, but in 1988 deployments to countries such as Cuba, Libya, Syria, and Angola decreased dramatically (Figure 2) and the trend continued through 1990.

Atlantic

Until the late 1980s, the Soviets maintained a substantial strategic strike force on patrol in the North Atlantic Ocean and adjacent Norwegian, Barents, and Greenland Seas. With the exception of a two-year period between 1984 and 1986, however, only the older YANKEE class SSBNs regularly patrolled close to US shores. In January 1984, the YANKEEs were augmented by DELTA class SSBNs whose presence at that time likely represented an announced "analogous response" by the Soviet Union to NATO's deploying PERSHING II intermediate-range ballistic missiles (IRBMs) and ground-launched cruise missiles (GLCMs) in Western Europe. This response ended in 1986 with the return of the DELTAs to patrol areas in the northern latitudes. In a widely reported accident, the Soviets lost a YANKEE in waters east of Bermuda in October 1986. The ship suffered serious structural damage as a result of an explosion of volatile missile fuel. There have been no YANKEE deployments off the US east coast since early 1989, and, considering the small number of YANKEEs remaining, regular patrols are unlikely to recommence.

In the South Atlantic, Soviet warships have maintained a near-continuous presence off the African west coast since late 1970 to protect Soviet fishing interests. Additionally, the Soviets routinely maintained a presence in

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Angola until late in 1990 (Figure 3), where they were granted routine access to the seaport and airfield at Luanda. A destroyer or frigate, repair ship, an occasional diesel attack submarine, and a supporting naval oiler or a chartered merchant tanker constituted the usual deployed force. The Soviets also maintained a periodic naval air presence in Luanda until 1988. The aircraft conducted reconnaissance flights along the West African coast and over the South Atlantic toward Ascension Island.

As an important adjunct to the Soviet Navy's missions, Soviet intelligence collection ships (AGIs) routinely patrol near US and Allied naval facilities throughout the North Atlantic region. These sophisticated units are normally deployed to the US east coast and, on a periodic basis, to normal Allied fleet operating areas. While primary emphasis is on SSBN bases in Scotland and the United States, secondary interest is shown in both manned space missions from Cape Canaveral and Allied SLBM tests elsewhere in the Atlantic.

Other Soviet submarines, surface ships, and aircraft also routinely operate in the Atlantic. This activity is generally concentrated in the Norwegian Sea, although occasional operations by Soviet and Warsaw Pact warships in the North Sea and in the area west of the United Kingdom have occurred. Excursions by modern submarines in western Atlantic waters have been few in recent years.

Figure 3

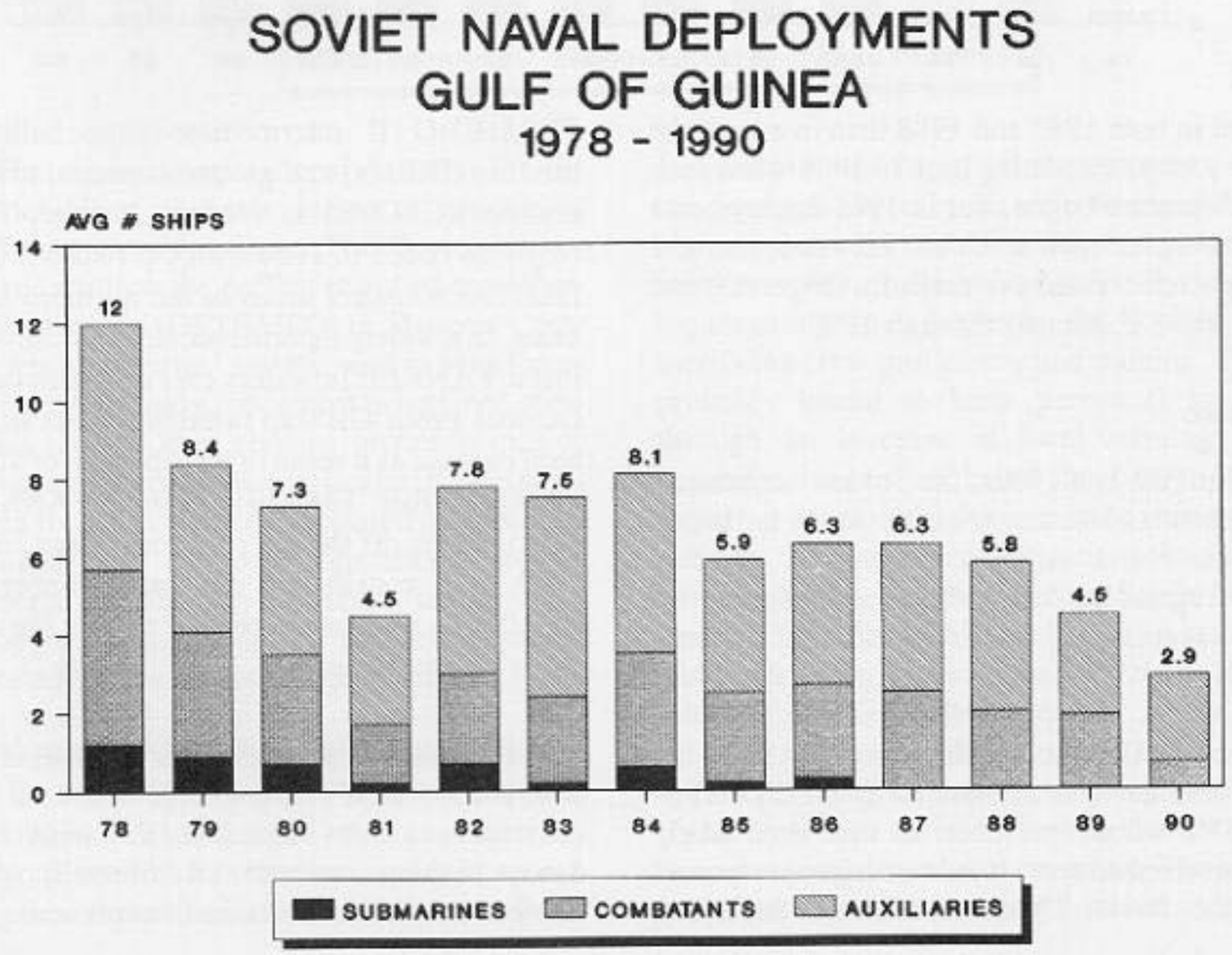

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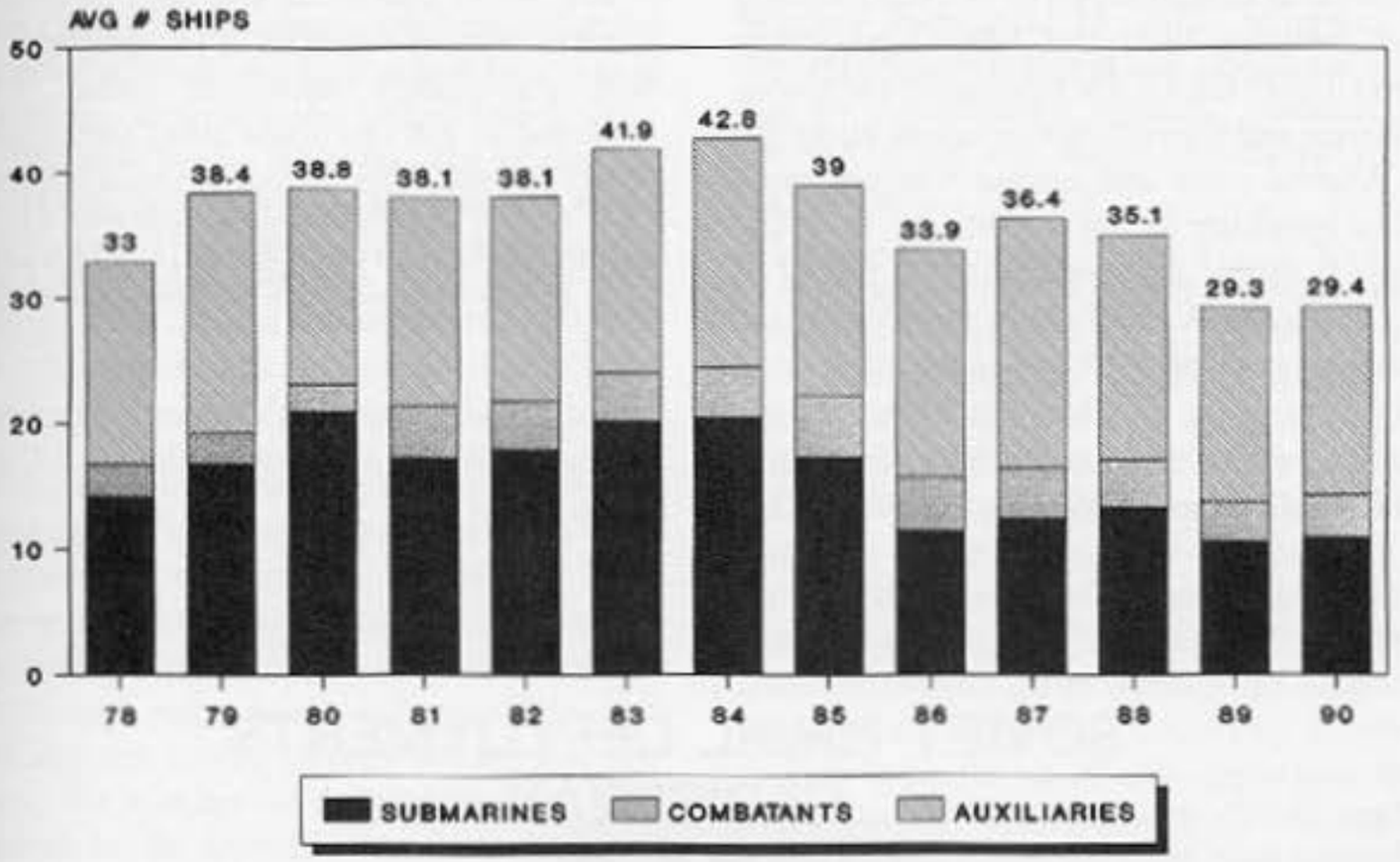
Figure 4

SOVIET NAVAL DEPLOYMENTS ATLANTIC OCEAN 1978 - 1990



In wartime, initial Soviet naval operations in the Atlantic would emphasize ensuring the survival of their SSBNs and preventing hostile, nuclear-capable forces from striking the Soviet Union. To that end, the Soviet Navy would attempt to control the Atlantic sea and air approaches to the USSR and deny access to those areas by Western naval forces. In accomplishing this latter goal, Soviet naval forces would operate extensively in the Norwegian Sea, seeking to prevent opposing military forces from extending their seaborne operations beyond the Greenland-Iceland-United Kingdom (GIUK) Gap. The objective of operations extending into the Atlantic would be the disruption of sea and air lines of communication (and termini) for the reinforcement and resupply of NATO forces (Figure 4).

Caribbean

Soviet naval presence in the Caribbean has been, of course, closely associated with Moscow's relationship with Cuba. Soviet naval ships, particularly intelligence collectors and oceanographic research ships, began operating there soon after the Castro Revolution of 1959, with naval combatant deployments beginning in 1969. A total of 28 combatant deployments have been made to Cuba since then, normally by contingents of three to five ships (including two or three major combatants, an attack- or cruise-missile submarine and a supporting naval oiler or naval associated merchant tanker). There have been only two such deployments since 1986, however, the most recent occurred in June 1990 and was unusual in that it lasted only six days compared to a norm of about 40 days.

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Most of the operations during the deployments have involved joint training with Cuban military forces in Caribbean and Gulf waters. Figure 5 depicts Soviet naval deployments in the Caribbean from 1978-90.

In addition to surface ships and submarines, Soviet naval aircraft deployed to Cuba over 100 times between 1970 and 1990. Long-range Soviet Tu-95 BEAR Ds routinely flew reconnaissance and surveillance missions along the US Atlantic coast and against Western naval forces operating in the Caribbean. In 1983, Moscow began deploying Tu-142 BEAR F long range ASW aircraft to the Caribbean, enhancing their capability to monitor US naval operations in the North Atlantic and off the southeastern US coast as well as in the Caribbean. In October 1986, when a YANKEE SSBN became disabled southeast of Bermuda, BEAR aircraft dispatched from Cuba assisted in the search and rescue mission before the submarine finally sank. The number of flights to Cuba has dropped in recent years, however, and there have been none since February 1990.

The Soviet Union has also used facilities in Cuba to support a number of varied operations with intelligence collection value. AGIs deployed to US east coast areas are supplied out of Havana. The Soviets, on occasion, have used Cuban ports to support research vessels that operate in the Atlantic. At Lourdes, Cuba, the USSR maintains the largest, most sophisticated signals intelligence collection facility outside the Soviet Union. In addition, Soviet commercial vessels of all types regularly use Cuban ports.

Figure 5

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In addition to the periodic presence of Soviet warships and aircraft in the Caribbean, the Soviets provided the Cuban Navy three KONI class frigates, more than two dozen missile-equipped patrol craft, and three FOXTROT class diesel attack submarines. This small naval force, when augmented by the fourth generation MiG-29 FULCRUM fighter aircraft provides Cuba with a modest combat capability for potentially hostile military action in a region of strategic interest to the United States. Over the last two years, however, the amount of Soviet support to Cuba as a whole has dwindled, and the effectiveness of much of the Cuban inventory of Soviet equipment is open to doubt.

Mediterranean

Since the mid-1960s, the Soviets have maintained a significant naval squadron in the Mediterranean. Throughout the 1980s, this force averaged 30 to 40 units and included two to five submarines, three to six major surface combatants, mine warfare ships, AGIs, and auxiliary and supply ships. Over the last two years, the number of combatants has been reduced, but the Soviet Navy continues to keep several major combatants in the Mediterranean at all times. In peacetime, this squadron has been used to counterbalance the presence of Western naval forces and to demonstrate Moscow's support for friendly littoral regimes, especially Libya and Syria. Both of these nations' naval forces are Soviet trained, supported, and at least partially Soviet equipped. Although the Soviet squadron is primarily supported and supplied at anchorages in international waters, access to Libyan and Syrian port facilities, among others, is important to sustaining Soviet naval operations in the Mediterranean.

The record of Soviet naval air operations in the Mediterranean has been mixed. Between 1968 and 1972, a number of Soviet naval aircraft were deployed to Egypt on a continuous basis, including medium-range bombers (Tu-16 BADGERs), ASW aircraft (Be-12 MAILs, upgraded in 1971 to Il-38 MAYs), and reconnaissance aircraft. The most significant deployment occurred in November 1971 when BADGER G strike aircraft were deployed to the Egyptian airfield of Aswan, the first time that Soviet Naval Air Force strike aircraft had deployed outside the Soviet Union or Warsaw Pact area. In 1972, however, the Soviet presence in Egypt was effectively ended due to deteriorating political relations and the BADGER Gs were transferred to the Egyptians.

After a nearly decade-long absence, Soviet naval aircraft returned to the Mediterranean in June 1981. Since then, Il-38 MAY aircraft have routinely deployed to Syria and Libya, with Tu-16 BADGERs periodically deploying to Syria. Soviet naval air tasking includes targeting operations against US forces in the Ionian and eastern Mediterranean Seas, surface surveillance and ASW for the Soviet squadron, and early-warning and intelligence support in times of crisis/tension. Reflecting a general decline in Soviet out-of-area operations, however, Soviet Naval Aviation (SNA) deployments to both Libya and Syria were gapped for an unprecedented time in 1989, with total presence reduced approximately 65 percent from that in 1988. SNA aircraft have not deployed to the Mediterranean since December 1989.

The Soviet Navy operates in the Mediterranean under several restrictive conditions. Access to the Mediterranean is controlled by powers outside the Soviet sphere of influence: by Egypt at the Suez Canal; by Great Britain and Spain at Gibraltar; and by Turkey at the Bosporus and Dardanelles. Access to the Bosporus is governed by an international treaty, the Montreux Convention, which the Soviets probably view with mixed feelings. This agreement places restrictions on all naval access to the strategically important straits by requiring that all non-Turkish naval ships declare their intentions to transit with the Turkish

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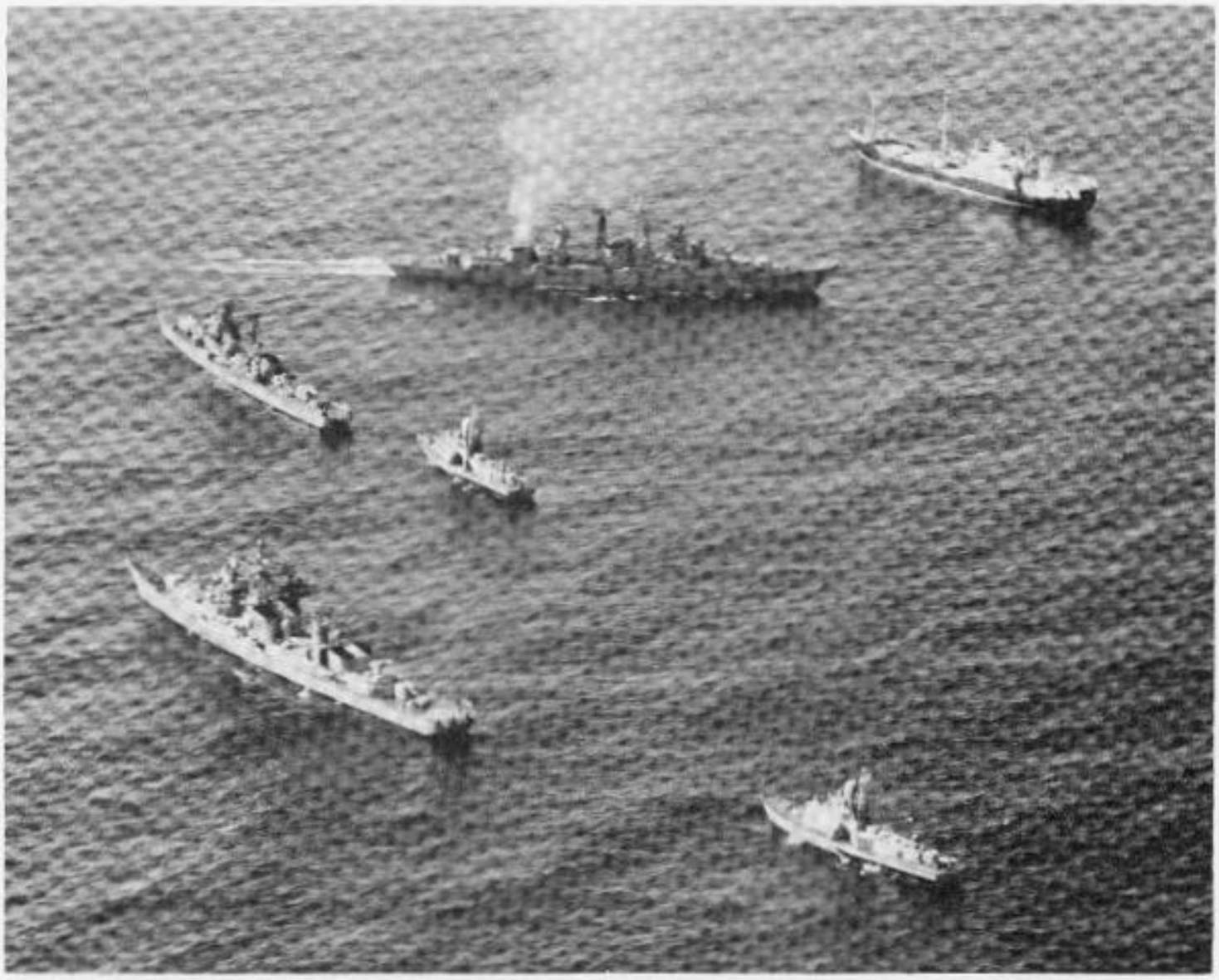
government. While the convention is much more favorable to Black Sea powers (Turkey, Bulgaria, Romania and the USSR), it restricts the numbers, tonnage, and types of ships of all nations that can transit the Bosporus.

The principal wartime role of the Soviet Mediterranean force and its supporting aircraft is to deny the West control of the eastern Mediterranean and to prevent Western naval forces from launching strikes against the Soviet Union from that area. Mediterranean forces, backed up by land-based strike aircraft based primarily in the Crimea, would attempt to destroy US and French carriers as well as SLCM platforms outside of striking distance of the Soviet Union. The Soviets thus consider the eastern Mediterranean critical to their national defense. Figure 6 shows Soviet Mediterranean deployments from 1978 to 1990.

Indian Ocean

Since 1968, as a counter to Western naval presence in the region, the Soviets have maintained a permanent naval force in the Indian Ocean. This squadron typically includes a



Although Soviet out-of-area deployments have declined within the past few years, the Soviet Navy still maintains a continuous presence in the Mediterranean Sea. Port facilities such as those in Tartus, Syria, are critical to Soviet Mediterranean operations. Seen here at the southern entrance to the Aegean Sea are, clockwise from top, a KASHIN missile destroyer, a VYTEGRALES class cargo ship, another KASHIN with a NANUCHKA missile ship astern, and a KOTLIN destroyer with a NANUCHKA astern.

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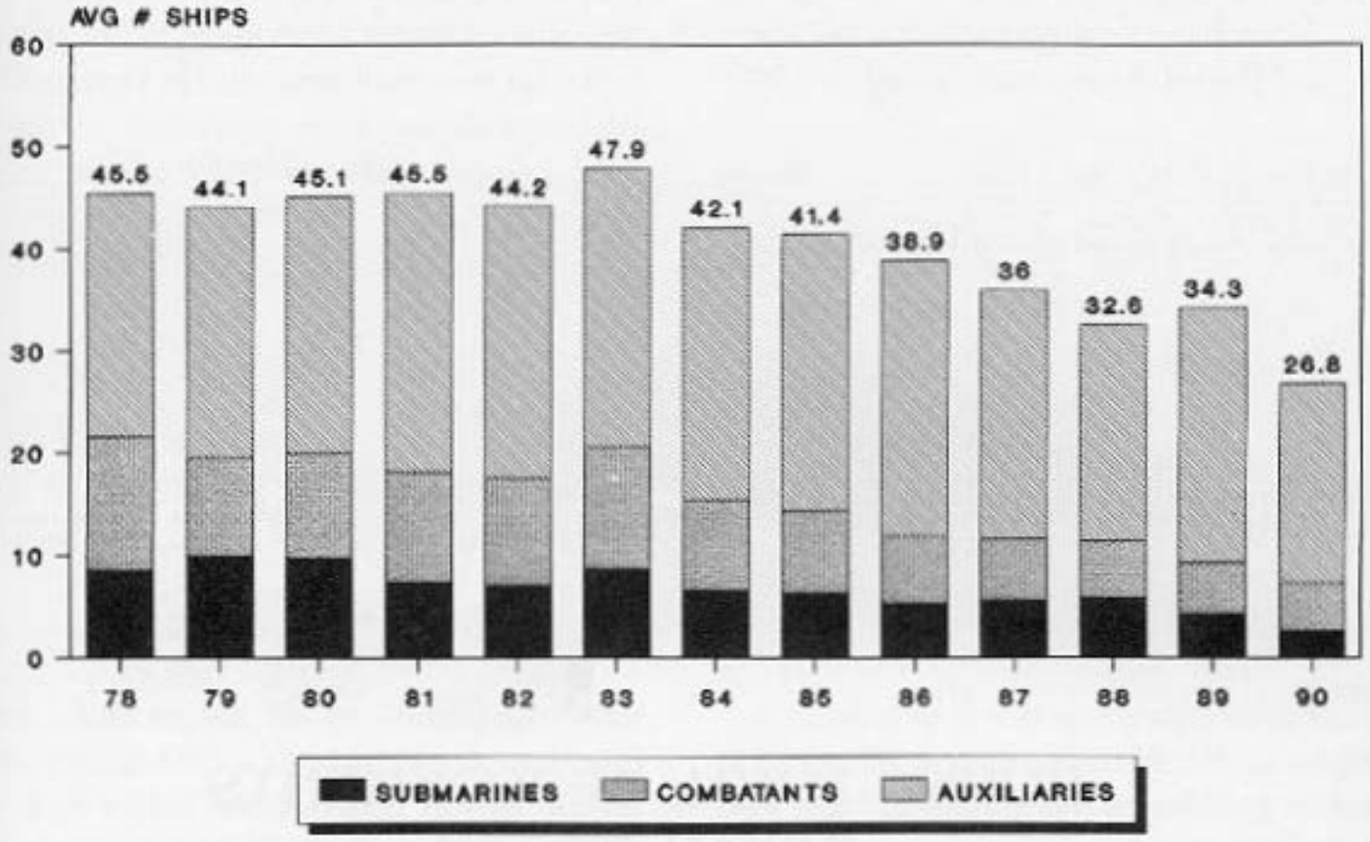
Figure 6

SOVIET NAVAL DEPLOYMENTS
MEDITERRANEAN SEA
1978 - 1990



major combatant, minesweepers, an amphibious ship, and about fifteen supporting auxiliaries. Although the squadron previously included one or two submarines, none have been deployed there since 1986. Although the Soviet Navy maintained a significant force in the Northern Arabian Sea during the latter stages of the Iran-Iraq War, it played no role whatever in the United Nations Coalition interdiction of Iraqi seaborne trade in the 1990-91 Gulf crisis. Indeed, the evident loss of safe access to the Soviet facilities leased from Ethiopia at the Dehalak Islands caused the Soviet Navy to withdraw most of its support craft from the area in the spring of 1991. The Soviets are currently dependent on access to Aden, and to a lesser extent Djibouti, for support of their remaining naval forces in the area.

The Soviet presence has been made up primarily of naval units subordinate to the Pacific Ocean Fleet, although relatively free and more rapid access to the Indian Ocean could be achieved by units deploying from the Black Sea and the Mediterranean via the Suez Canal. Transits between the Pacific Fleet's main operating base at Vladivostok and the northern Arabian Sea require about three weeks, with units stopping at Cam Ranh Bay for replenishment and voyage repairs.

The Soviet Naval Air Force operated in the Indian Ocean from 1975 until 1990, when reconnaissance flights from foreign bases in the area ceased. Initially deployed to Somalia, Soviet maritime patrol aircraft periodically made short deployments to the region until the

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Soviet Union was ousted in 1977. The air presence was resumed in late 1979 when Il-38 MAY operations shifted north to airfields in Ethiopia and Aden. The surveillance aircraft were continuously deployed to both locations until two were destroyed on the ground in Ethiopia during a rebel attack in 1984. None have deployed to Ethiopia since then, and flights from Aden ceased in 1990.

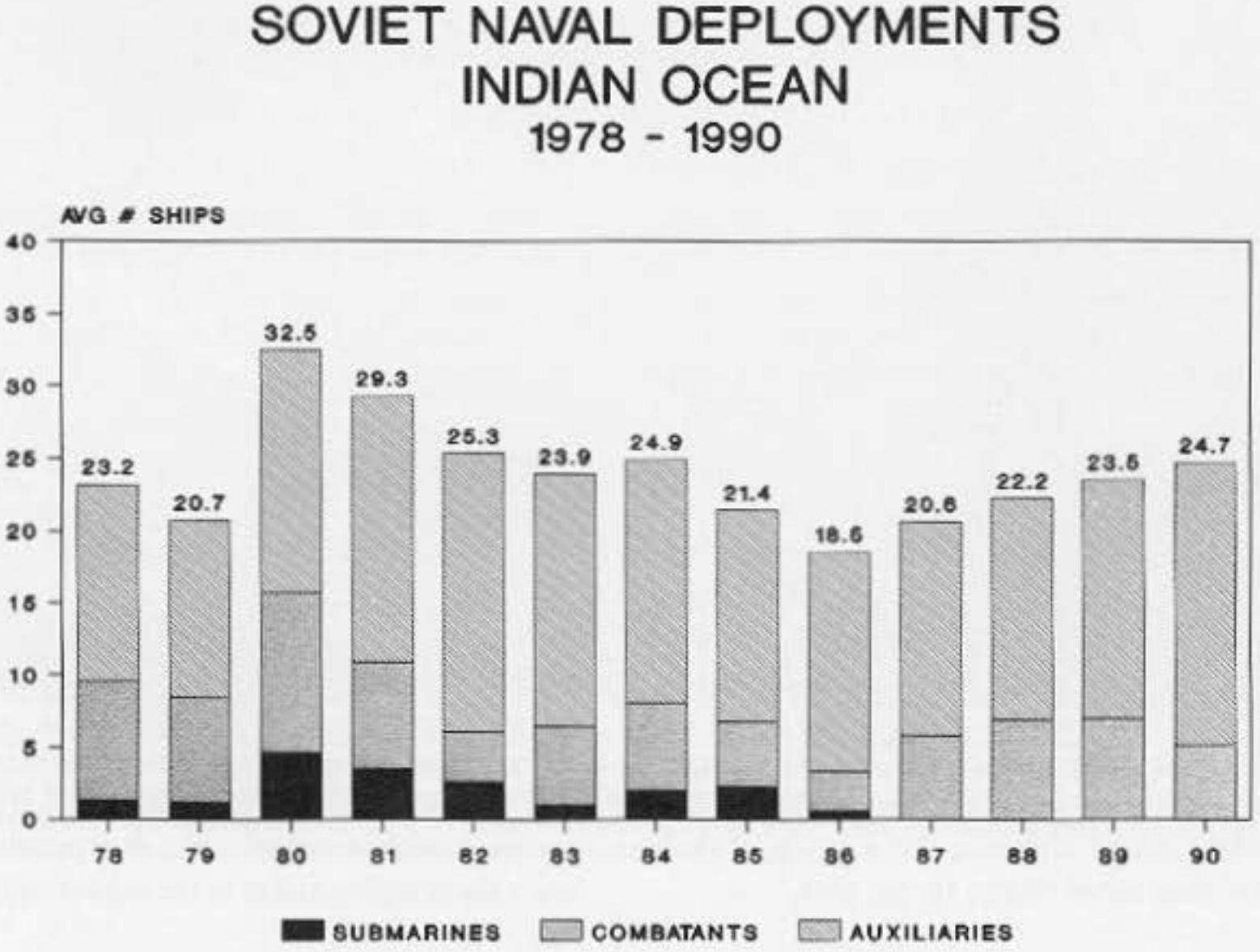
The Soviet Navy has called at other Indian Ocean littoral ports, primarily as a display of support for the governments in power. Port visits to Mozambique, Mauritius, Djibouti, the Seychelles, India, Sri Lanka, and the United Arab Emirates have been conducted by a variety of units. Figure 7 indicates Soviet naval deployments in the Indian Ocean from 1978 to 1990.

Although the Soviet Indian Ocean Squadron represents a potential wartime threat to the strategically important oil routes from the Persian Gulf to Western Europe and the Pacific, its actions during the 1987-88 Persian Gulf crisis reflected restraint and caution. During that period, the bulk of the squadron operated in the Gulf of Oman, providing escort services to Soviet merchant ships in the Persian Gulf. Although Soviet units continued to operate from a mobile seaborne "base" off the coast of Oman during the 1990-91 Gulf war, they played no role whatever in the conflict.

Pacific Ocean

The Pacific Ocean, like the Atlantic, is a major operating area for Soviet strategic strike naval forces. As in the Atlantic, SSBNs patrol

Figure 7



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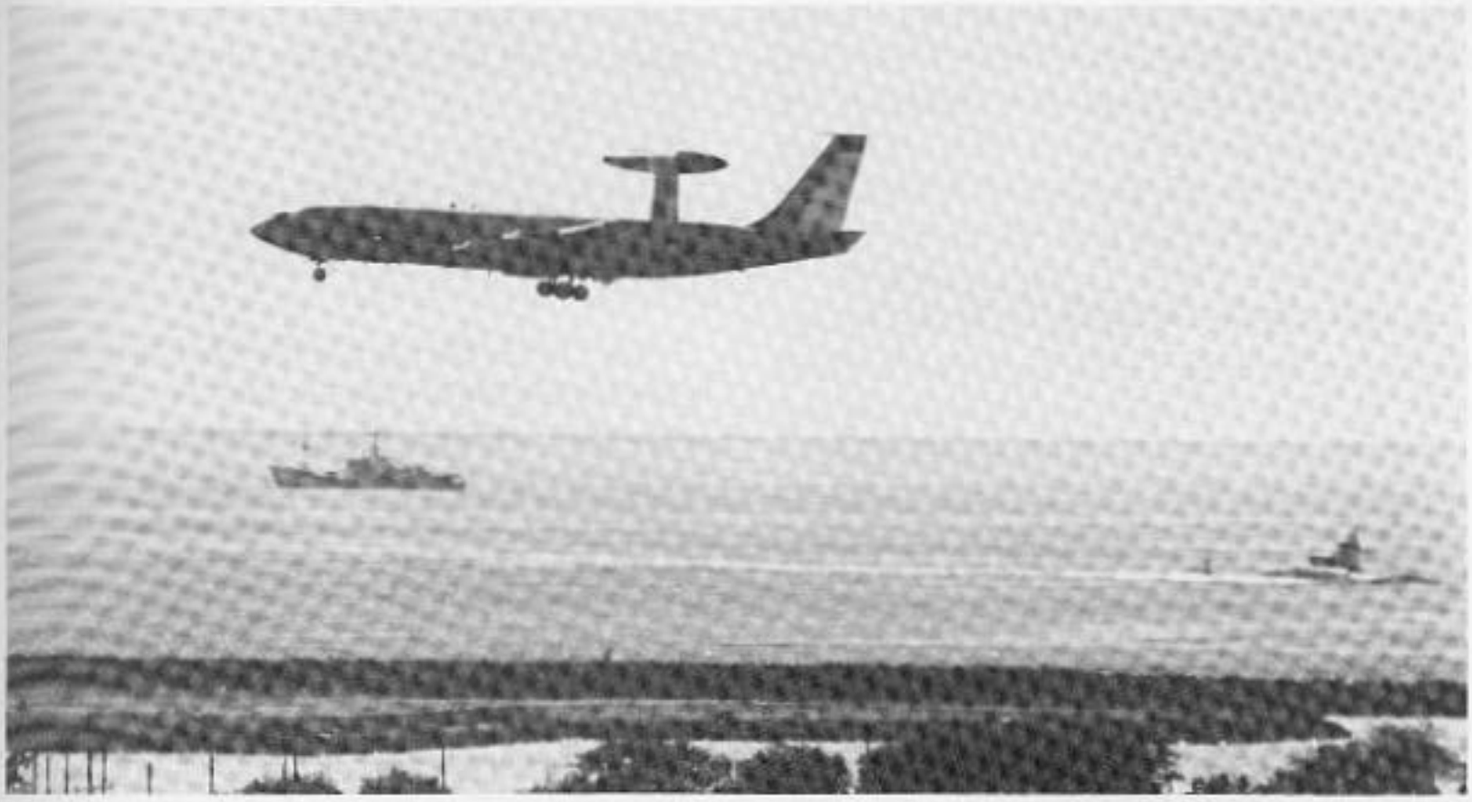

A Soviet MOMA class AGI operates off the coast of Hawaii, where it can monitor U.S. military activities.

waters close to the Soviet homeland. Other Soviet Pacific Ocean Fleet submarines and surface ships tend to operate in the vicinity of their Petropavlovsk and Vladivostok bases, rarely venturing far out into the Western Pacific. Soviet SSNs, however, have operated in the eastern Pacific during the 1980s.

Soviet AGIs have been regularly deployed off Hawaii to monitor US military operations in the area. Periodic AGI patrols are also conducted off the US west coast, principally near San Diego. Operations west of Vandenburg Air Force Base, and the OHIO class ballistic missile submarine base at Bangor, Washington, also occur periodically. One of the most frequent AGI patrols is in the vicinity of the remote atoll of Kwajalein in the Marshall Islands. Normally that patrol is manned about ten months per year by a sophisticated AGI which monitors US ballistic missile tests. From 1983 on, the Soviets increased the attention paid to both Kwajalein and Vandenburg due to the involvement of those installations in Strategic Defense Initiative-related tests.

A number of Soviet space support ships, also periodically operate in the Pacific in conjunction with the launch and de-orbiting of Soviet manned space missions and long-range ballistic missile tests from the Soviet Union.

In the Western Pacific, the Soviets appear to be seeking a less visible military presence. By early 1990, they had withdrawn a considerable portion of their naval and air forces from the former US facilities at Cam Ranh Bay, Vietnam. Those facilities still support, however, a sizable force, usually one or two submarines, several surface combatants, a repair ship, mine warfare craft, and supporting auxiliaries.

In 1989, the BADGERs were retired and the FLOGGERs returned home. BEAR D and F patrols, however, continue.

Cam Ranh Bay is still well situated and equipped to serve Soviet interests in the Southeast Asia region. It is also an important fueling and repair station for ships traveling to and

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from the Indian Ocean and for ships being transferred to the Pacific Ocean Fleet from western Soviet shipyards. At a minimum, the Soviets are expected to leave forces sufficient for local defense and auxiliaries at the facility to service combatants that call there.

Soviet wartime planning for the Pacific focuses on fighting a prolonged conventional war. As in the Atlantic, initial Soviet wartime naval operations in the Pacific would focus on ensuring the survival of their SSBN force and preventing US nuclear-strike forces from attacking the Soviet Union. Such operations would include an attempt to control the seas and air space contiguous to the USSR including the Sea of Japan and the Sea of Okhotsk. This could be facilitated by eliminating any possible Japanese participation through either negotiation or combat action, closing off the strategically important straits which provide access to those areas, interdicting the western Pacific SLOCs, and creating a "buffer zone" around the remote operating base at Petropavlovsk. Figure 8 shows Soviet Navy deployments in the Pacific from 1978 to 1990.

C. Soviet Naval Exercises

The Soviet Navy conducted its first major exercise program in 1968 as a participant in the large-scale joint exercise "SEVER-68." Later, in the spring of 1970 and again in 1975, the Navy deployed its forces in two complex "OKEAN" exercises, demonstrating capabilities to extend its combat operating areas. The "OKEAN" exercises featured warships conducting coordinated operations simultaneously in Atlantic, Caribbean, Mediterranean, Indian and Pacific Ocean areas. Over 200 submarines, surface combatants, and supporting auxiliaries participated in "OKEAN 70", while about 120 participated in "OKEAN 75." Operations included antisubmarine and anti-carrier warfare, SLOC interdiction, opposed forces, convoy escort, and amphibious landings. Aircraft participation was also a major part of both exercises and included strike aircraft from both the Soviet Naval Air Force and Soviet Air Force. The exercises signaled the arrival of the USSR as a global maritime power and afforded Soviet naval personnel excellent training opportunities under realistic conditions.

Since 1975, Soviet naval exercises in general have been smaller in scale and scope and have been primarily oriented toward the intended missions of the separate fleets. In 1983, a worldwide exercise emphasized antisurface operations in defense of the Soviet landmass. It featured simulated attacks on convoys and task groups by submarines, aircraft and surface ships in the Northern and Pacific Ocean Fleet areas, as well as the Mediterranean Sea and Indian Ocean. It also included the highest ever level of participation by the Soviet Merchant Fleet. In the spring of 1984, a large-scale naval exercise was conducted along the western approaches to the Soviet Union, apparently to test the Navy's capability to carry out its strategic defense mission of protecting the SSBN force. In addition to surface combatants and submarines, naval and air force aircraft conducted long-range reconnaissance and strike missions well out into the Atlantic. The exercise also demonstrated the ability to conduct successfully joint force operations with other elements of the Soviet military structure. Two large-scale exercises were conducted in 1985, one each in the Pacific theater and in the Norwegian Sea/North Atlantic region, which concentrated on defending the Soviet homeland along the seaward axes against hostile strike forces. Emphasis was placed on the early acquisition and interception of enemy battle groups.

Defensive operations have been highlighted in Soviet naval exercises since 1986 to reflect the shift in Soviet military doctrine that a future war probably would involve a protracted conventional conflict. Hence, the current Soviet exercise regime stresses the planning and execution of intensive, joint force "defensive" operations closer to home while always remaining prepared for nuclear operations.

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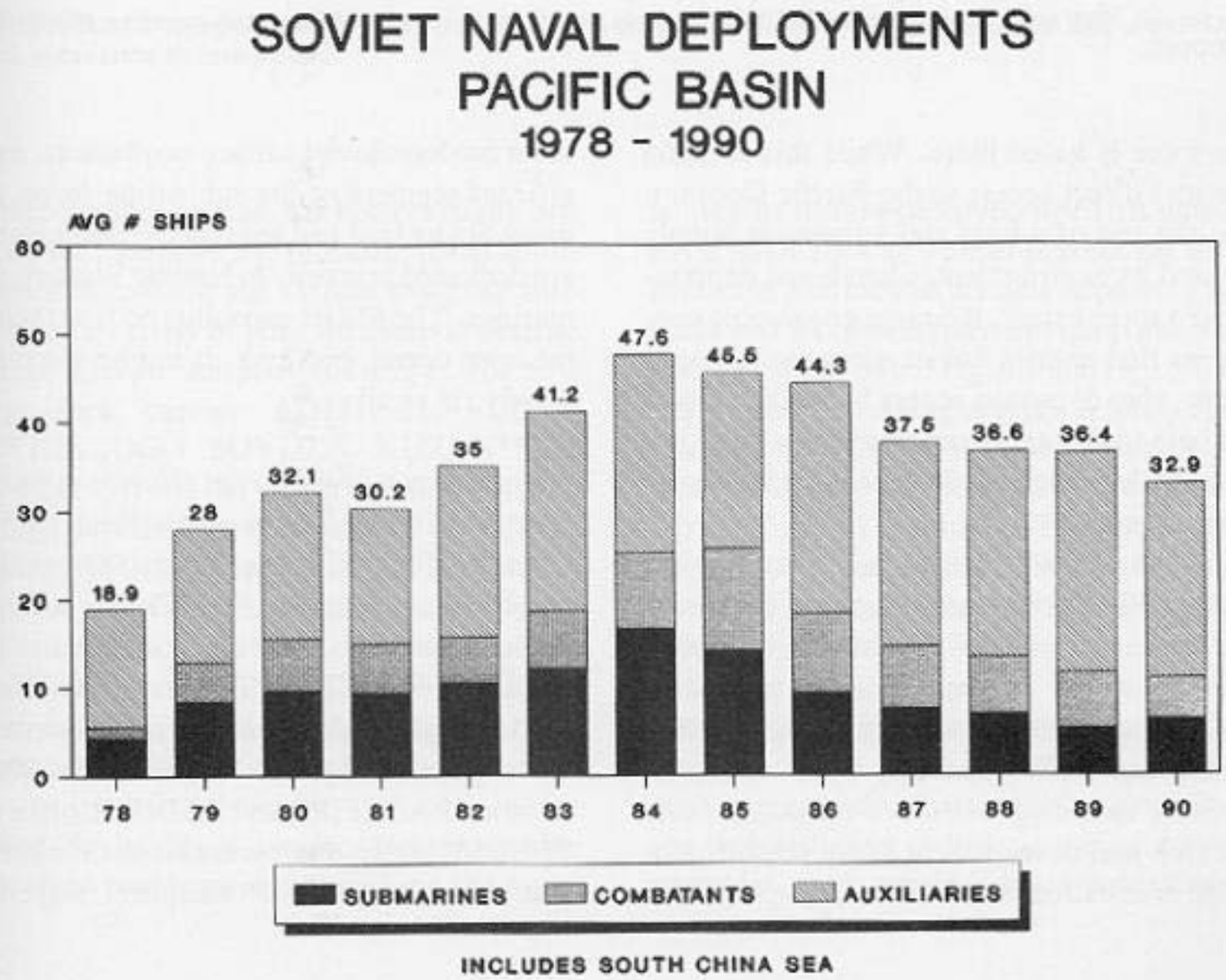
D. Limitations

Despite substantial improvements over the past thirty years, the Soviet Navy still has significant problems and limitations. These include: geographical constraints which inhibit access to the open sea; limited capability in open-ocean ASW; inadequate sea-based tactical air forces and underway replenishment; and a narrowly trained, conscripted enlisted corps. Also, Soviet general purpose naval forces are still mainly dedicated to and trained for combined arms/homeland defense responsibilities and lack the capabilities, experience, and support to enable them to engage in significant naval power projection, particularly over a prolonged period.

The geography of the Soviet landmass, with its restricted access to the open oceans, is itself a major obstacle to naval operations. The Northern Fleet must contend with the rigorous Arctic climate and the long transit to operating areas. The Baltic Fleet is restricted by straits which could be easily controlled by the West, and its strategic position has been hurt by the loss of East Germany and Poland as allies. The Black Sea Fleet faces restricted access to the Mediterranean through the NATO-controlled Turkish Straits and through the Aegean Sea. Although eased somewhat by maintaining a deployed force of varying size in the Mediterranean, resupply from the Black Sea would be a major problem in time of conflict. In the Pacific, the Soviet Navy has tried to alleviate access restrictions presented by the Japanese straits by maintaining a large naval complex at Petropavlovsk on the sparsely populated Kamchatka Peninsula. The bulk of the Pacific Ocean Fleet's operational subma-

Figure 8



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The Soviet KRIVAK I class frigate DRUZHNY closely monitors the 1986 NATO naval exercise NORTHERN WEDDING.

rine force is based there. While this location provides direct access to the Pacific Ocean, it is at the end of a long and vulnerable supply line and its environment is harsh and depressing. To some extent, the same geographic constraints that restrict Soviet access to the open oceans also constrain access by hostile forces and help to define Soviet operational requirements in defending the Soviet Union from maritime threats.

There are also enduring weaknesses in the ability to fulfill those requirements. Of particular concern to the Soviet Navy is its insufficient ability to counter Western submarine forces. The Soviets are seeking to improve their open-ocean ASW capability by a variety of methods including extensive efforts in basic research and development and a sizable allocation of resources to ASW weapons programs. Most modern Soviet surface combatants, a significant segment of the submarine force, and many Soviet land and sea-based combat aircraft are dedicated primarily to hunting Western submarines. The Soviet capability to find them in the open ocean, however, is improving rather slowly, if at all.

Another part of the Soviet effort to overcome shortfalls in meeting its operational requirements has focused on air power. Sea-based air power has increased since 1976 with the production of four KIEV class carriers and their embarked FORGER VTOL (vertical takeoff and landing) aircraft. These deployed elements are augmented by shorebased Soviet Naval Aviation BACKFIRE and BADGER strike and FENCER strike and reconnaissance aircraft. The current lack of adequate shipboard

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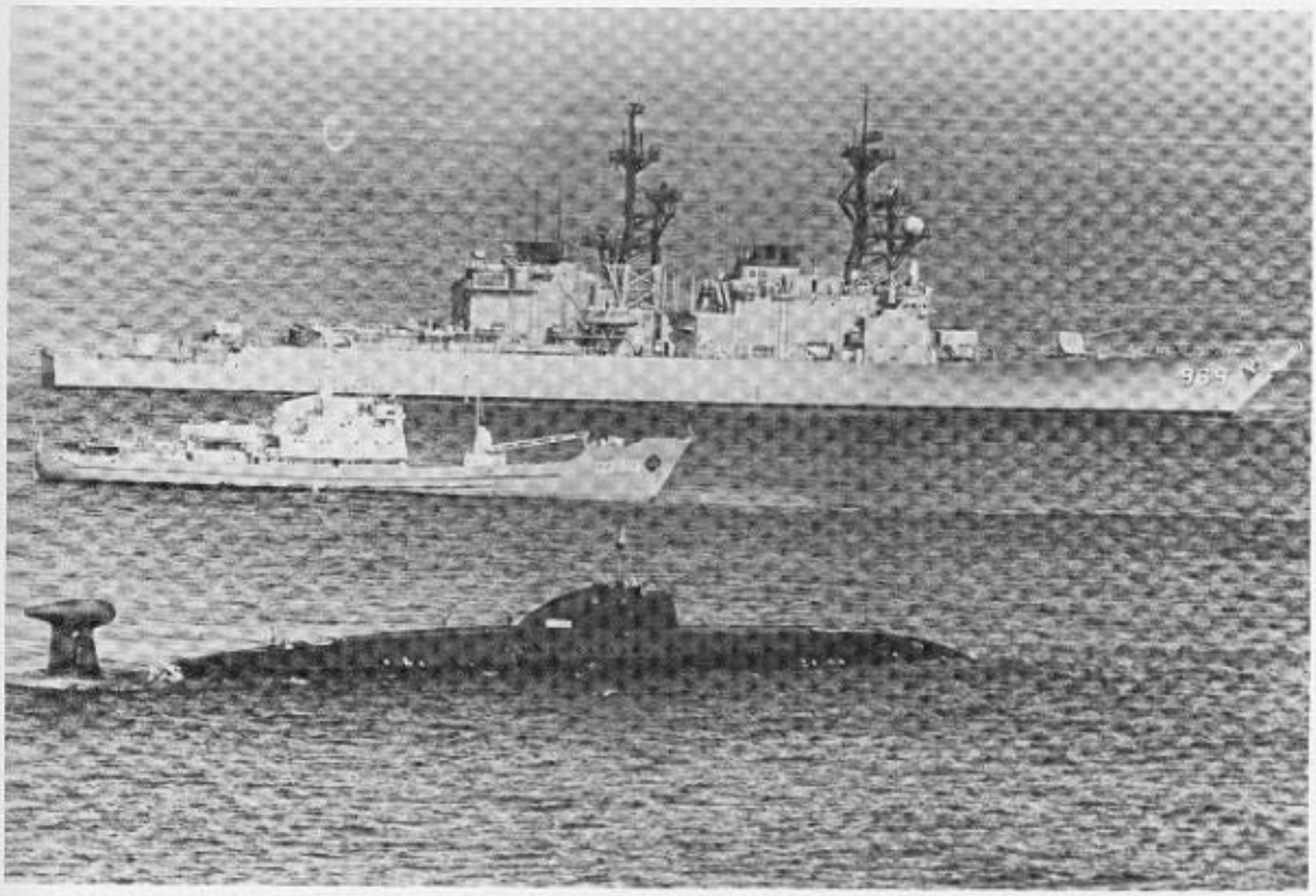

The SPRUANCE class destroyer USS PETERSON (DD-969) with a Soviet MOMA class AGI and a VICTOR III class submarine in foreground.

fighter/bomber aircraft has been partially offset by the extensive use of medium and short-range surface-to-air and surface-to-surface missiles and a variety of guns for close-in defense against aircraft, missiles and ships. The new large-deck carrier ADMIRAL FLOTA SOVETSKOGO SOYUZA KUZNETSOV (ex-TBILISI) and her embarked air wing with its high performance conventional takeoff and landing (CTOL) fighter/interceptor aircraft will improve this already established capability by an order of magnitude; operating Su-27K FLANKER and/or MiG-29K FULCRUM fighters, KUZNETSOV will be a vital component of the Soviet air defense structure.

The Soviet Navy has no insurmountable peacetime problems in replenishing and maintaining its distant-deployed fleets. It employs naval auxiliaries as well as ships of the Soviet Merchant Marine that are able to procure fresh water and foodstuffs from foreign ports. Additionally, shore-based logistic and repair facilities are used to varying degrees in foreign ports where the Soviets have gained access. Countries which have provided such access include Syria, Cuba, Yugoslavia, Tunisia, Guinea, Angola, Algeria, Yemen, Greece, Ethiopia, Vietnam, Djibouti, Singapore, France, Italy, Libya, and Canada.

During war, however, most such port facilities could become inaccessible, and the anchorages would be extremely vulnerable. At-sea replenishment of fuels, ammunition, consumables, and repair parts would then be

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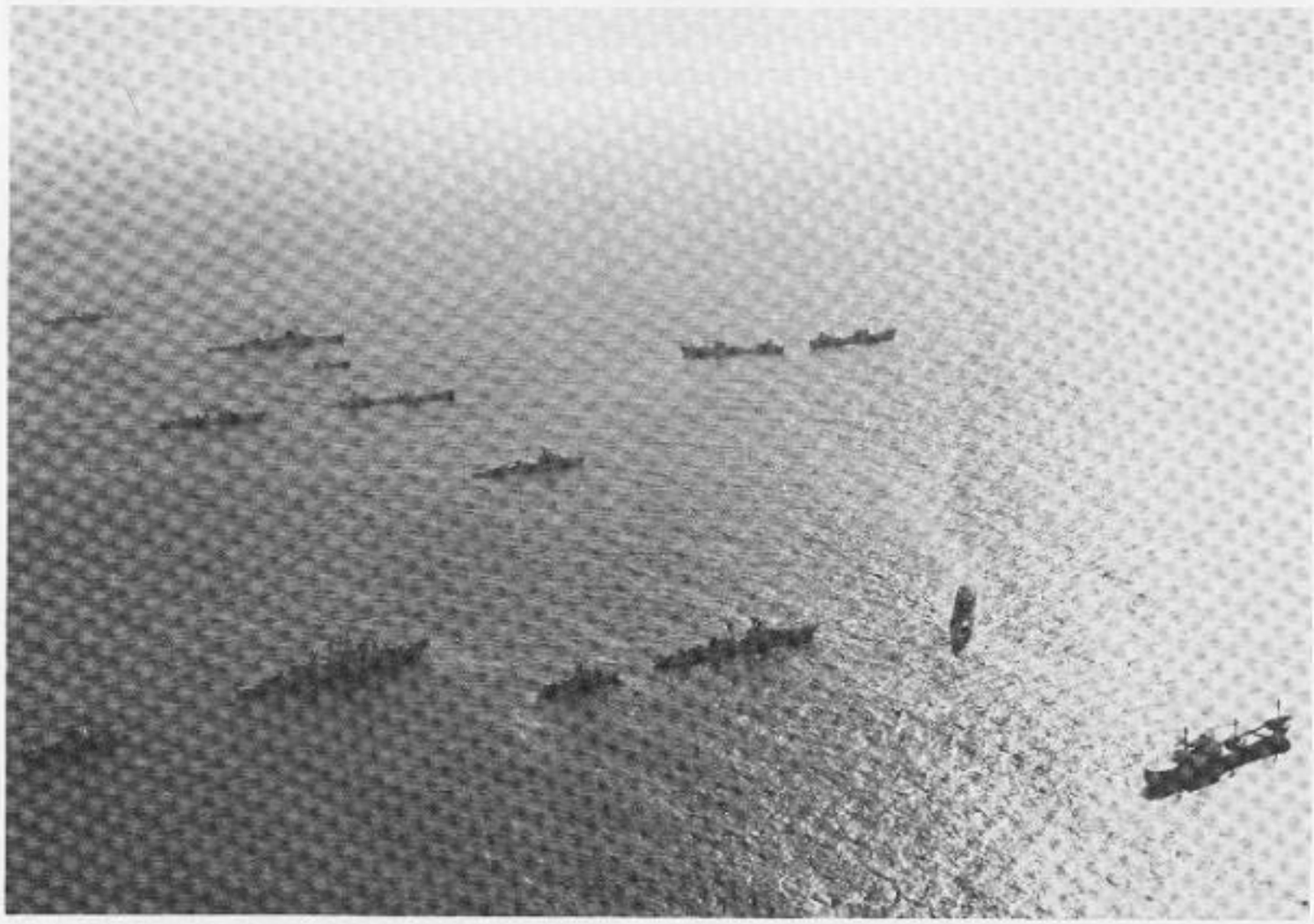
required to sustain warships at great distances from their home ports in prolonged periods of conflict. Until the late 1960s, the Soviet Navy had been slow in developing underway replenishment capabilities and techniques. They have now improved their ability to conduct alongside, underway replenishment of liquids, but their ability to transfer ammunition and other solids in the same manner is still marginal. During the 1970s, the Soviets introduced the BORIS CHILIKIN class of combination oiler-stores ship and a larger, multipurpose replenishment ship, the 37,000-ton BEREZINA, which carries two helicopters for vertical replenishment and is similar to the US Navy's WICHITA Class AOR design. Further, a number of Soviet naval oilers can also provide underway refueling by the less efficient astern method traditionally used by the Soviet Navy. No significant new replenishment ships have been delivered to the Soviet Navy for well over a decade, however, and most of the existing replenishment ships are small and slow.

Another often-cited shortcoming of the Soviet Navy is that it is a "one-shot" fleet, with strong initial striking power but relatively few offensive missile reloads. In one sense, this lack of endurance reflects Admiral Gorshkov's "battle of the first salvo" philosophy, a notion that under contemporary conditions of nuclear conflict the first naval engagement would be the decisive one. While certainly a limitation, this approach has permitted the Soviet Navy to be optimized for a specific war situation. Moreover, the newer classes of warships have shown



Soviet combatants and auxiliaries shown at anchorage in international waters in the Mediterranean Sea.

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Despite significant improvements in the Soviet Navy's underway replenishment capability in recent years, the Soviets still frequently use the astern method of refueling, which requires the vessels involved to come to a virtual standstill. Depicted here is a Soviet UDALOY class guided missile destroyer being refueled by a LISICHANSK class merchant tanker.

a trend toward increasing numbers of reloads; the latest KIROV class cruiser, for example, has the potential to carry over 500 surface-to-air missiles, while the carrier KUZNETSOV may be able to carry over 700.

With regard to personnel limitations, over 95 percent of the non-officer personnel on active duty in the Soviet Navy are conscripts. To maintain this pool of manpower requires recruitment of as many as 100,000 inductees a year, indicating a vast turnover of naval personnel each year. The average conscript receives the majority of his training on-the-job, mostly in non-skilled activities. The burden of operating and maintaining highly technical naval weapons systems thus falls on the cadre of officers, warrant officers, and senior enlisted. Thus, the overall level of training and consequent combat readiness of the Soviet Navy is seriously degraded by shortages of professional manpower. The pending reduction in the length of obligated service of Navy conscripts from three years to two will exacerbate this problem. Innovative personnel programs are being instituted, however, and ultimately could vastly improve the quality of Soviet Navy personnel if fully implemented.

Given all these issues, some critics assert that Soviet maritime forces make a political and psychological impact far out of proportion to their war-fighting potential. Not only is their Navy impressively described by the Western press, the same adjective-filled descriptions are found in Soviet writings and, probably more

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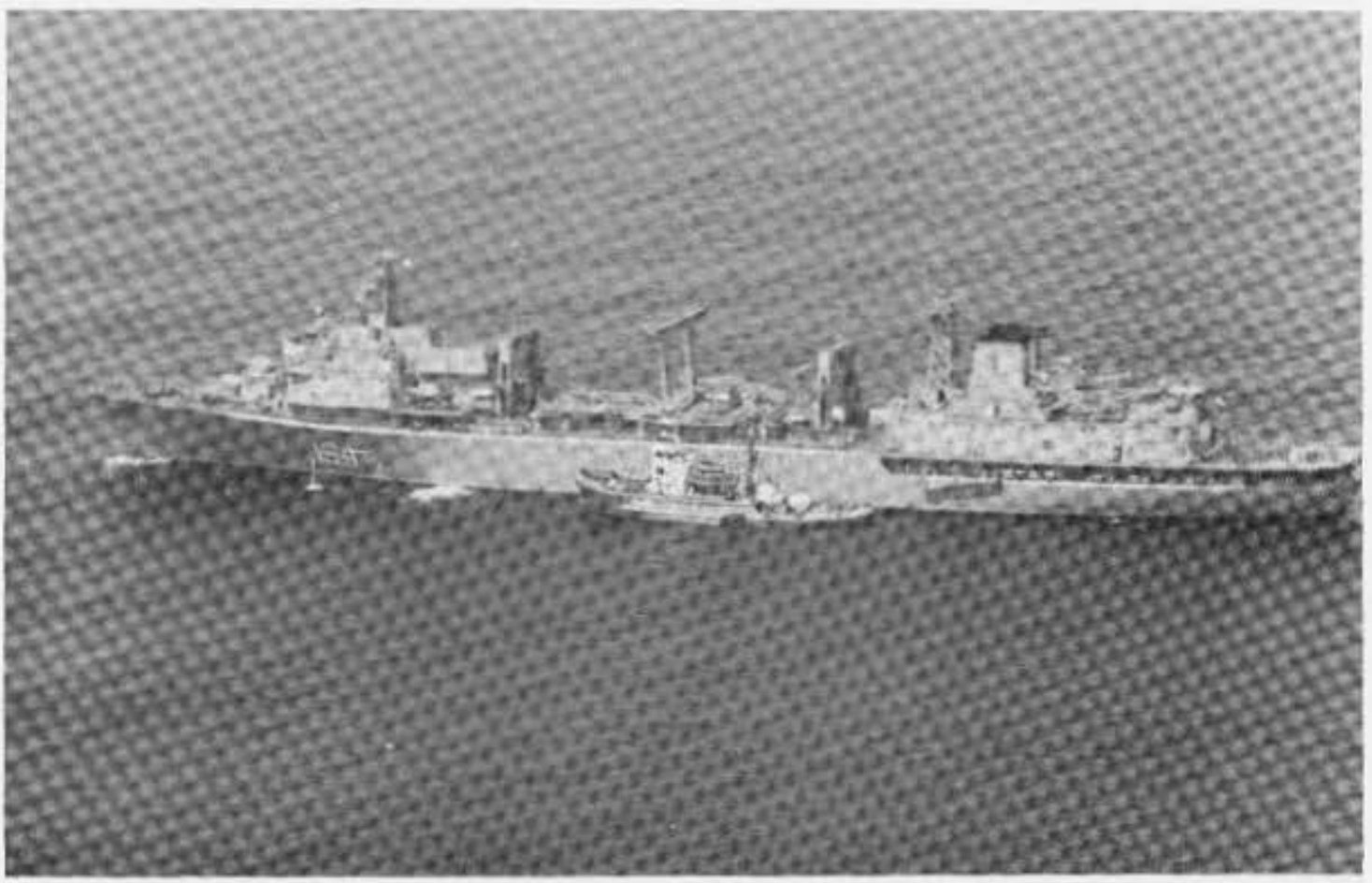
significantly, in the presses of numerous non-aligned and Third World nations. Important political power can be derived from perception, and perceptions can have a strong influence on nations which depend on the world's oceans for essential commerce and communications. Admiral Gorshkov's authoritative book, *Sea Power of the State*, was widely distributed throughout the world in the late 1970s, and his words seemed to be corroborated by the world-wide operations of the Soviet Navy. The regular visits of Soviet warships to foreign ports, including the United States (in 1975, 1989, 1990, and 1991), provide ample opportunity for "salesmanship" in key areas of the globe. Although such Soviet naval visits in the West were rare in the seventies and eighties, they are now becoming a matter of routine and provide excellent opportunities for Moscow to use the Navy as an instrument of foreign policy.



The Soviet Navy has been gradually improving its open-ocean replenishment capabilities and today operates some 25 which are capable of alongside refueling. No major units have been delivered since 1979, however, and most in service are old, small, and slow.

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SECTION 4. SOVIET NAVAL EQUIPMENT

The appearance of a nuclear-powered submarine fleet; introduction of strategic nuclear-missile systems to it; development of air-capable ships; the fleet's outfitting with long-range aviation; broad development of forces and resources of antisubmarine, antiaircraft, and antimissile defense and of systems for underwater, surface, and air situation coverage; and the introduction of automated control systems—all these qualitative changes permitted creating an oceangoing, nuclear-missile submarine-air fleet with developed surface forces because of our country's powerful military-economic potential, major achievements of domestic science and technology, and the talent and expertise of Soviet shipbuilders. The creation of a modern oceangoing fleet in our country capable of accomplishing strategic missions in the oceans in opposition to a strong enemy fleet dispelled the illusory hopes of imperialist military circles for winning undivided supremacy in the ocean.

—S. G. GORSHKOV (1910-1988),
Admiral of the Fleet of the Soviet Union

The Soviet Union has committed significant resources to sustain its armed forces buildup over the past two decades. Expenditures for military programs have, in fact, contributed to the slowing economic growth the country has faced since the 1980s. As growth rates declined, valuable and productive resources continued to be channeled to Soviet military programs at the expense of investment in the civilian sector. For example, the defense industrial ministries absorbed almost sixty percent of the output of the vital machine building branch of industry. While there is considerable uncertainty about the numbers (due primarily to differences in national accounting systems and the inability to obtain accurate data on the Soviet defense budget), it is evident that military expenditures have commanded a far greater share of the Soviet Gross National Product (GNP) than in the United States. Estimates of Soviet military spending in current rubles show an increase from 14-16 percent of their GNP in 1980 to 15-17 percent in 1987 (some estimates are as high as 33 percent). By comparison, the US spent 6.6 percent of its much larger GNP on defense programs in 1987. A significant portion of the Soviet expenditures over the past two decades has been on naval ships, aircraft, weapons, sensors, and related hardware and infrastructure.

In January, 1989, President Gorbachev, as part of his sweeping reforms under *perestroika*, announced that the Soviets would reduce weapons procurement and defense spending substantially over the next few years. Such cuts are expected to provide the basis for a major infusion of resources to the civil sector. The Soviet Navy, which will absorb its share of these

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reductions, is lowering its expenditures, in part, by reducing its ship inventory and by retaining those ships that are more efficient to operate and maintain.

To that end, Moscow has begun an aggressive scrapping program. In 1989, for example, 46 Soviet combatant ships and submarines were sent to foreign yards to be scrapped. While in 1990, 44 ships were scrapped abroad. More than 150 additional principal combatants and submarines are estimated to be available for scrapping in the early 1990s. The majority of these will probably go to foreign yards, at least until the planned five new Soviet breaking facilities become operational. These reductions are not expected to have much effect on the combat capability of the Soviet Navy, however, since most of the units involved are more than 30 years old and practically none have recently been operational.

Meanwhile, Soviet ship construction continues at a brisk rate. In this regard, tonnage added to the fleet in 1989 exceeded tonnage lost to scrapping. In fact, 1989 was the most productive year, in terms of tonnage delivered to the Soviet Navy, in more than two decades, while 1990 saw the launching of more submarines than in any year since the early 1980s.

A. Surface Warships

The Soviet Navy maintains the world's largest fleet of principal surface combatants, patrol boats, and coastal combatant forces. Revolutionary advances in naval technology have resulted in new surface ships with significantly greater capabilities than their predecessors and allow the Soviets to replace older units with more capable combatants in fewer numbers. The Soviets view their surface warships not only as necessary elements of a balanced fleet, but as primary instruments for providing a visible naval presence in support of Soviet global foreign policy. They continue to empha size multipurpose ships, more heavily armed with antisubmarine, antiair, and antiship weapons than most comparable ships in other navies.

Aviation Ships

The first two aircraft carriers of the Soviets' KUZNETSOV class, the ADMIRAL FLOTA SOVETSKOGO SOYUZA KUZNETSOV (ex-TBILISI ex-LEONID BREZHNEV) and the VARYAG (ex-RIGA), were launched in 1985 and 1988, respectively, at Nikolayev. The KUZNETSOV was commissioned in January 1991. The VARYAG is fitting out and should commence sea trials by 1992, while construction of a third, larger carrier, UL'YANOVSK, continues. The KUZNETSOV is approximately 300 meters (990 feet) in overall length and displaces about 65,000 tons. It is conventionally powered by steam turbines. CTOL aircraft use ramp-assisted launch and conventional arrested landing techniques. KUZNETSOV's air wing will likely consist of 20 to 40 aircraft, depending on the mix deployed. The air wing will probably be optimized for air defense, with Su-27K FLANKERs fulfilling the long range intercept mission and the MiG-29K FULCRUM serving as a medium range fleet air defense fighter with the ability to be employed in a ground attack role if required. KUZNETSOV will also carry a complement of helicopters, and the ship is capable of operating Yak-38 FORGER VTOL fighters as well. The ships also carry a dozen SS-N-19 SHIPWRECK long-range anti-ship cruise missiles.

Although it will take years for the Soviet CTOL carriers and their air wings to achieve full warfighting effectiveness, they will eventually enable the Soviets to extend their operations well beyond the air protection currently provided by land-based aviation. High-performance aircraft of the embarked air wings are expected to conduct integral air defense of task groups, decreasing the vulnerability of deployed surface forces and contributing to the national air defense posture.

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The first Soviet aircraft carrier conducted takeoff and landing trials in the Black Sea in November 1989 when "navalized" versions of the Su-27 FLANKER, the MIG-29 FULCRUM and the Su-25UT FROGFOOT made arrested landings and ramp-assisted takeoffs. A FULCRUM is shown above in final approach.

The KUZNETSOV class carrier could also prove an asset for Soviet distant area naval diplomacy in peacetime and power projection during Third World crises, although this is not considered to be a primary mission. Carrier aircraft would enhance the Soviets' ability to protect and assist ground forces operating ashore, as well as providing air protection for naval forces. Sustained combat operations in Third World areas, however, would require an additional degree of support, such as underway replenishment, currently lacking in the Soviet Navy.

The KIEV class CVHG, a "heavy aircraft-carrying cruiser" (as designated by the Soviets), provided the USSR with its first sea-based, fixed-wing aircraft capability when the lead unit became operational in mid-1976. The second and third KIEV class ships, MINSK and NOVOROSSIYSK, are assigned to the Pacific Ocean Fleet, while the fourth ship of the class, BAKU (recently renamed ADMIRAL FLOTA SOVETSKOGO SOYUZA GORSHKOV), joined KIEV in the Northern Fleet.

The KIEVs have an unusual design. They are 273 meters (910 feet) long, have a full-load displacement of over 41,000 tons, an angled flight deck some 180 meters (595 feet) long, and an island superstructure to starboard in the tradition of Western carriers. The forward part of these ships is, however, similar to Soviet missile cruisers, with antiship, antisubmarine and antiaircraft missile and rocket launchers.

The lack of aircraft arresting gear and catapults on the flight deck limits the ships to helicopters and VTOL aircraft operations. The flight deck accommodates 14 to 17 HORMONE

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A MOSKVA class helicopter carrying missile cruiser.

or HELIX helicopters, and 12 Yak-38 FORGER VTOL aircraft. The latter are capable of daylight attack, reconnaissance, and limited air defense missions. A new V/STOL aircraft, the Yak-41, is under development for use on KIEV, and possibly KUZNETSOV, class units.

Although the Soviets state that the primary mission of the KIEV class is ASW, the ships also have a potent antisurface capability in their SS-N-12 cruise missile systems. This antiship missile, with a range of 300 nautical miles (560 kilometers), can be targeted beyond the horizon by the ship's helicopters or information received from satellites or land-based, long-range aircraft. The KIEV also carries an array of other weaponry and support equipment, including over 100 long- and short-range surface-to-air missiles, air defense gun batteries, tactical sensors, electronic warfare systems, and advanced communications devices.

While most of the embarked HORMONE and HELIX helicopters have a primary ASW mission, the FORGER aircraft have been observed operating in both antiship and nominal air defense roles. Depending on Soviet intentions, the aircraft might also be capable of ground attack, reconnaissance, or other support roles. To date, these aircraft have shown little inclination to stray any great distance from the ship. Although this first Soviet effort is tactically limited when compared to other front-line aircraft, the FORGER did represent the beginning of a most significant trend in the Soviet Navy—the growth of sea-based, fixed-wing air power.

The KIEV class is the second generation of Soviet "aviation ships," and followed the

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MOSKVA class helicopter carrying missile cruiser (CHG), first operational in 1967. MOSKVA's distinctive flight deck, aft of a large superstructure, can support the operation of 14 ASW helicopters. The MOSKVA class ships are classified as "antisubmarine cruisers" by the Soviet Navy and have been used primarily in that role, as well as serving as flagships. Although helicopters are their primary weapon systems, the MOSKVA class ships also have antiaircraft and antisubmarine missiles, ASW rockets, and guns, as well as a sophisticated array of radars, sonars (both hull mounted and variable depth), and electronic warfare equipment. Thus, they combine the full weapons/sensor suite of a guided-missile cruiser with the capacity to handle a wing of ASW helicopters.

Cruisers

The first modern Soviet cruiser was completed late in 1962 with the initial KYNDA class guided-missile cruiser (CG). The ships are small compared to most cruisers, displacing about 5,500 tons fully loaded, and measuring 142 meters (465 feet) in length. The four KYNDA class ships were armed with SS-N-3 cruise missiles, antiaircraft missiles, multipurpose guns, and antisubmarine weapons. At least one has been retired.

The introduction in 1962 of the SS-N-3 antiship cruise missile, with its approximately 250 nautical mile (460 kilometer) range, represented an attempt to counter the US superiority in carrier aviation. Long-range missiles became the Soviet Navy's "tactical air."

The KIROV class guided missile cruiser is the Soviet Navy's first nuclear-powered surface warship. It is equipped with a wide array of powerful weapons systems as well as significant electronic warefare and C3 capabilities.

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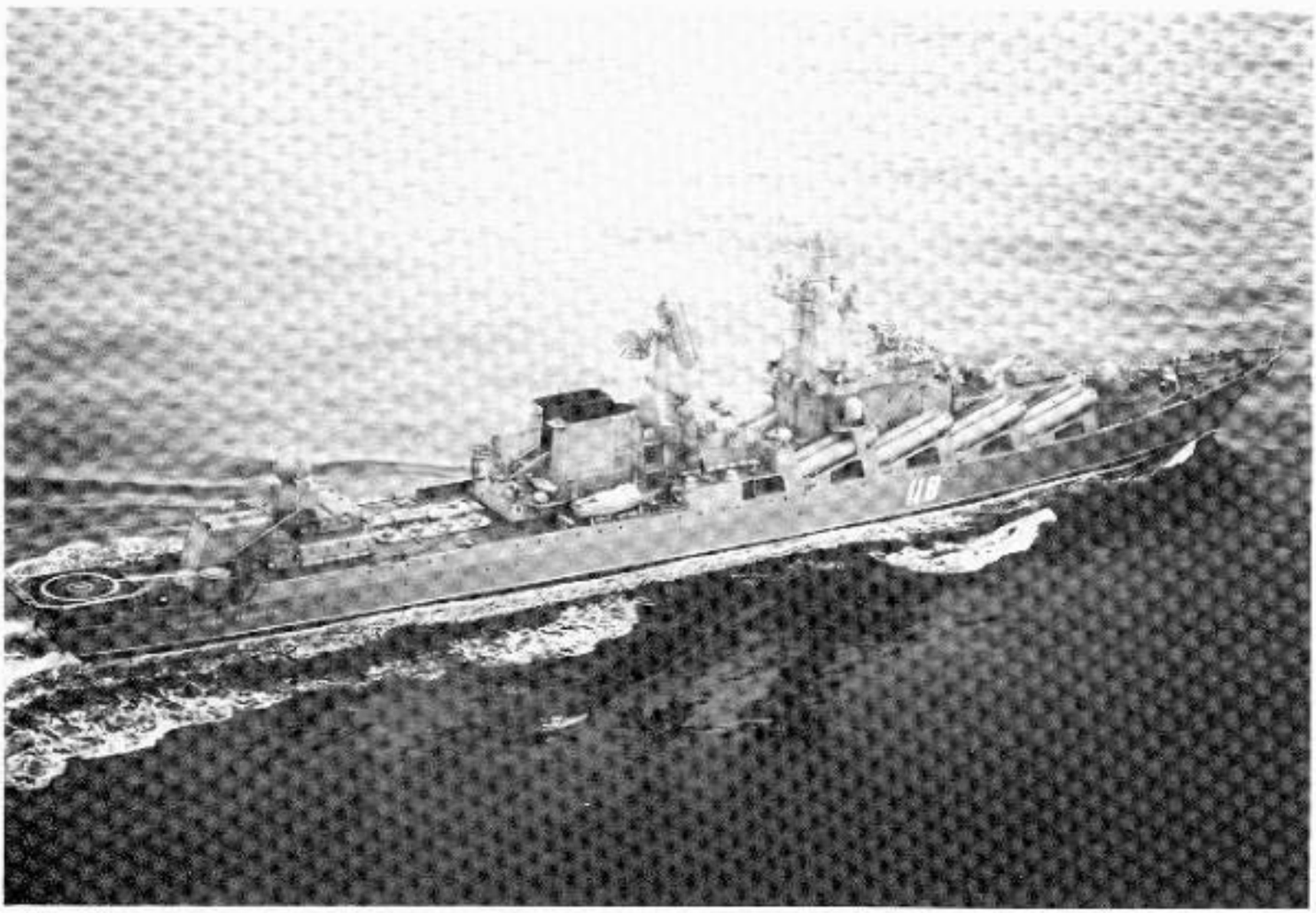
In 1967, Soviet shipyards completed the first of four KRESTA I class cruisers, longer and greater in displacement tonnage than KYNDA. In these ships, the Soviets reduced the total number of long-range SS-N-3 launchers from eight to four, but increased the twin antiaircraft missile launchers from one to two, and added a helicopter hangar to permit KRESTA I to maintain a HORMONE B on board, for extended range missile targeting.

The next cruiser to appear was the slightly larger KRESTA II, armed with eight launchers for the SS-N-14 ASW missile, which can also engage surface ships to a range of about 30 nautical miles (55 kilometers). The missile change from KRESTA I to KRESTA II reflected a Soviet shift in cruiser-sized ship missions from predominantly anti-carrier to antisubmarine. Additionally, KRESTA II has improved antiaircraft missiles and more advanced electronics. Ten KRESTA II class ships were completed between 1970 and 1978.

In 1973, another new missile cruiser (CG) was introduced with completion of the first KARA class ship, which displaces 9,700 tons and has a length of 173 meters (567 feet). Again, this class incorporated improvements in weapons and sensor capabilities, as well as an increase in operating range. KARA's main weapons are the same as in KRESTA II, but with two additional launchers for short-range antiaircraft missiles, a heavier gun battery, and



MARSHAL USTINOV, the second of a planned quartet of 12,500-ton SLAVA class guided-missile cruisers, joined the Northern Fleet in 1986. In addition to 16 long-range antiship cruise missile, this gas-turbine-powered vessel carries 64 vertically launched SA-N-6 SAMs and 40 short-range SA-N-4 missiles, plus guns, torpedoes, ASW rocket launchers, and a helicopter.

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the addition of a variable depth sonar. Seven KARA class cruisers were built.

The early 1980s witnessed the introduction of more technologically advanced classes of surface ships into the Soviet Navy inventory, including the first Soviet nuclear-powered surface warship, the KIROV guided-missile cruiser, and the first of a class of gas-turbine-powered guided-missile cruisers, the SLAVA.

KIROV, with a displacement of about 28,000 tons, is the largest combatant warship, with the exception of aircraft carriers, built by any nation since World War II. Its nuclear power propulsion system gives it an extensive, unrefueled range; the ship also incorporates oil-fired boilers. KIROV has advanced air search radars, a much-improved antiair warfare missile fire control system, and significant electronic warfare and command, control, and communications capabilities. Its principal armament is a battery of twenty 300-nautical mile (560 kilometers) SS-N-19 antiship cruise missiles, complemented, in the first ship of the class, by SS-N-14 antisubmarine missiles. Three HELIX or HORMONE helicopters can be embarked for ASW and missile targeting. KIROV is also outfitted with an array of air defense weapons, including long-range SA-N-6 missiles in vertical launch tubes and, on subsequent units, provision for SA-N-9 shorter range SAMs. Medium-caliber gun mounts, a number of gatling-type guns for point defense, torpedoes, and ASW rockets complete KIROV's modern armament. In 1984, FRUNZE, the second unit of the KIROV class, became operational, with the third unit, KALININ, joining the fleet in 1988. A fourth unit, YURIY ANDROPOV, the last of the class, is fitting out.

The SLAVA class cruiser (12,500 tons) is equipped with 16 SS-N-12 antiship missiles, 64 SA-N-6 air defense missiles in vertical launchers, 40 SA-N-4 point defense missiles, a 130mm twin-barrel, dual-purpose gun, and one HORMONE or HELIX helicopter. It too has a sophisticated array of sensors and communications capabilities, making it one of the most powerful ships of its size in the world. Three are operational and the fourth and last is fitting out.

Destroyers/Frigates

Since World War II, the Soviets have added six new classes of destroyers to their active fleet. As in the West, Soviet destroyers have developed significantly in both size and capability.

The first post-World War II Soviet destroyer construction program produced the SKORYY class (DD). Seventy-two of these ships were built. Sixteen SKORYYs were transferred to Egypt, Poland, and Indonesia, but none of these exported vessels is operational, and the class has been retired from Soviet Navy service.

In the 1950s and 1960s, the Soviet Navy introduced the KOTLIN class (DD) gun destroyer (27 built), the KILDIN class (DDG) antiship missile destroyer (4 built), and the KRUPNYY class (DDG) antiship missile destroyer (8 built). Many of the KOTLINs received various modifications over the years including surface-to-air missiles. The KILDINs were built on KOTLIN hulls and three were modified to include four improved SS-N-2 STYX antiship missiles. Earlier antiship missile systems on all eight of the completed KRUPNYYs were replaced by two quadruple 57mm gunmounts forward and a twin SAM launcher aft, with additional ASW weapons and equipment also added. Thus reconfigured, these ships were renamed the KANIN class by NATO. All but two of the 1950-1960s vintage destroyers have been retired.

From early 1963 through 1972, Soviet shipyards delivered 20 KASHIN class guided-missile destroyers (DDG). These ships displace approximately 4,800 tons, are 145 meters

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One of two guided-missile destroyer classes currently under serial production by the Soviets is the SOVREMENNYY class DDG. SOVREMENNYY's principal mission is surface warfare.

(476 feet) long, and are armed with two twin antiaircraft missile launchers, antisubmarine rocket launchers, five torpedo tubes, two twin 76mm multipurpose gunmounts and mine rails. Six were fitted with four short-range, antiship missiles (SS-N-2) and variable depth sonar. The most distinctive KASHIN feature is the four large funnels positioned in pairs to exhaust the tandem gas-turbine power plants. These were the world's first large warships with gas turbines, which gave the KASHINs an estimated top speed of over 35 knots for brief periods. One of these ships was lost in 1974, another was transferred to Poland in 1988, five or more of an export version have been sold to India, and at least four Soviet units have been retired.

One of two guided-missile destroyer classes currently under serial production by the Soviets is the SOVREMENNYY class DDG. The first unit put to sea in 1981. Construction of this class continues at North Shipyard in Leningrad, where the KRESTAs were constructed. The SOVREMENNYY is essentially a basic variation of the KRESTA design tailored for surface warfare duties, with eight SS-N-22 cruise missile launchers, two twin 130mm gunmounts, two single SA-N-7 SAM launchers, four gatling guns, four torpedo tubes, two ASW rocket launchers, and facilities for a helicopter. Thirteen of the ships had been to sea by early 1991.

The other DDG class now in production is UDALOY, which first entered the fleet in 1981. UDALOY is primarily designed for ASW, armed with eight SS-N-14 ASW missile launchers, provision for eight vertical launchers for a new short range SAM system

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(SA-N-9), two single rapid-fire 100mm gun mounts, four gatling guns, torpedoes, ASW rocket launchers, and two HELIX helicopters. Additionally, this class has the latest electronics and acoustics equipment, including both hull-mounted and variable-depth sonars. UDALOY is about the same size as a US SPRUANCE class destroyer, and eleven have been completed to date.

The Soviet Navy also has a large number of frigates which operate as ASW escorts in fleet formations and as coastal patrol ships. There are 32 KRIVAK I and II class missile frigates, the first of which went to sea in 1970. These ships displace about 3,700 tons and have an overall length of 124 meters (407 feet). KRIVAKs are armed with dual-purpose antisubmarine/antiship missiles and antiaircraft missiles, including a four-tube launcher for the SS-N-14 ASW/ASUW missile and two twin reloadable launchers for the SA-N-4 short-range SAM missile. In addition, the ships have antisubmarine rockets, eight torpedo tubes, mine rails, and two twin 76mm gunmounts. In many of the ships, two single 100mm gunmounts replaced the 76mm mounts; these ships have been designated the KRIVAK II class. The ships' sensors include advanced electronic systems and both hull-mounted and variable depth sonars. Another variant, the KRIVAK III, with helicopter capability but reduced ASW and AAW capability, has been produced at the rate of one per year since 1984 for use by

The UDALOY class guided-missile destroyer is primarily equipped for ASW with eight SS-N-14 ASW missiles. The class also carries eight SA-N-9 short-range launchers, has two side-by-side helicopter hangars and carries the HELIX helicopter. This ship is approximately the same size as a US SPRUANCE class DD.

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A KRIVAK III class missile frigate. Thirty-two KRIVAK I and II class 3,670 ton frigates were completed for the Soviet Navy between 1970 and 1982. The KRIVAK III version of the class is specially configured to carry a helicopter and is used by the KGB Maritime Border Guard.

the KGB Maritime Border Guard forces. NEUSTRASHIMYY, the first of a new larger follow-on class to the KRIVAK series, commenced sea trials in 1990.

Another frigate, the KONI class, was built exclusively for export (except for the first unit). The countries receiving KONIs were Algeria, Bulgaria, East Germany, Libya, Yugoslavia, and Cuba. These ships are rather simple, general-purpose frigates armed with two twin 76mm gunmounts, two twin 30mm guns, one twin SA-N-4 SAM launcher, ASW rocket launchers and depth charges (those belonging to Libya and Yugoslavia also carry antiship missiles, and Libya's have ASW torpedoes).

The remainder of the corvettes (small frigates) in the Soviet inventory are of the MIRKA, PETYA, and GRISHA series. Although these corvettes are far smaller than most Western frigates (all less than 1,200 tons), some nonetheless have deployed on occasion to the Mediterranean Sea and Indian Ocean.

B. Small Combatants

The Soviet Union operates large numbers of small combatants – missile, torpedo, patrol, and mine craft – in coastal waters. These ships play a major role in the layered defense of the Soviet homeland.

Missile Patrol Boats

The Soviet Navy has displayed a continuing interest in the missile patrol boat (PTG) throughout its development, beginning in the 1950s with KOMAR and OSA classes. Over 100 OSAs were transferred to or built for other navies and a few remain in Soviet service.

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In 1969, the Soviets introduced the NANUCHKA class guided-missile patrol combatant (PGG). The class is still in production, and about 40 units have been built to date, nine of which have been exported. This ship displaces almost 700 tons and is 59 meters (195 feet) long. The NANUCHKA I has a twin SA-N-4 antiaircraft missile launcher forward and a twin 57mm gun aft. A later variant, the NANUCHKA III class, has a 76mm and a 30mm gatling gun. The main battery of both variants consists of six tubes for the SS-N-9 missiles, with a maximum range estimated at about 60 nautical miles. A version designated NANUCHKA II carries four SS-N-2 missiles and has been sold to India, Libya, and Algeria.

Newer, more capable patrol craft are replacing the OSA boats. The TARANTUL class PGG, which displaces nearly 580 tons, is fitted with a 76mm gun and two 30mm gatling guns. Early versions of this PGG carry four SS-N-2 antiship cruise missiles, while the newer TARANTUL III is equipped with four of the more capable SS-N-22 supersonic sea-skimming missiles. The TARANTUL I is produced for export, with Poland, East Germany, Yemen, Bulgaria, and India having received units. Most recent in the missile-carrying inventory are the experimental DERGACH class surface effect ship (by far the world's largest) and UTKA class Wing-in-Ground (WIG) effect craft, both of which can carry six SS-N-22 missiles.

Mine Warfare Ships and Craft

Mine warfare is a major mission of the Soviet Navy and receives appropriate priority and resource support. Soviet literature discusses the mission, placing great emphasis on mine usage early in a war to close enemy ports and harbors. Other offensive applications include blocking shipping lanes, isolating naval operating areas, and denying chokepoint transit routes or operating areas to enemy missile submarines.

A TARANTUL II guided-missile patrol craft, a design built for the Soviet Navy and in an export variant.

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TURYA class hydrofoil torpedo-boats are armed with four tubes for antiship or antisubmarine torpedoes, a twin 57mm dual-purpose gun aft and a twin 25mm AA mount forward.

Soviet interest in mine warfare dates to Tsarist Russia and was seriously tested during World War II, when the USSR used mines extensively in both offensive and defensive operations in the Baltic and Black Seas. The vast majority of the mines encountered in conflicts from the Korean War to the 1990-91 Persian Gulf crisis have been of Soviet design in manufacture.

The Soviet Navy's mine warfare force is currently the largest in the world. Over 150 ocean and coastal minesweepers, plus a number of smaller minesweeping craft, are in the active and inactive forces. Ocean minesweepers, displacing 540 to 900 tons, include the NATYA and YURKA classes, while coastal minesweepers (200 to 400 tons) include the SONYA, and VANYA classes. The first unit of a new 1,200 ton minehunter class, GORYA, became operational in 1989.

Although the Soviet Navy has only three ships designed primarily for minelaying (the ALESHA class), the Soviets have large numbers of other properly configured surface ships, aircraft, and submarines to support large-scale mining efforts. Soviet stockpiles of mines include moored contact mines and modern magnetic and acoustic magnetic induction mines, the world's largest inventory. The Soviet Navy also uses mine warfare ships for a variety of additional tasks, such as picket duties. Soviet Navy mine countermeasure ships worked alongside U.S. and NATO ships in clearing mines in the Persian Gulf in 1988 but did not help in the clearing of Iraqi-laid mines in 1991.

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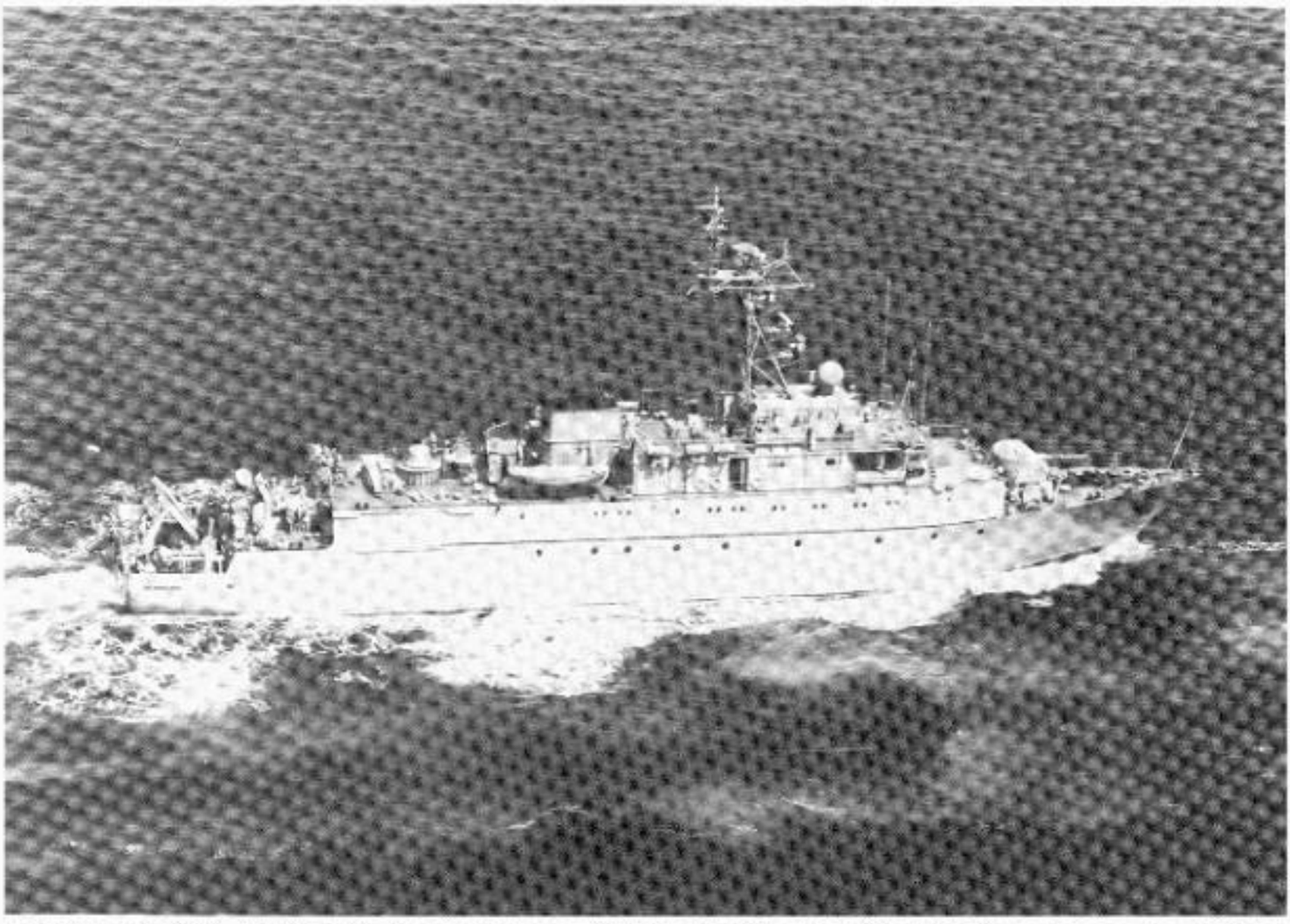
In addition to the classes mentioned, the Soviet Navy has several hundred small combatants of a variety of types including patrol boats ranging from 50 tons to nearly 1,000 tons displacement.

The KGB Maritime Border Guard, which draws its nonrated sailors from the Soviet Navy, operates a large fleet of patrol and support ships and craft, including KRIVAK III class frigates, armed icebreakers, and well over one hundred SVETLYAK, MURAVEY, PAUK, and STENKA class antisubmarine patrol boats. This fleet, autonomous in peacetime, would come under the Soviet Navy in time of conflict. Riverine warfare, formerly a province of the Soviet Navy, now appears to be the responsibility of the MVD's internal security forces, which operate a number of different classes of river gun-boats, monitors, and patrol craft, primarily on the Amur-Ussuri River network in the Far East region.



In September 1989, the GORYA class minehunter (MHS) joined the Black Sea Fleet to undergo a lengthy test and evaluation period. The GORYA appears to be optimized to handle mine neutralization vehicles (MNV's) and also carries conventional mechanical, acoustic, and magnetic minesweeping equipment.

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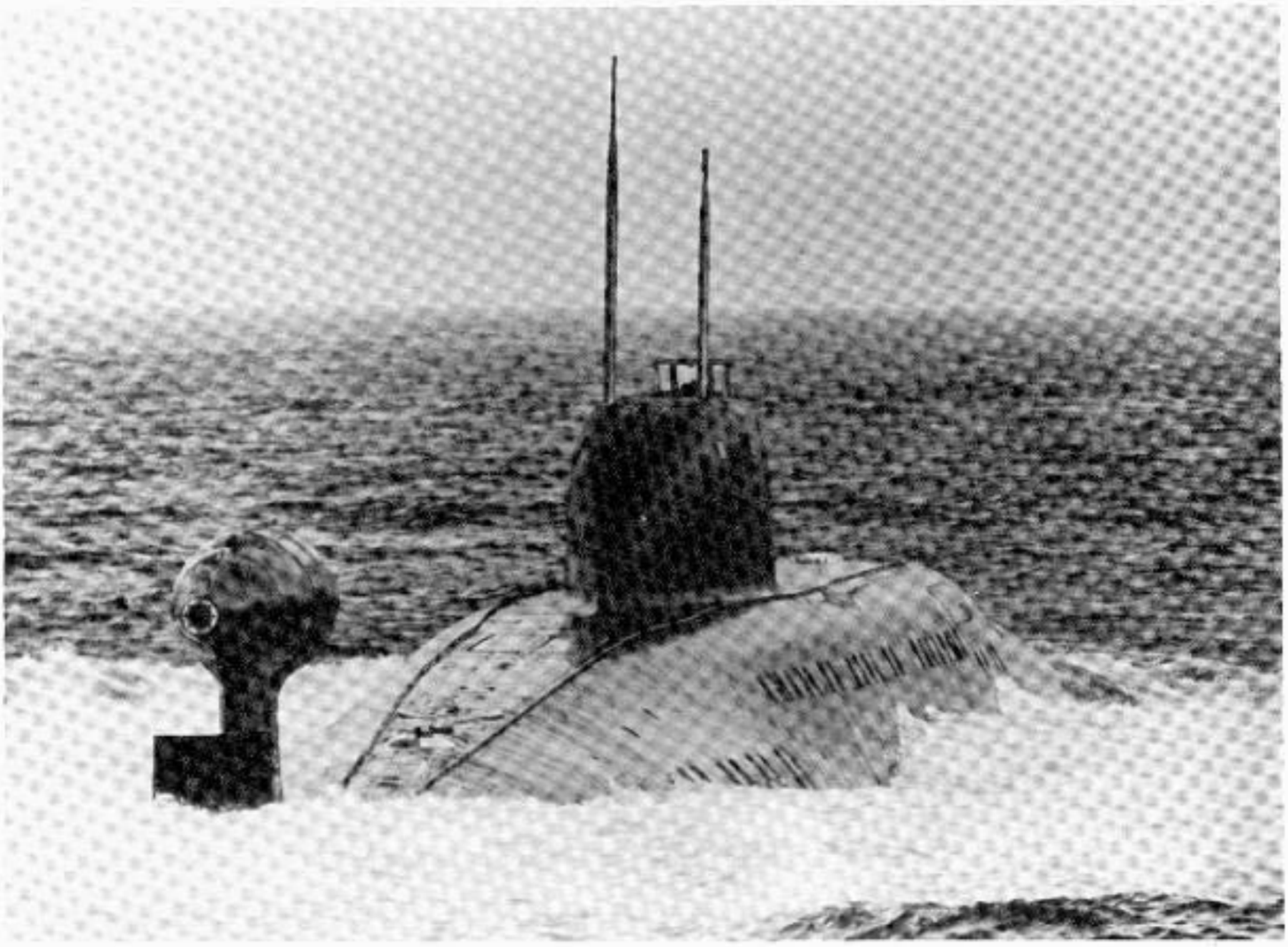

This VICTOR III SSN, seen underway in the Atlantic Ocean, represents an extensive modification of earlier VICTOR designs and is significantly quieter than its forerunners.

C. Submarines

Submarines have played a major role in the Soviet Navy since its inception. Since the late 1930s, the Soviets have had more submarines in their inventory than any other navy in the world. Today, the submarine force represents the most significant part of their naval strength. It comprises three principal categories:

- Torpedo-attack submarines that attack enemy surface warships and submarines using torpedoes and/or missile delivered ASW weapons (SS/SSNs);
- Cruise-missile submarines that fire large antiship cruise missiles as well as torpedoes (SSG/SSGNs); and,
- Strategic ballistic missile submarines armed with vertical-launched, nuclear-tipped missiles aimed at land-based strategic targets (SSBNs).

The scope of the current Soviet submarine and undersea warfare development program, includes advanced torpedo and antiship cruise missile technology, land-attack SLCM applications for submarines, and specialized communications support. Backed by an extensive research and development effort, the newest Soviet submarine designs show evidence of an emphasis on quieting, depth, speed, nuclear propulsion, weapon system versatility, and the incorporation of other state-of-the-art technologies.

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The Soviet Navy operates nearly 220 attack submarines. Over half are diesel-electric powered, and all of the operational units, nuclear or diesel-powered, have been completed since 1960. Since the early 1980s, the Soviet Union has been producing three separate classes of nuclear-powered attack submarines simultaneously, as well as continuing to build diesel submarines for Soviet Navy use and for export. The three new SSNs incorporate substantial advances in sound quieting and warfighting capability over previous Soviet SSNs, with technologies gained through domestic research and development and successes in technology transfer from the West. They constitute the Soviet Navy's front-line antisubmarine-warfare capability.

The first SIERRA class SSN was launched in 1983. At 7,600 tons, SIERRA is about 20 percent larger than the VICTOR III, which was introduced four years earlier. In this era of rapidly developing technologies, the titanium-hulled SIERRA is a clear demonstration of the high priority that submarine development programs receive in the Soviet Union. At present, there are two SIERRAs operational, and a third has been launched.

In 1984, the first of a second new class of nuclear-powered attack submarines, the AKULA class, was launched. AKULA, displacing 10,000 tons and measuring 113 meters (370 feet) in length, proved much quieter (and hence less vulnerable to detection) than had been projected by Western intelligence. The AKULA's low noise levels were achieved primarily by using known technologies available to the Soviet Union as a result of their successes in acquiring Western technology by fair means and foul. At least six AKULA SSNs are operational, with construction continuing.

The SIERRA class SSN, first launched in 1983, is 20 percent larger than the VICTOR III, which it resembles.

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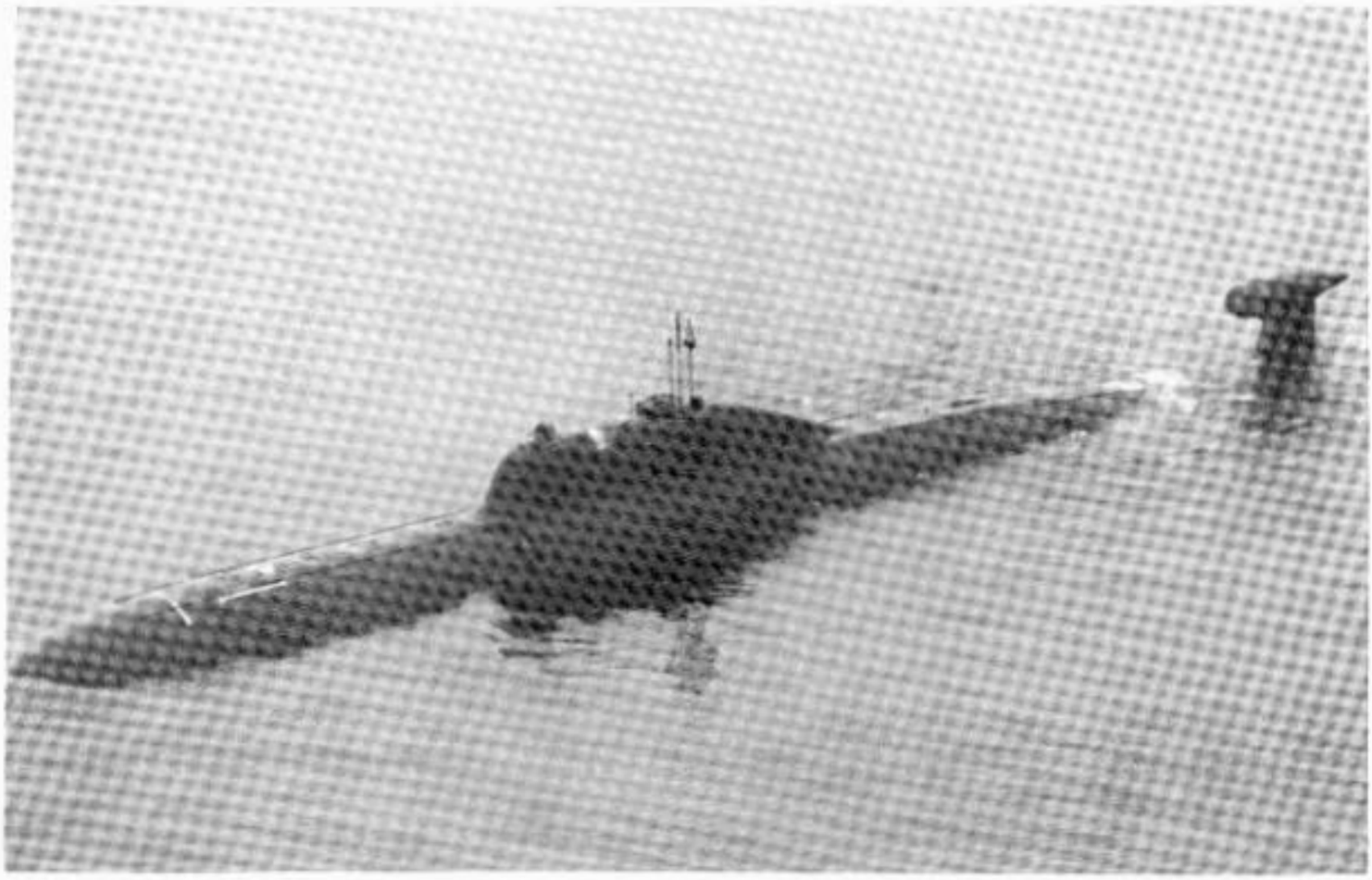

The AKULA class SSN incorporates significant improvements in submarine noise reduction technology.

A single-unit experimental, deep diving SSN, dubbed the MIKE class, was launched in 1983. The one-of-a-kind platform suffered a fire on board in April of 1989 and sank north of North Cape, in the Norwegian Sea.

VICTOR III (6,200 tons), an extensive modification of earlier VICTOR I/II designs, has continued in production since the late 1970s. VICTOR III is significantly quieter than its forerunners and incorporates the best Soviet communications and hull-mounted acoustic ASW systems. Twenty-five boats of the class have been launched to date.

An additional submarine development evident since 1983 typifies another aspect of Soviet naval hardware philosophy, the effort to retrofit innovations into older designs, thus extending the service life and tactical utility of the submarine force. In one case, the ballistic-missile tubes were removed from a YANKEE SSBN in a process that converted the unit to an experimental trials submarine. This "YANKEE SSN" has probably been re-equipped with updated fire control and sonar systems in addition to other modifications that will enable it to test a wide variety of sensors and weapons. Two of a second YANKEE conversion variant, the YANKEE NOTCH, have been modified to accommodate large numbers of SS-N-21 land-attack cruise missiles, and more conversions are expected.

In conjunction with other programs to produce specialized nuclear-powered submarines for research and development, weapons system evaluation, and fleet command and control, the Soviets maintain a diesel-powered torpedo attack submarine force numbering about 100. The average age of these diesels is over 20 years, primarily because over half are FOXTROT and WHISKEY class boats completed before 1968. Only the KILO class

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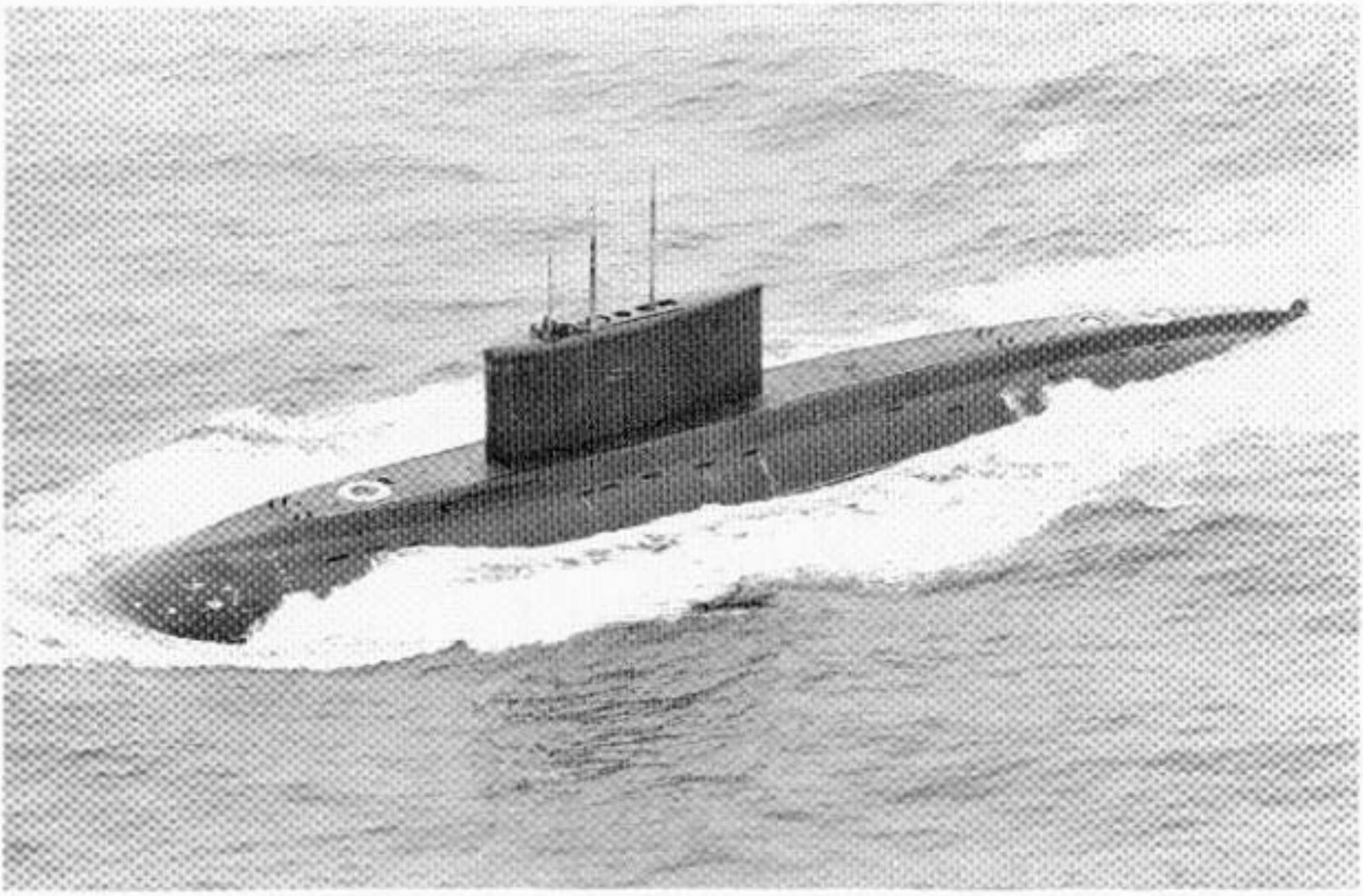
diesel submarine remains in production. Designed as a follow-on to the FOXTROT and TANGO (18 of which were completed during the 1970s) the KILO's primary mission is coastal defense, using ASW and ASUW torpedoes and mines. The KILO is also intended for export, with sixteen units operating with the Soviet fleet and the remainder going to Poland, Romania, India, and Algeria.

The Soviets are expected to build approximately 20 KILOs for their own inventory as well as continuing production for export. The once-numerous WHISKEY class (236 built during the 1950s) has just about disappeared from the Soviet Navy's inventory, and few are left in foreign fleets. The larger FOXTROT class submarines delivered between 1958 and 1967 are now beginning to be retired. Future diesel force levels in the mid-to-late 1990s will be less than half of today's active fleet as the FOXTROTs are deleted.

In a new application of the general purpose submarine force, a family of long-range, land-attack cruise missiles has been developed with some modified for use by the Soviet Navy. The small, subsonic SS-N-21 has a range of about 1600 nautical miles. Comparable in size to the US TOMAHAWK SLCM, it is small enough to be fired from Soviet submarine torpedo tubes. AKULA, and the two specially-configured YANKEE (NOTCH) submarines are believed to be the intended launch platforms for the SS-N-21, which is now believed to be operational. Some work has also been done on a larger supersonic cruise missile, the SS-NX-24.



The KILO SS is currently the only Soviet diesel-powered submarine in series production.

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The OSCAR SSGN is fitted with 24 submerged-launched, 300 nautical mile range, nuclear-capable SS-N-19 antiship cruise missiles.

Anti-ship Cruise Missile Submarines

Since the 1950s, the Soviets have maintained a constant program of anti-ship cruise missile submarine development and improvement. The primary targets of these submarines have been surface combatants, particularly aircraft carriers.

The Soviets, in fact, have produced two types of submarines that are typed "SSGN" by NATO. The first, and by far most numerous, have been the carriers of large aerodynamic missiles with ranges of 250 nautical miles and more, dependent on outside sources for targetting information. The missiles themselves are intended for use against "strategic" targets (by Soviet definition), meaning major ships like aircraft carriers or major groupings of ships. The first ships of the type, the ECHO I class, carried inertially-guided SS-N-3C missiles formerly for use against land targets. The succeeding nuclear-powered ECHO II and diesel-powered JULIETT classes carried radar-homing versions of the SS-N-3, and about half of the 28 ECHO IIs built had been modernized to carry the later SS-N-12 when the ships began to be retired at the end of the 1980s.

The SS-N-3/SS-N-12-carrying submarines had to launch their missiles while surfaced, rendering the submarines vulnerable for a considerable period. The next group of SSGNs, the CHARLIE I and CHARLIE II classes, could launch their SS-N-7 or SS-N-9 missiles while submerged, but the weapons had much shorter ranges and depended primarily on the submarine's own sensors for targetting. One CHARLIE I became the only Soviet nuclear powered submarine to be exported when it was leased (reportedly without missiles) to India in 1988; the ship returned to the USSR at the beginning of 1991.

The two-unit OSCAR I and the subsequent longer OSCAR II class represent a synthesis

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of the earlier SSGN concepts, in that they launch the long-range, externally-targeted SS-N-19 missile while submerged. Unlike the ECHO II and CHARLIE series, which carried only eight missiles, the OSCARs are far larger (and faster, and quieter) and carry no less than 24 supersonic, 300 nautical mile-ranged SS-N-19 missiles. Six OSCAR IIs have been completed to date, and construction continues. In terms of combat potential, each OSCAR is more than three times as capable as the ECHO II that it is replacing.

Ballistic Missile Submarines

As discussed earlier, the Soviets began developing diesel-powered submarines in the mid-1950s to fire short-range submarine-launched ballistic missiles (SLBMs). Then, in the late 1950s, the GOLF class diesel and HOTEL class nuclear SLBM submarines were completed. These submarines were limited initially by mechanical difficulties, short-range missiles, and the requirement for surfacing prior to launch. Most of these submarines were later provided with a submerged missile launch capability and improved weapons.

Today, the Soviets maintain the world's largest ballistic missile submarine force, armed with 940 nuclear-tipped missiles. About 80 percent of the ballistic missile submarines are fitted with long range SLBMs allowing them to patrol in waters close to the Soviet Union, protected from NATO ASW, or to operate even from homeports, if necessary, and still strike targets in the US.

Six units of the Soviets' largest SSBN, TYPHOON, where launched between 1980 and 1989. Each TYPHOON carries 20 SS-N-20 solid-propellant, 4600 nautical mile (8300 kilometer), highly accurate MIRVed SLBMs. The TYPHOON is the world's largest submarine,

TYPHOON is the Soviets' most powerful SSBN. Six units were launched between 1980 and 1989.

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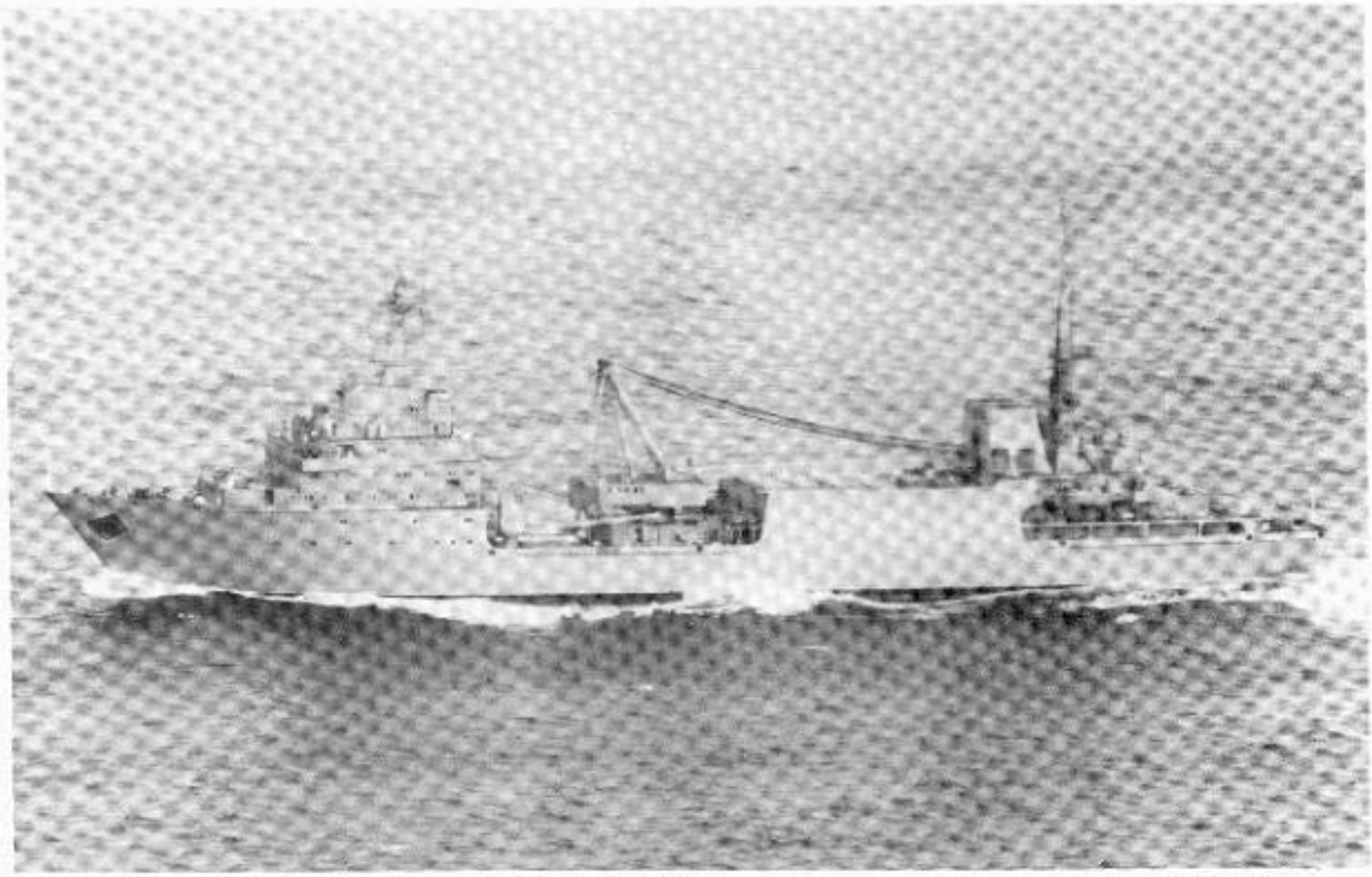

The ballistic missile transport ALEXANDER BRYKIN carries replacement missiles for TYPHOON class submarines.

with a displacement (25,000 tons) approximately one-third greater than that of the US OHIO class. It can operate effectively under the Arctic icecap, which enhances its survivability considerably.

Since 1983, the Soviets have also launched seven units of another class of SSBN, the DELTA IV. These submarines are fitted with the SS-N-23 SLBM, a large, liquid-propellant missile that is the Soviet's first hard target capable SLBM. The SS-N-23 has greater throw-weight, carries more warheads (10 versus 7), and is more accurate than the SS-N-18, which is currently carried on DELTA III SSBNs. The Soviets will probably begin flight-testing a modified version of the SS-N-23 early in the 1990s. The new version of the SS-N-23 will be more accurate and possess greater throw-weight than its predecessor. DELTA I AND II SSBNs continue to conduct strategic patrols carrying 4,900 nautical mile (9100 kilometer) range SS-N-8 SLBMs, and the DELTA-IV class remains in production.

Since 1978, the Soviets have dismantled the launchers on a number of YANKEE I SSBNs, removing them from the strategic force to stay within the 62 modern SSBN/950 SLBM limits established by the SALT I Interim Agreement in 1972. Some YANKEEs have been reconfigured as long-range cruise missile or experimental trials submarines. The remaining YANKEE SSBNs have been assigned theater patrols with targets on the Eurasian landmass.

To enhance communications reliability, the Soviets have built an extremely low frequency (ELF) communications system that will enable them to contact SSBNs under most operating

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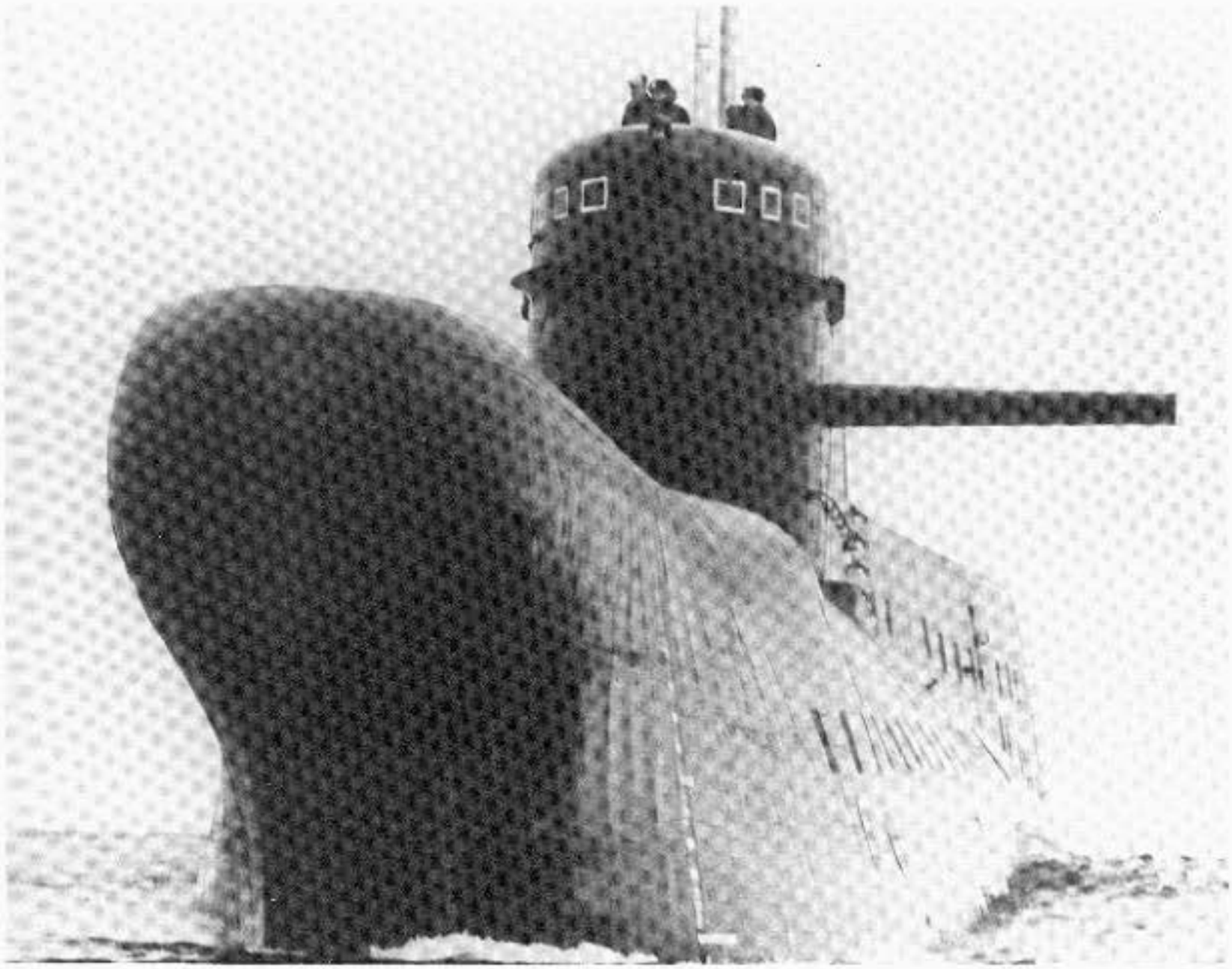

The INDIA class salvage and rescue submarines carry two submersibles.

conditions. Additionally, they have deployed a specially-equipped BEAR airframe, the BEAR J, that can perform a similar mission using VLF communications.

Research Submarines

BELUGA, UNIFORM and X-RAY are special purpose submarine classes built in the 1980s. Along with converted HOTEL, ECHO II, and YANKEE class submarines and several older diesel submarines, it appears that they are intended for testing new systems or operational techniques.

In summary, through an unwavering commitment to submarine development, the Soviet leadership has constructed a large, versatile, modern force capable of conducting a wide range of naval warfare operations. Moreover, newer submarine classes are showing major design improvements over their predecessors and are narrowing the technological lead long held by the West. This demonstrated capability to translate state-of-the-art submarine research into production is a clear indication that the USSR will continue its effort to put increasing technological pressure on the West in the years ahead.

D. Naval Aviation

Soviet Naval Aviation (SNA) consists of regiments of strike, reconnaissance, fighter, ASW, and support aircraft assigned to each of the four fleets under an aviation officer who reports directly to the fleet commander.

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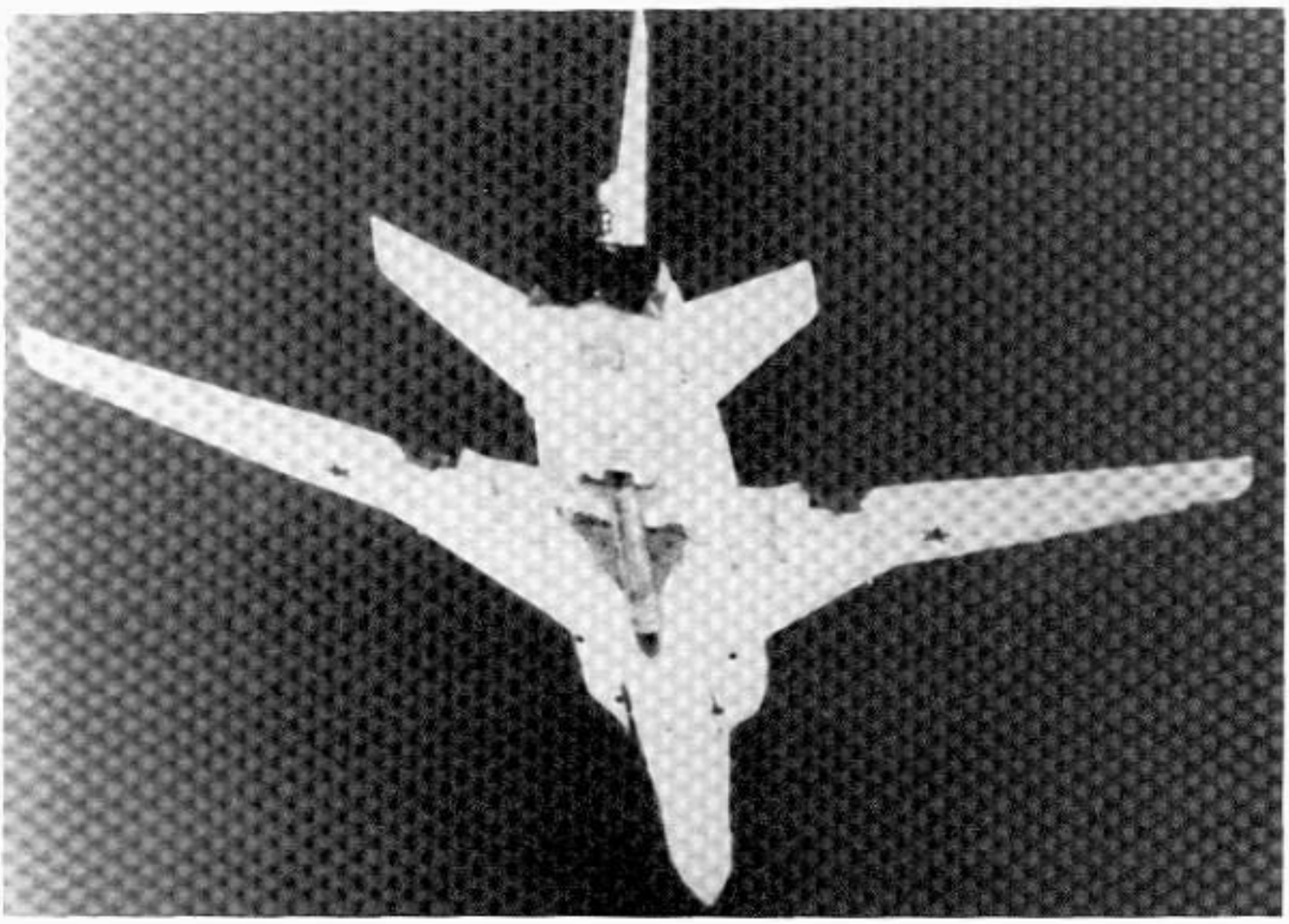
Although its emphasis on sea-based aircraft development is increasing, Soviet Naval Aviation will remain primarily a land-based force. Numbering nearly 2,400 aircraft, over 95 percent of which are land-based, SNA alone is larger than most of the national air forces in the world today. Since the mid-1950s, when the force was first equipped with missile-carrying jet bombers, weapon systems and tactics associated with its principal antiship strike mission have been progressively upgraded. The Tupolev-designed variable geometry-wing BACKFIRE bomber entered the SNA inventory in 1974 and is currently deployed in all four fleets. The BACKFIRE can carry antiship missiles, bombs, or mines and exhibits marked advances in performance, nearly doubling the combat radius of its BADGER and BLINDER predecessors. In 1986, the improved BACKFIRE C model became operational and joined the SNA inventory.

A major addition to Soviet Naval Aviation has been the transfer since 1989 of over 670 first-line land-based strike aircraft from Soviet Frontal Aviation subordination. Nor are these current-production Su-24 FENCER, Su-25 FROGFOOT, Su-22 FITTER, Su-27 FLANKER, MiG-23 FLOGGER, and MiG-29 FULCRUM aircraft merely subordinated to SNA; they have been integrated into its operations.

ASW is an important mission for SNA. An ASW variant of the Tu-95 BEAR turboprop bomber, designated the BEAR F and referred to by the Soviets as the Tu-142, was introduced in 1970. With a 3400 nautical mile (6000 kilometer) radius and a sophisticated sensor capability, it enables the Soviets to extend the range and quality of their ASW searches. The BEAR F has been continuously updated



Bottom view of a Soviet Tupolev BACKFIRE swing-wing bomber aircraft with a fuselage-mounted AS-4 air-to-surface missile.

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IL-38 MAY aircraft have frequently been deployed to bases overseas from which they conduct surveillance and ASW operations.

with new sensors, weapons, and command and control systems. For coastal and intermediate range ASW, SNA employs the BE-12 MAIL amphibian and land-based Il-38 MAY. To replace the MAIL, and later the MAY, the A-40 ALBATROS jet-powered amphibian—the largest amphibian ever built—is being developed. For shipboard applications, the HELIX ASW helicopter became operational in 1980. Now widely deployed in the Soviet fleets, the HELIX has significantly greater range, speed, and payload than its HORMONE predecessor, yet fits within the same shipboard stowage modules.

As Soviet naval air capabilities grow both with resubordination of former Air Force units and with the deliveries of new aircraft especially built or modified to SNA requirements, the Navy's contribution to national air defense will also increase, particularly with the addition of the new aircraft carriers. Naval units will extend the protective air defense umbrella hundreds of miles out to sea, increasing warning time of impending attack and offering an additional layer of defense against strategic bombers and land-attack cruise missiles.

Antiship Strike

The major strike aircraft in Soviet Naval Aviation are BACKFIRE twin-jet supersonic missile bombers, older, twin-jet BADGER aircraft, and Su-24 FENCER, swing-wing fighter-bombers. These platforms are fitted to carry one or two of several types of antiship cruise missiles with "stand-off" ranges varying from 55 to over 250 nautical miles (110-450 kilometers). These missiles have variable flight paths and differing homing techniques to help them penetrate ship defenses. All are assessed

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to carry a 450 to 900 kg (1,000 to 2,000 lbs) high explosive or nuclear warhead.

The BACKFIRE carries AS-4 KITCHEN stand-off missiles and continues to replace the BADGER in strike squadrons. The Navy is projected to have about 11 regiments (20 aircraft each) of BACKFIREs before production ends in the late 1990s. These bombers present a formidable threat to Western surface forces such as aircraft carrier or amphibious task groups.

KIEV class aircraft carriers, with their FORGER aircraft, give the SNA an additional, although very limited, dimension of antiship strike. The FORGER can be fitted with short-range air-to-surface missiles, rockets, or bombs for use against lightly defended ship or shore targets. The new Yak-41 V/STOL currently in development is expected to replace the FORGER.

SNA's FITTER C and FENCER fighter/bombers are assigned to the Baltic Fleet, primarily to provide antiship strike and close air support to amphibious operations. Additional FITTERs are assigned to augment the Pacific Fleet as required and the Su-25 FROGFOOT ground attack aircraft has recently entered SNA service in several fleet areas as well.

In addition to SNA aircraft armed with antiship missiles, BACKFIRE, BEAR, BLINDER, and BADGER bombers of the Soviet Air Force can also be used for attacks against shipping. These aircraft regularly participate in naval exercises. Most can be refueled in flight by a tanker fleet of over 20 specially fitted naval BADGERS or by Soviet Air Force tanker assets.

The aircraft carrier KIEV, displacing over 40,000 tons, has the potential for antisubmarine warfare, fleet air defense, reconnaissance, antiship strike, and close air support operations. Note the gun, missile, and rocket armament on the bow, and the angled flight deck.

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The HELIX A is a replacement for the HORMONE A antisubmarine helicopter and represents Soviet "state of the art" technology in both airframe and ASW systems.

The Soviets are currently developing a number of new technology air-to-surface missiles, both antiship and land-attack variants, capable of being launched from a variety of threat platforms.

Antisubmarine

The Soviet Navy has a large force of fixed-wing aircraft configured for submarine detection and attack, including about 60 ASW-configured BEAR F aircraft, approximately 40 aged MAY turbo-prop aircraft that resemble the US P-3 ORION, and about 100 even older MAIL twin-engine amphibian aircraft. All operate from Soviet home bases or overseas land facilities to search ocean areas for foreign submarines. They carry a variety of ASW detection equipment as well as depth bombs and torpedoes. A new amphibian, designated by the Soviets as the A-40 AL'BATROS, flew in 1989. While optimized for duty as a search and rescue platform, it is also expected to replace aging MAIL and MAY aircraft for ASW purposes.

An increasing number of antisubmarine helicopters are also being flown by the Soviet Navy as more and more new naval ships are completed that are helicopter-capable. The HELIX A, introduced in 1980, joined the HORMONE A, the Soviet Navy's first widely-deployed shipborne ASW helicopter. Both are twin turboshaft helicopters with two counter-rotating rotors and are very similar in appearance. All Soviet warships of destroyer size or larger built during the last 15 years can carry at least one helicopter.

An ASW version of the Mi-8 HIP helicopter, named the Mi-14 HAZE A, has also been in the SNA inventory since 1974 as a replacement for the obsolescent shore-based HOUND B ASW helicopter. The shorebased HAZE A operates in all four fleets and is sold abroad to Soviet allies and clients. One variant is used for mine countermeasures operations.

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Reconnaissance and Surveillance

SNA aircraft are also employed for vital maritime reconnaissance missions. Intermediate-range MAY aircraft were regularly deployed to South Yemen and periodically to Libya and Syria during the 1980s, primarily to conduct maritime surveillance operations. BEAR D and F long-range aircraft have conducted regular deployments to staging bases in Cuba, and are continuously deployed to Vietnam. Operations from these bases provide the Soviets not only with military intelligence, but also with detailed information on ship movements along critical Western sea lines of communication. Additionally, Il-20 COOT aircraft, operating from Soviet bases, are employed on electronic warfare duties.

Support

Soviet Naval Aviation operates over 400 transports, training and utility aircraft of various types. Although basic and advanced training are provided by the Soviet Air Force, maritime operational training is accomplished within the Navy. The SNA retains a number of transports to provide a logistics capability better to meet the Navy's priority needs.

Sea-based Aircraft

The aircraft carriers of the KIEV class operate either the HORMONE A or HELIX A for ASW and HORMONE B for missile targeting, as well as a utility helicopter (HORMONE C or HELIX D) for miscellaneous missions, including search and rescue. An amphibious assault version of HELIX, HELIX B, entered

A Yak-38 FORGER aircraft hovers above the flight deck of the KIEV class carrier NOVOROSSIYSK.

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An Su-27 FLANKER comes in for an arrested landing aboard the Soviet carrier TBILISI (now KUZNETSOV) during trials in the Black Sea.

service in 1986 aboard IVAN ROGOV class amphibious warfare ships. After extensive experimental work in fixed-wing VTOL technology, the Soviets developed the Yak-38 FORGER series fighter-type aircraft. Both the single-seat (A model) and the two-seat operational trainer (B model) versions are carried on KIEV class ships. This aircraft has approximately the same speed as the US Marine Corps AV-8 HARRIER V/STOL, but it does not have comparable range, maneuvering capabilities, weapons capacity, or avionics systems. A new, significantly more capable V/STOL aircraft, the Yak-41 FREESTYLE, is also under development for use on the KIEV class and potentially on the KUZNETSOV class. Although the Soviets have worked for many years at the Saki Naval Airfield in the Crimea to develop catapults for use on aircraft carriers, the first two carriers employ "ski-jump" ramps at the bow to launch aircraft. It is still believed, however, that the third ship and any later carriers will have the more efficient and safer steam catapults. To date, the carrier KUZNETSOV has operated with Su-27K FLANKER B, and MiG-29K FULCRUM fighters, Su-25 FROGFOOT 2-seat trainers, and Yak-38 FORGER VTOL fighter-bombers in perfecting the skills and techniques of effectively employing high-performance at sea. The limited performance of the FORGER makes it of only modest utility, while the only FROGFOOT variant associated with the carrier is not combat-equipped. The FLANKER and FULCRUM, however, are the latest in Soviet first-line equipment, and the navalized, folding-wing variants produced for the Soviet Navy should prove formidable in the air intercept roles as well as in maritime attack.

E. Amphibious Forces and Naval Infantry

Since its re-establishment in the early 1960s, the Soviet Naval Infantry has received con-

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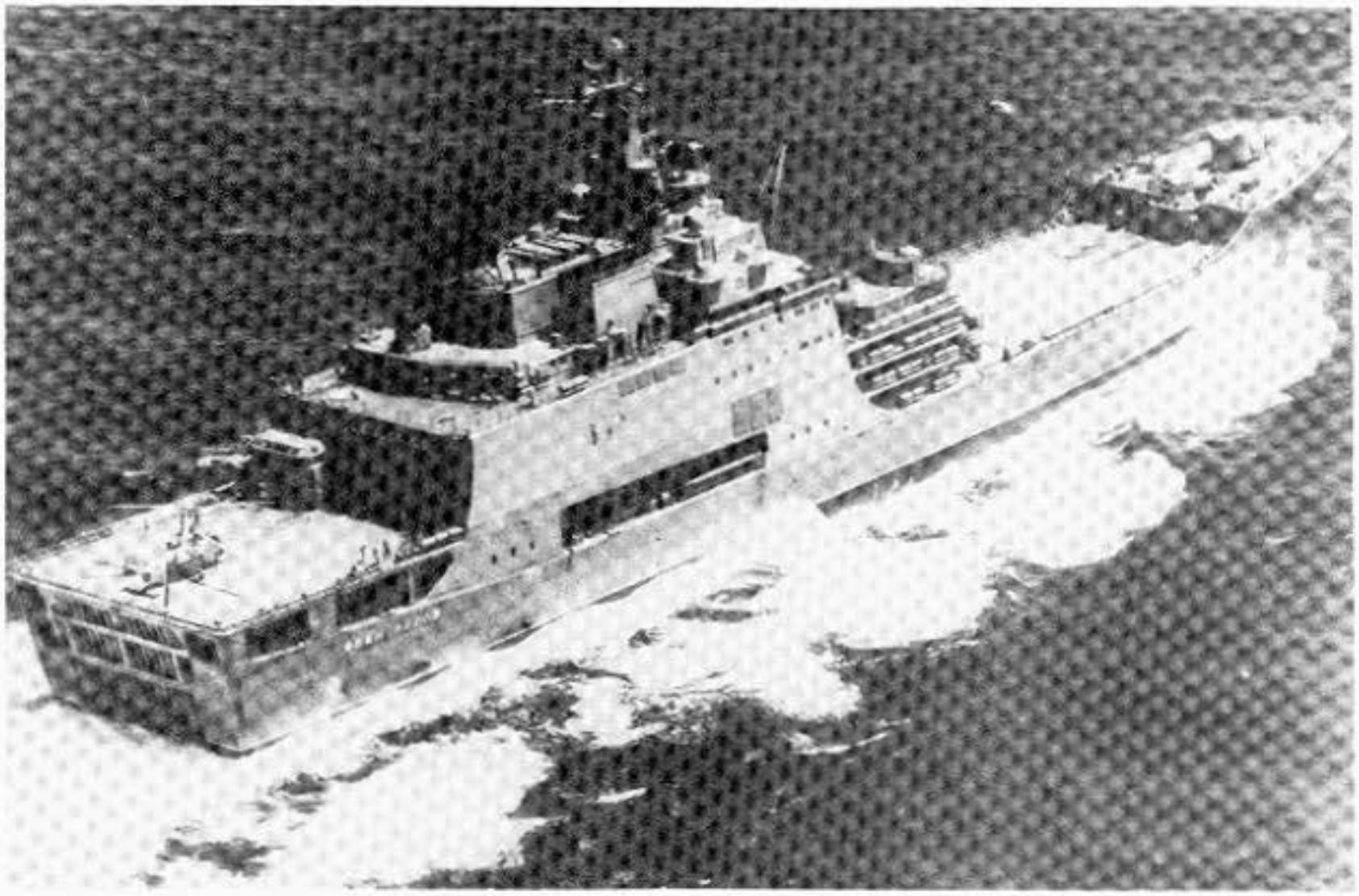
siderable publicity in the Soviet press and is now widely regarded as an elite combat force. Today there are about 12,600 Soviet Naval Infantrymen, mostly allocated to the four fleets. (The US Marine Corps, by comparison, numbers about 197,000 men and women in all branches, including aviation.) There is one Naval Infantry Brigade in each of the Western fleets and a full division in the Pacific Ocean Fleet. Soviet amphibious forces exercise regularly in their respective fleet areas and have routinely deployed to the Mediterranian Sea and Indian Ocean.

The mission of the Soviet Naval Infantry (SNI), its organization, and its equipment differ greatly from those of the US Marine Corps. The SNI is not designed to conduct extensive independent operations. Instead, it is limited to spearheading amphibious landings for other ground forces, holding captured beachheads against counterattack, carrying out "prolonged" river crossings, and defending naval bases. Although described as "light" infantry, the SNI is highly mechanized and is equipped with tracked and wheeled amphibious vehicles, including tanks and armored personnel carriers. Unlike the USMC, it does not have its own organic air arm.

During 1990, four Ground Forces Motorized Rifle Divisions (MRDs), one in each fleet area, were transferred to the subordination of the Soviet Navy. The Soviets have said, however, that they intend fully to integrate the MRDs into the naval command structure and that they will be integrated with the SNI—in effect quintupling the number of combat troops in Soviet Navy service. Although the MRDs are expected to continue in a coastal defense role, they would be available for amphibious warfare employment, and most of their current equipment is compatible with Soviet amphibious warfare ships.



The IVAN ROGOV class LPD provides the Soviet Navy with a significant amphibious capability. The ship can carry air-cushion vehicles or conventional landing craft in its floodable well deck and, using its bow door and ramp, can offload its cargo over the beach. It also has a hanger and two helo landing decks.

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This artist's concept of Soviet UTKA class wing-in-ground effect vehicle shows it firing one of its six surface-to-surface missiles. WIG aircraft are designed to cruise efficiently at altitudes of less than 15 meters, riding on the cushion of air formed between the wing and the ground during low altitude flight. WIGs are capable of heavy lift over long distances, and some units, such as the ORLAN class, are especially well suited for amphibious operations.

Amphibious lift for the SNI is provided primarily by the three IVAN ROGOV class LPDs, each capable of transporting about 525 men and 1600 tons of equipment, by LSTs of the ALLIGATOR and ROPUCHA classes, and by the remaining POLNOCNY class LSMs. The Soviet Navy is also the world's largest operator of military air-cushion vehicles, employing the GUS, LEBED, TSAPLYA, AIST, and POMORNIK class landing craft. POMORNIK, the largest, has a 21 meter (70 feet) beam and 350 ton displacement, and is the largest military air-cushion vehicle in active service. At 57 meters (190 feet) in length, POMORNIK is 10 meters (33 feet) longer than the AIST class air-cushion craft. The POMORNIK is also faster and has greater lift capacity than the AIST, and its 122mm rocket launchers and 30mm gatling guns improve direct fire support. The production of the POMORNIK class illustrates the Soviet Navy's concerted effort to introduce new ship types into the fleet, although it is being built only in small numbers. All of these vehicles provide the SNI with a high-speed, across-the-beach assault capability.

The Soviet naval air R&D effort has pursued wing-in-ground effect (WIG) technology for amphibious vehicles. WIGs are designed to cruise efficiently at altitudes of fewer than 15 meters (50 feet), riding on the cushion of air formed between the wing and the ground during low-altitude flight. This factor greatly increase the craft's ability to carry heavy loads over long distances, especially over water, making it well suited for amphibious warfare.

Two naval WIG designs have been under development. The smaller ORLAN class is designed for amphibious operations and is able

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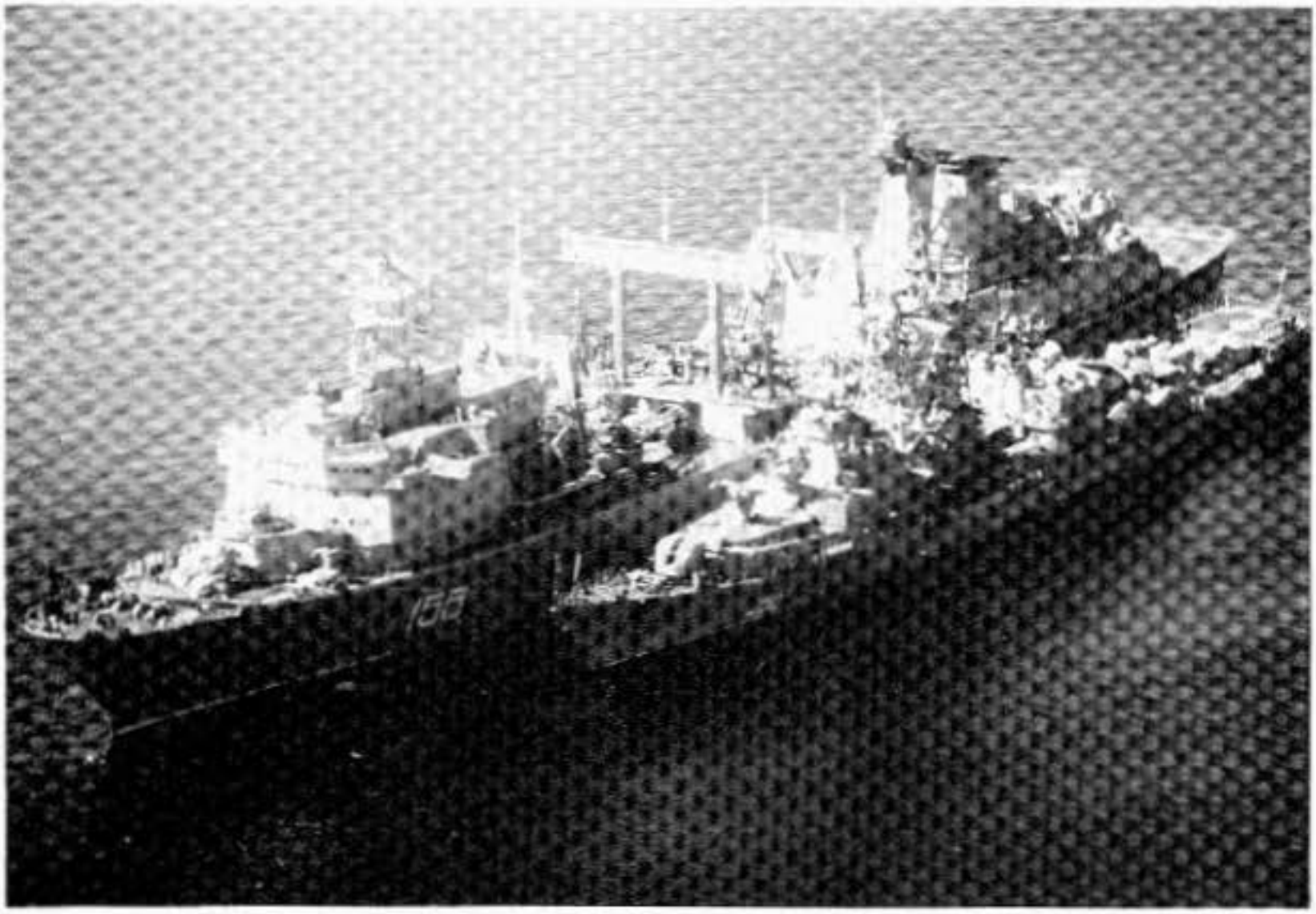

The Soviet oiler BEREZINA with a MOD KASHIN guided-missile destroyer alongside during a replenishment operation in the Mediterranean Sea.

to carry about 200 troops over 500 nautical miles (925 kilometers). The larger version, the UTKA, appears to have greater range and, with six surface-to-surface missile launch tubes, has a primary mission of coastal antiship warfare.

Although small by comparison to the US Marine Corps, the Soviet Naval Infantry was the sixth largest marine force in the world and, as the MRDs are assimilated, will rise to second place. The potential power of even a few hundred Soviet Naval Infantrymen afloat in any given area during a crisis provides the USSR with a valuable political-military tool. The Soviet ability to conduct an amphibious assault is limited to landings within the range of land-based air power, however, but the development of sea-based tactical air power, may eventually provide the SNI with a power projection potential.

F. AUXILIARIES

The Soviet Navy is supported by about 740 auxiliaries, performing a myriad of functions. Many of the naval auxiliaries are engaged in activities which in other countries would be undertaken by a coast guard or other, non-military agencies, including survey work and tending navigation aids. The vast majority of Soviet Navy Auxiliary Service and Salvage Service ships are manned entirely or in part by civilians.

One area in which the Soviets have lagged behind Western navies is in underway replenishment. The Soviets provide a preponderance of replenishment and routine maintenance to their deployed units in open anchorages in international waters. Although such activities appear entirely adequate during

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peacetime operations, this mode of support would be highly vulnerable to attack in times of conflict. Today, the Soviet Navy employs about 50 replenishment ships, some 27 of which are capable of alongside refueling. The six BORIS CHILIKIN class AORs and the single BEREZINA AOR are the most capable of these ships, but only two very small underway replenishment ships have been delivered to the Soviet Navy since 1979. The Soviets still use the astern method of refueling extensively, requiring the participants to proceed at relatively slow speeds or to remain dead in the water. The Soviets also rely on their merchant marine to provide a substantial percentage of logistic support at sea.

The BEREZINA displaces about 37,000 tons (full load) and is a multipurpose replenishment ship similar in size, appearance, and capabilities to the U.S. Navy's WICHITA class AOR, although it carries only about half as much fuel. BEREZINA is the Soviet Navy's only logistic support ship armed with guns and missiles and is designed to support out-of-area operations. Besides various liquids, this ship can also transfer solid stores, including missiles, and has a helicopter hangar.

Other auxiliaries which regularly deploy are material and fleet support ship types, such as: large submarine tenders (AS), which also serve the fleet as command and general maintenance ships; missile tenders (AEM); stores ships (AF); repair ships (AR); and ocean tugs (ATA). In addition to providing direct support to the fleet, auxiliaries of the Soviet Navy are operating in virtually every corner of the world. These include such types as intelligence collectors, survey and research vessels, and space-event support ships.

The Soviets also use auxiliaries extensively for fleet maintenance and support in many of their home operating bases in lieu of developing more widespread shore facilities. During 1991, Soviet naval replenishment ships also began to be employed to support the civilian fishing fleet.

The Soviets have relied to a considerable extent on their Warsaw Pact allies, particularly Poland and East Germany, to construct naval auxiliaries, such as the four hospital ships built in Poland. Finland, Hungary, Romania, and Sweden have also built auxiliaries that are currently in service in the Soviet Navy.

G. Surveillance, Intelligence, and Communications

The Soviet Navy's increased operational capabilities have been matched by quantitative and qualitative advances in related surveillance, intelligence, and communications activities. The best known manifestation of this aspect of Soviet naval activity has been the extensive operations of passive intelligence gathering ships, designated AGIs. They are clearly identifiable as naval intelligence ships, manned by naval personnel, fly the Soviet naval ensign, and are easily distinguished from fishing or merchant vessels by their varied and unusual electronic antennas. Some of the older AGIs are modified trawlers and survey or research ships, while a number are built-to-order intelligence collection vessels. The first of a new large AGI design, the BAL'ZAM class, joined the Soviet fleet in 1980 and displaces about 5,000 tons. A number of other smaller 1,200 ton AL'PINIST class AGIs have also joined the fleet in the past few years. The most recent AGI construction program produced seven units of the 3,500-ton VISHNAYA class during the late 1980s. The largest intelligence collector is the nuclear-powered, 30,000-ton-plus SSV-33, dubbed the KAPUSTA class by NATO; the ship transitted to the Pacific after completion in 1989 and appears to have been intended to collect against U.S. anti-ballistic missile research and developments activities as well as serving in a space event support role and, possibly, as a wartime command platform.

Soviet AGIs have normally patroled near US missile submarine bases at Holy Loch, Scotland; Kings Bay, Georgia; and Bangor, Washington. An AGI regularly operates off the southeastern coast of the United States, which

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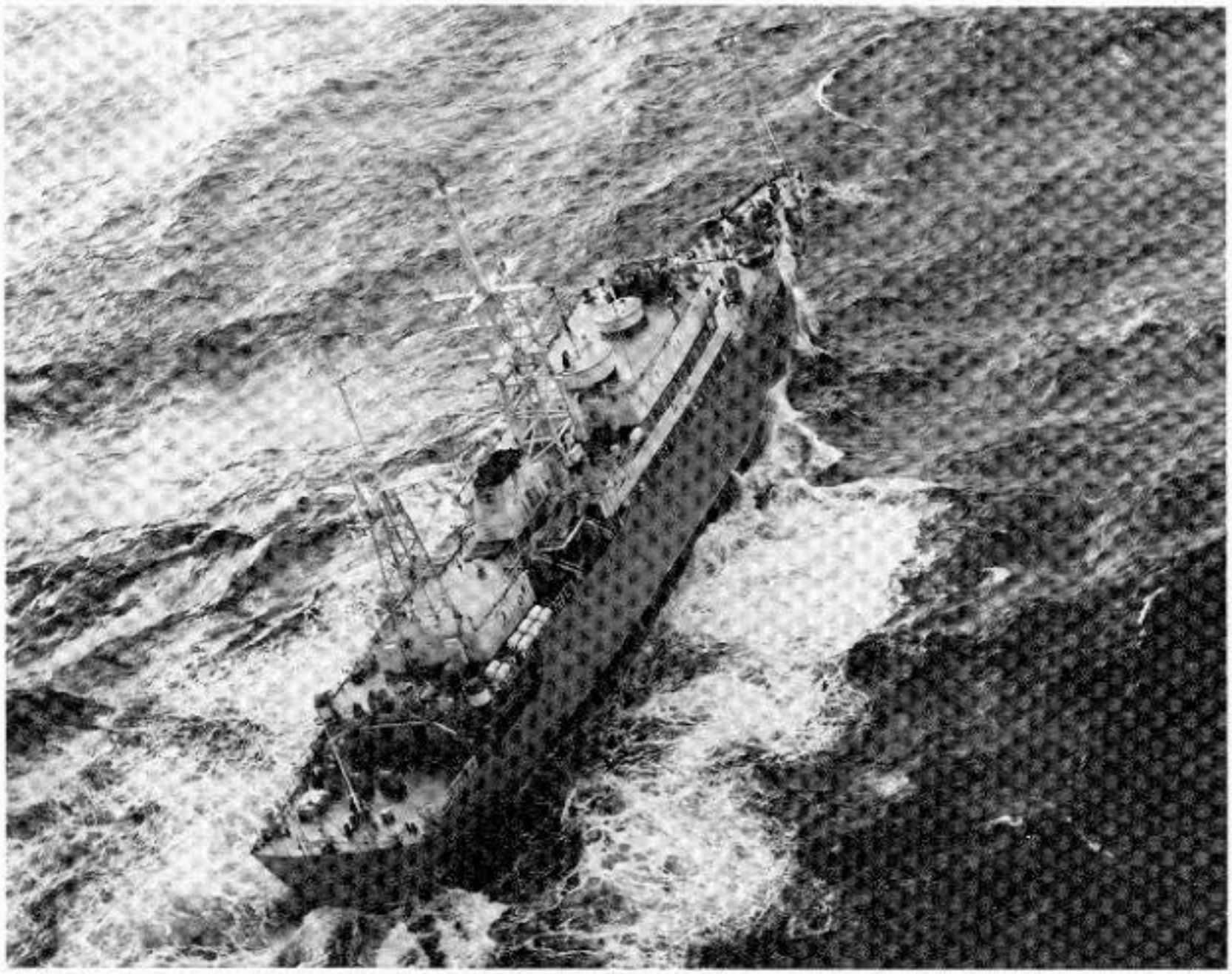

The Soviet Navy retains a large fleet of passive intelligence ships or "AGI's" such as this VISHNAYA class unit. Although earlier AGI classes were adapted from fishing trawler hulls, they are easily distinguished by their unusual and varied electronic antennas, and most carry pendant numbers in the SSV-series (SSV = Sudno Svyazi "Communications Vessel").

permits surveillance of the submarine bases at Charleston, South Carolina and Kings Bay, Georgia; the aircraft carrier operating areas off Virginia and Florida; or the missile activity at Cape Canaveral. AGIs regularly shadow NATO and US naval forces during exercises and are usually present at most international confrontations involving Soviet interests.

The Soviets have armed most of their AGIs with small surface-to-air missiles, and a few have been fitted with guns. The KAPUSTA is equipped with three sizes of guns as well as small surface-to-air missiles.

In addition to AGIs, the Soviet Navy, like other major navies, has employed surface warships, submarines, and aircraft for intelligence collection. Soviet merchant vessels and civilian-subordinated research ships are also assumed to be used for such purposes from time to time.

The Soviet Navy also uses advanced satellite surveillance systems. Recent naval-associated surveillance satellites have improved collection rates and processing capabilities. These include Electronic Intelligence (ELINT) satellites, Electronic Ocean Reconnaissance Satellites (EORSATs), that can identify electronic signals from Western warships to provide location information; Radar Ocean Reconnaissance Satellites (RORSATs), that locate vessels on the ocean surface; and photographic satellites. The ELINT and radar satellites can

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provide near-real-time detection and possibly some weapon guidance capability. Future radar satellites will probably use improved nuclear power sources and both low and high resolution, synthetic aperture radars.

Satellite surveillance systems are used extensively by the Soviet armed forces to monitor crisis situations. Dedicated Soviet reconnaissance satellites were orbited during the October 1973 Arab-Israeli war and during the Persian Gulf, Afghan, Falklands, and Lebanon conflicts. In addition, the Soviets are believed to have been using the MIR manned space station for military surveillance applications.

Satellites are also used by the Soviet Navy for long-range communications and navigation. A number of Soviet warships and support ships have satellite communications equipment onboard, including KIEV class aircraft carriers, KIROV class cruisers, and two DON class submarine tenders employed as fleet flagships. The newest constellation of satellites, the GLONASS system, significantly improves position-fix accuracy, an important input to targeting solutions.

The Soviet Navy has developed advanced conventional communication equipment for the tactical coordination of strike forces. For example, Soviet surface missile ships, missile-armed submarines, and aircraft are able to exchange targeting information and coordinate strikes against surface ship targets.

During large-scale maneuvers, the Soviets have been observed simulating several coordinated attacks against surface ships. In some phases of the multi-ocean exercises of the 1970s, naval bombers in both the North Atlantic and Western Pacific Oceans flew simulated strike missions and attacked warships in the different oceans at the same time.

Open Soviet literature describing the major fleet exercise "OKEAN 1970" tells of the navy commander-in-chief being able to communicate with major units anywhere in the world almost instantly; receive information that an order had been executed by a ship in a "matter of minutes"; have available in real-time the status of air, surface, and underwater situations, including friendly and enemy orders of battle; and monitor "how the (ship) commander conducts a search and accurately judges the effectiveness of his actions." The Soviets continue to progress in the development of sophisticated electronic data links and voice communications nets. Their command, control, and communications intelligence nets connect air, surface, and subsurface forces and feature built-in survivability and redundancy.

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Soviet sailors during a port visit to Boston in 1975. A new program of port visit exchanges between the US and USSR began in 1989.

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SECTION 5. SOVIET NAVAL PERSONNEL

However technically perfect the Navy may be, man is always the basis of naval forces, the ruler of all weapons of warfare.

–S. G. GORSHKOV (1910-1988), Admiral of the Fleet of the Soviet Union

Soviet seapower hinges upon more than weapons platforms, operational deployment patterns, and strategic designs. The human element – the attributes of the individual sailor and the organizational framework within which he must labor – is an equally essential component of the overall maritime might of the USSR.

In assessing the abilities and mindset of the Soviet naval officer or enlisted man, it is important to bear in mind his unique vantage point and to avoid "mirror-imaging" the American or Western experience. What determines his thoughts, his motivation to learn or fight, is quite different from what drives his American counterpart. In short, an important part of understanding Soviet naval developments revolves around the Soviet sailor, both as an individual and as a member of a crew.

This chapter discusses the traditional Soviet approach to personnel issues such as the Soviet system of conscription and pre-induction training; the background, education, training, and typical career path of Soviet enlisted men, warrant officers, and officers; and, the composition and structure of the Soviet Navy High Command. Some of the Soviet Navy's persistent problems with combat readiness and morale, which result from these policies, are also discussed and some new approaches to these problems are appraised.

A. Soviet Naval Manpower, Conscription, and Pre-Induction Training

Soviet Naval Manpower

When ranked by the number of active-duty personnel, the Soviet Navy is second in size only to the United States, numbering about 396,000 in mid-1991. The transfer of four Motorized Rifle Divisions and nearly 670 combat aircraft to the Soviet Navy since 1989 brought additional manpower, but the overall number is expected to continue to decline over the next several years as older, manpower-intensive warships are phased out. The Soviets themselves admitted to having only 437,300 personnel in March of 1989, but it is not known how the total was arrived at. There are also a great many civilians working for the Soviet Navy, including the well over 20,000 men and women who operate most of the seagoing logistics support ships and yard and service craft.

In May 1991, about 124,000 men, or more than one in three sailors on active duty, served aboard ship, and another 75,000 or so were attached to Soviet Naval Aviation. In addition, there are an estimated 17,000 Naval Infantry (marines) and 23,000 personnel assigned to coastal defense, communications, and observation forces, including the four Motorized Rifle Divisions transferred to the Soviet Navy in 1990. A large shore support establishment comprises some 109,000 men and women, and there are approximately 17,000 personnel in training.

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Although Soviet Navy personnel numbered about 455,000 in 1989, demographic trends and fundamental economic reforms have led the USSR leadership to announce a reduction in future force levels.

The KGB maintains a large maritime border guard—25,000 or more strong—principally to police emigration and customs, and the MVD and other internal security organizations operate port security and riverine patrol forces.

Although the number of men and women serving on active duty in the Soviet Navy had remained steady throughout the 1980s, demographic trends and fundamental economic reforms in the USSR, including the disposal of large numbers of older, manpower-intensive ships, will lead to a reduction of naval personnel in the 1990s. While a decline in the number of 18-year-old males in the USSR has finally bottomed out, the number of Russians and other Slavs continues to decrease relative to non-Slavic, principally Central Asian, peoples. The non-Slavic nationalities are considered by most ethnic Russians to be somewhat incompetent and untrustworthy, not the least because of their inability or unwillingness to speak and read Russian.

While other Soviet forces are expected to be greatly affected, the Navy, because it is a smaller, more homogeneous group, is less likely than the other armed forces to suffer from

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shifting demographics. But the Navy is no less likely than the other services to be spared from major policy shifts under the Soviet central government, which needs military cutbacks in order to help finance economic reforms. Undeniably, there is still much room for trimming the massive Soviet conventional forces.

Conscription and Pre-Induction Training

Military service in the Soviet Union is mandatory for all males reaching the age of 18, unless a medical discharge or educational deferment is granted. Under the 1967 Universal Military Service law, which reduced the length of required service by one year, young men entering the Navy had to serve two years in shore commands or three years aboard ship. The longer length of service for those at sea reflects the more specialized training required for shipboard personnel. In 1991, the seagoing conscription period was reduced to two years, which will adversely affect readiness and training on Soviet Navy ships.

Although Soviet law allows women to be drafted in peacetime if they have medical or other special training, and in wartime if they are needed to perform auxiliary or special duty, few women currently serve in the military. Physically qualified women above age 18 may volunteer for the enlisted ranks, provided they have a minimum of eight years of education, are single, and have no children. Similarly, women with advanced degrees or backgrounds in military-related civilian specialties may apply to become officers or warrant officers. But career opportunities for women in the military are sharply restricted to select non-combat ratings—primarily medical, legal, administrative, and communications positions. Female officers, for example, are not allowed to attend higher naval schools, a virtual prerequisite for promotion into the senior ranks, and none serve in seagoing billets.

Preparation for military service in the USSR begins long before youth are conscripted out of high school. In fact, the fundamental philosophical principles of the military are inculcated into a child from the time he begins pre-school. In response to education reforms passed in 1984, Soviet children now begin their formal schooling at age 6 instead of 7 and embark upon an 11- rather than 10-year program of state education. Moreover, Soviet children aged 6 through 14 are pressured to participate in extracurricular organizations (the Little Octobrists and Young Pioneers) which, while superficially similar to the Cub Scouts or Boy Scouts, focus on political indoctrination and paramilitary training.

A more deliberate and undiluted program of pre-induction military training commences at the end of nine years of schooling (normally at age 15). Coincident with a child's high school or vocational education, a Soviet youth at that time undertakes 140 hours of basic military and weapons instruction, spread out over two years.

High school-aged children and young men and women aspiring to success in Soviet society join the *Komsomol,* or Young Communist League, which further directs a youth's political and civic sensibilities. Finally, youth may take advantage of one of the many clubs run by DOSAAF, the Voluntary Society of Cooperation with the Army, Aviation, and the Fleet. DOSAAF is a defense-patriotic organization offering training in paramilitary activities such as radio operating, diving, mechanics, and parachuting; its popularity is derived in part from its predominant control over state recreational and athletic facilities. While this system of preparing youth for military service has worked well in the past, it has been affected by the myriad of changes ongoing in the Soviet Union, and its effectiveness has been greatly impaired.

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Because military service in the Soviet Union is mandatory for all males upon reaching age 18, a large portion of the Soviet Navy's enlisted corps is young with nearly all conscripts below the age of 21.

Despite the colossal, centralized effort aimed at preparing Soviet youth for military service, the system suffers from serious deficiencies, as even the Soviet press indicates. Perhaps it is not surprising that a country encompassing about 60 nationalities and speaking some 100 official languages is beset by widespread illiteracy in the Russian language, racial discrimination, anti-semitism, xenophobia, and technical backwardness. Soviet military officials compensate for these shortfalls by several methods, including: (1) preserving a predominantly Slavic officer corps; (2) in general relegating non-Slavic, poor Russian-speaking personnel groups to non-combat and unessential positions; and (3) emphasizing strict, repetitive training in basic skills. For all the problems incurred by the state apparatus for pre-induction training, there is little doubt that its universal indoctrination acts as a cohesive force in the USSR and prepares Soviet youth for mandatory military service.

B. Soviet Navy Enlisted Men, Warrant Officers, and Officers

Enlisted Personnel

Between two-thirds and three-fourths of the men and women on active duty serve in the enlisted ranks, where their privileges are next to non-existent. For the most part conscripted, they earn meager wages, endure miserable living conditions and an ingrained system of vicious hazing imposed by only slightly more senior conscripts, rarely receive leave, and, upon completion of their active-duty requirements, are transferred into the reserves until they reach age 50. Although there is some disagreement as to whether the caliber of Soviet conscripts tends to be higher for the navy than for other services, it is incontestable that Soviet naval personnel form a more inbred society, one that has fewer non-Slavic recruits who speak little or no Russian than three of the four other arms of the military (Ground Forces, Air Defense, and Air Force).

Irrespective of his ability, the average sailor in the Soviet Navy is a short-termer, desiring little more than to complete his duration of service without incident. Prior to the reduction in naval conscript service time, each year as many as 100,000 men were inducted into the Navy, indicative of a turnover rate that taxed training programs to their limits. (This also meant that every six months about 17 percent of experienced sailors were replaced by recruits; under the 1991 reduction in conscripted service time, over a third of the crew will be replaced every six months, exacerbating an already difficult situation). Navy inductees undergo a nine-week basic training period, after which about 75 percent are selected for specialist training (roughly six months of predominantly theoretical and rote instruction in a narrow specialty or piece of equipment). The other 25 percent of the conscripts are sent directly to fleet or shore commands, where they are typically assigned to billets for the unskilled.

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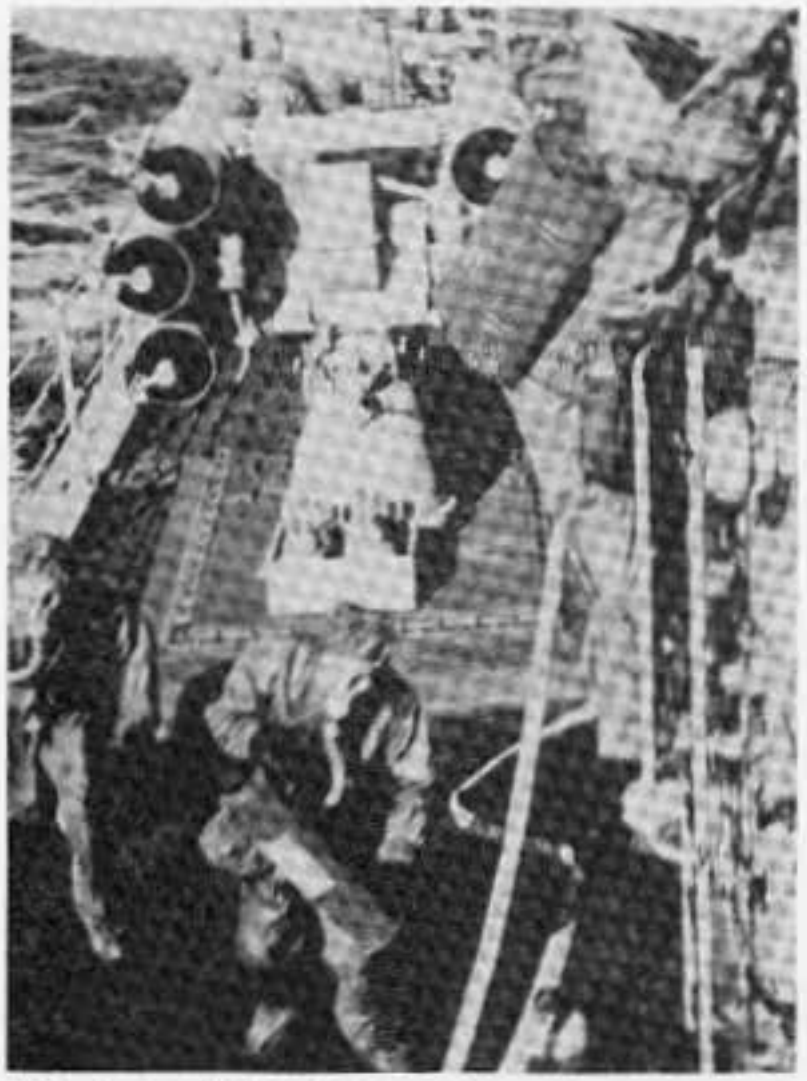
Sailors receive the majority of their training on the job, after they have reported aboard ship. Primarily under the tutelage of the sailor he will replace. The new recruit begins a four-phase training program designed to make him proficient at his narrow skill. A sailor initially can qualify as a 3rd-class specialist, and with independent study and further experience can advance to a 2nd- or even 1st-class specialist in less than two years. But this rapid advancement infrequently translates into deftly skilled individuals. Indeed, the brisk rate at which conscripts are channeled through the system denies the Soviet Navy the kind of technical expertise commonplace among the US Navy's professional enlisted "bluejackets." Only about five percent of the Soviet conscripts have reenlisted as career sailors.

To meet these challenges, the Soviet leadership is exploring a number of new programs. They have recognized that the operation and maintenance of complex modern equipment requires a level of expertise that cannot be achieved in two years by conscripts and that a professional petty officer corps is needed to provide specialists in some crucial areas.

Perhaps the most revolutionary program is an experiment, scheduled to begin in 1991, which will be carried out in a limited number of surface ships and submarines. The plan is to have volunteers sign a contract with the Defense Ministry for a three-year period. During that time, they will be treated as servicemen on active duty—they will live in barracks and on ships, will discharge all duties required of Soviet sailors and will enjoy all the rights, benefits and advantages granted to seamen, petty officers and their families. There are two main differences, however. First, they will serve three years instead of the two years served by conscripts. Also, after six months of training, they will be paid as extended servicemen with extra allowances for special service conditions (e.g., grade, combat duty hours, remote assignments). Thus, overall monthly pay could be as high as 200 to 380 rubles, compared with conscript pay of only up to 40 rubles per month.



Biological and chemical warfare environments are simulated as an integral part of combat training in the Soviet Navy.

According to Deputy Chief of the General Staff Krivosheyev, the program will provide an opportunity to have "first-class" professionals from among the enlisted men, which equates to a higher level of readiness for the armed forces while the young man who signs the contract lives and serves for three years fully provided for by the State, learns a useful specialty, and then gets an honorable discharge with enough money in his pocket to provide financial freedom during his college years or to use for other opportunities. If the young man decides to stay on as an extended serviceman, he can become an NCO or petty officer, attend

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a service academy to obtain a commission, or take advantage of other opportunities which will be open to him.

If successful, such a program will be expanded to include the other services and could be the first step toward a professional military force. In fact the overall trend appears to be toward "Westernizing" the Soviet Navy, placing more emphasis on ability and merit and less on political reliability. Additionally, incentives such as better training and educational opportunities and improved pay and benefits are intended to attract higher quality personnel and improve retention. While mandatory conscription will probably be retained to ensure manpower requirements are met, it appears the Soviet military, with the Navy in the lead, is moving toward a professional, mostly volunteer, force patterned after the Western model.

On-board training is viewed as the major method of "perfecting skills and knowledge" to maintain a high level of combat readiness. Training at sea revolves around "socialist competition," which entails the achievement of specific goals and objectives set by higher authority and, then "unanimously" subscribed to by the crew under the leadership of the commanding officer and political officer. Some

Soviet sailors relax in their berthing space aboard the SLAVA class cruiser MARSHAL USTINOV.

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objectives and goals are prescribed in terms of the number of men achieving a new or higher class specialization and the number of men rated as outstanding.

Competitive drills and exercises are conducted aboard ship. These involve the usual variety of situations from damage control to simulated or actual firing of weapons. Fleet and inter-fleet exercises involve units competing against each other. All competition is characterized by the great emphasis placed upon obtaining set quantitative goals. This has resulted in a number of abuses. Aside from outright cheating, other abuses involve the setting of unrealistically low goals which are easily achieved, or the more serious problem of "formalism" in which, after the goals are set, promises are made to fulfill them, all the required speeches are made, then the whole competition is just forgotten. A further problem involves drills and exercises conducted in a routine, mechanical manner, thereby lacking realism and constructive value.

Obviously, the true extent to which these problems exist in Soviet training cannot be fully determined, yet, if the reports of the Soviet press can be considered an indication, it would appear that such problems are severe.

In practice, life aboard a Soviet vessel can be an austere experience for the new seaman, who must endure not only the standard rigors of sea duty but also a widespread system of "non-regulation relations" or hazing. Although hazing is reportedly not as rampant as in the Ground Forces, senior conscripts in the Soviet Navy wield unusual power over juniors through the appropriation of food, clothing, and possessions, or through beatings and assignments to undesirable details. While this system is not officially sanctioned at higher levels, it is ignored at lower levels of command because it serves to maintain the system; in particular, the illegal hazing permits officers to distance themselves from the need to mete out harsh discipline.

Pay and living conditions are equally spartan for the Soviet sailor. A fresh recruit receives a mere 10 rubles (roughly $15) per month. In time, he can add a few extra rubles per month for achieving 2nd- or 1st-class specialist or for holding positions of responsibility. The maximum pay for an enlisted man, however, is capped at 40 rubles per month, or about $60. The enlisted sailor, moreover, is refused leave during his first year of service, and then receives no more than 10 days plus traveling time in later terms of service. Furthermore, as a means of maintaining control over Soviet nationalities, conscripts seldom are allowed to be stationed in proximity to their native areas, and it is not uncommon for a sailor to fulfill his conscription obligation without a single visit to see his family. When Soviet ships call at foreign ports, liberty is granted only rarely, for brief periods and always restricted to supervised groups. Recent visits to U.S. and other western ports has proved the exception to past patterns, however, with unusually liberal liberty policies set in probable deference to the cooperative spirit of such ship visit exchanges. Finally, housing—whether at a Soviet naval base or aboard a ship—is characteristically stark, although probably no worse than civilian housing generally is in the USSR.

Warrant Officers

Representing about 10 percent of all Soviet Navy personnel are the warrant officers, or *michmany*, who are above the sailors in both rank and privilege. In Western navies, the backbone of any ship is provided largely by petty officers, or senior enlisted who have become experts in their trade. In the Soviet Navy, however, where few men "enlist" for extended service, the *michman* is the only person capable of assisting officers in the training and dis-

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By Soviet standards, officers such as this Captain 1st Rank receive very generous pay and benefits in comparison to the general Soviet population.

cipline of the conscripts. The *michman* rank was reintroduced in 1971 and has since been modified several times in an attempt to retain the best qualified personnel. With wages starting at about 170 rubles per month, *michmany* are paid more than conscripts, granted up to 45 days of leave per year, and provided better uniforms and living conditions than sailors.

Extra benefits notwithstanding, attracting and retaining qualified warrant officers has been a quixotic process for the Soviet naval leadership. Because they often lack the respect of lower-rated personnel and sense limited potential for advancement, retention among *michmany* is extremely low. On the other hand, the *michmany* who do reenlist are often those not qualified enough to do well in the civilian sector. In a characteristic article in the principal Soviet Navy journal, *Morskoy sbornik (Naval Herald)*, it was stressed that warrant officers need to overcome their unenviable reputation by fighting "against such negative phenomena as egoism, conceit, indifference, and rudeness." So long as the Soviet Navy continues to be a sharply stratified organization where a conscript's prospects for mobility are nil, it will continue to be plagued by overworked officers and a thin middle tier of *michmany*.

Officers

At the summit of the Soviet naval hierarchy is the officer corps, which includes about 20 percent of the total force. These have been traditionally considered elite members of Soviet society, and the vast majority choose to make the Navy their life's career. Many are the sons of naval officers, most are Great Russians or Ukrainians, and all face stern competition to enter a higher naval school similar to the US Naval Academy at Annapolis. Nearly all are members of the Communist Party. Most become competent, if specialized, engineers/leaders. Further down the line, most will have an opportunity for post-graduate education at a military institution. By Soviet standards, officers receive generous pay and pension, good health care, security, and opportunities to travel not enjoyed by the general population. Above all else, the naval officer has traditionally commanded respect from the Soviet people but the recent chaos in Soviet society and the decline in the already strained Soviet economy have brought publicly-expressed resentment of the privileges enjoyed by military and naval officers. Thus, if an officer succeeds in the Soviet Navy, few in his society will be afforded more privilege and honor.

The typical route of entry for a Soviet naval officer is via the Nakhimov Naval School in Leningrad, a special three-year "prep school" specifically geared toward gaining entry into a higher naval school. All officer candidates must pass a rigorous written examination and

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the scrutiny of a selection board to achieve admission into one of these eleven "academies." Once admitted, cadets (*kursanty*, the equivalent of US Navy midshipmen) embark on a five-year course of study, except for a four-year program for political officers. Upon completion of the five-year programs, cadets are granted an engineering diploma and commissioned as lieutenant. (There is no ensign rank in the Soviet Navy.) So prepared, the young officers are designated in their specialties and the superior ones are assigned to sea duty.

The junior officer stationed afloat generally will remain on board for five or six years, and often longer, while advancing up the career ladder to become a department head at the rank of either a Senior Lieutenant or a Captain Lieutenant, equivalent to the US Navy ranks of Lieutenant (junior grade) and Lieutenant. (See figure 9 for equivalent rank structure.) Soviet naval officers serve both as supervisors and technical specialists, accomplishing much of the maintenance and work undertaken by enlisted men in Western navies.

Junior officers who demonstrate both technical proficiency and leadership are identified by the ship's Commanding Officer (CO) and his political deputy, and then are groomed for command, first by being assigned to head a major department (such as navigation), and being designated as an Assistant to the CO, and second by being named as Senior Assistant or Executive Officer (XO). The XO works in tandem with the Commanding Officer for at least three years and receives advanced schooling at "Specialized Officers Courses." As a result of

Junior officers stationed afloat generally remain there 5-6 years or longer. Here officers gather in the wardroom of the MARSHAL USTINOV.

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Figure 9

OFFICER RANKS

*Rank**	*Approximate US Equivalent*
Admiral of the Fleet of the Soviet Union	Fleet Admiral
Admiral of the Fleet	Admiral
Admiral	Vice Admiral
Vice Admiral	Rear Admiral (Upper Half)
Rear Admiral	Rear Admiral (Lower Half)
Captain 1st Rank	Captain
Captain 2nd Rank	Commander
Captain 3rd Rank	Lieutenant Commander
Captain Lieutenant	Lieutenant
Senior Lieutenant	Lieutenant (junior grade)
Lieutenant	Ensign
Junior Lieutenant (reserve officers only)	Ensign

WARRANT GRADES

Senior Warrant Officer (Senior *Michman*)	Chief Warrant Officer
Warrant Officer (*Michman*)	Warrant Officer

NON-COMMISSIONED GRADES

Chief Ship's Petty Officer	Master Chief Petty Officer Senior Chief Petty Officer
Chief Petty Officer	Chief Petty Officer
Petty Officer First Class	Petty Officer First Class
Petty Officer Second Class	Petty Officer Second Class
Petty Officer Third Class	Petty Officer Third Class
Senior Seaman	Seaman
Seaman	Seaman Aprentice/Recruit

*Naval aviation, namal infantry, and coastal defense personnel, although part of the Navy, have "military" titles, such as general, major, and sergeant.

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Figure 10

SOVIET NAVAL EDUCATION

HIGHER NAVAL SCHOOLS (5-YEAR PROGRAMS)

School	*Location*	*Specialization*
Leningrad Nakhimov School	Leningrad	Naval Preparatory
Frunze Higher Naval School	Leningrad	Line
Makarov Pacific Ocean Higher Naval School	Vladivostok	Line
Kirov Red Banner Caspian Sea Higher Naval School	Baku	Line
Kaliningrad Higher Naval School	Kaliningrad	Line
Nakhimov Black Sea Higher Naval School	Sevastopol	Line
Leninskiy Komsomol Higher Naval School of Submarine Navigation	Leningrad	Submarine-line
Dzerzhinskiy Order of Lenin Higher Naval Engineering School	Leningrad	Line-engineering
Sevastopol Higher Naval Engineering School	Sevastopol	Line-engineering
Popov Higher Naval Communications School	Leningrad Petrodvorets	Radio-electronics
Lenin Higher Naval Engineering School	Pushkin	Shore engineering
Kiev Higher Naval Political School	Kiev	Politics (4-years)

POSTGRADUATE COURSES

Order of Lenin and Ushakov Naval Academy imeni Kuznetsov	Leningrad	Advanced technical and staff education (equivalent to US Naval War College)
Naval Officers Technical School	Kronshtadt	Officer technical training
Higher Naval Courses	Leningrad	Officer technical training

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this preparation, the XO eventually assumes command of a ship of the same or a similar class. A newly assigned ship commander must then successfully complete several additional steps to qualify and be certified for independent, unsupervised command of his ship.

Officers not considered qualified for command and those in specialties and engineering categories not considered eligible for command become career specialists. Officers in these fields continue to receive promotions while serving as department heads and on staffs afloat or ashore. This system makes it not unusual to find a Commanding Officer served by department heads who are senior to him in rank.

The commander and the specialist continue to interact at various levels. Staff officers from the senior afloat operational commander's staff ride the CO's ship to conduct department head level training and oversee and evaluate performance. Moreover, the senior operational commander himself, his chief-of-staff, and other senior line officers often ride the ship as "senior officers aboard" to oversee the CO's shiphandling and to train him directly for "independent" command.

Combined with a heavy workload, constant oversight, and austere living conditions, the recent perception that sea duty is no longer the optimum assignment for officer promotion has led an increasing number of officers to seek extended shore duty. An apparently extensive dissatisfaction among surface ship and submarine officers has become a matter of grave concern to the Soviet Navy's leadership, which fears that the traditional glamour of sea duty has lost its luster.

Career naval officers are encouraged to undertake post-graduate study. In fact, promotion to the more senior command posts is unlikely without such advanced study. Generally, officers finishing their first commands will be sent to Leningrad to take the command and staff course at the Admiral Kuznetsov Naval Academy (equivalent to courses available at the US Naval Postgraduate School at Monterey, CA, and at the Naval War College in Newport, RI). This is a two-year course directed at preparing them for higher responsibility at the unit formation, division, and fleet levels. After further command and staff experience, those officers selected for flag rank normally are sent to the Academy of the General Staff Academy in Moscow (equivalent to the National War College or the senior course at the Naval War College). Thus, over the course of a successful career, a Soviet naval officer begins as a narrow technical specialist, gradually broadens his responsibility, and eventually assumes a major naval or possibly joint-service senior position. (Figure 10 lists Soviet Naval Schools).

For those officers in "career specialties," the logical assignment after graduate training is a position on the faculty of one of the naval schools or a tour in one of the technical directorates (such as shipbuilding, mines, or torpedoes) as he proceeds toward flag-rank position in his area of expertise.

The handful of officers who achieve flag rank in the Soviet Navy are markedly different from their Western counterparts in several important respects. First, the senior Soviet naval officer, to a far greater degree than an American officer, rises to the rank of admiral from an early background as a narrow technical specialist, rather than as a generalist with a broad range of technical experience. But he has also spent his first ten to fifteen years at sea. Second, the Soviet Navy's leadership assumes a dual-hatted role as both military officer and politician; at senior levels, obligations to the Communist Party have in the past taken precedence. Finally, the Soviet Navy's top brass is not restricted to two- or three-year tours in the same billet. A more common length of stay appears to be five to six years. Of course, the 30-year tenure of Sergei Gorshkov as the Soviet Navy's supreme officer is a notable

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exception. Under the Gorbachev regime, there is a greater emphasis on adherence to upper age limits on military service and the long stay phenomenon is not likely to be repeated. The five- to six-year tenure in senior positions nonetheless affords a remarkable degree of continuity in the upper echelons of power.

C. Centralized Control and Discipline

There are several ways in which centralized control of the Soviet Navy has been maintained. First, naval officers are selectively drawn from the urban, upper strata of Soviet society. They are carefully selected for their academic qualifications, family backgrounds, and demonstrated psychological stability and political reliability. Second, for most of the history of the U.S.S.R., the Party had a tight grip on the Soviet Navy. It was virtually mandatory for officers to hold membership in the CPSU, and an officer's career advancement depended upon loyal support to the political system. This effectively co-opted the most influential segment of the Navy, both in terms of leadership and operational skills, to the Party. Third, in order to exert direct political control, a political officer (*Zampolit* or "deputy commander for political affairs") was assigned to all afloat and ashore naval units. His job was to assure that Soviet navymen received a constant flow of ideological indoctrination and supporting propaganda to motivate them to serve state interests unquestioningly and to work harder. This constant political focus provides an element of psychological control.

The KGB undoubtedly still runs a clandestine network of informants, either separate from or embedded in the party organization, to deter deviant political behavior. In consonance with Gorbachev's general policies of perestroika and lessening Party influence, however, the role of the Party and *Zampolit* will surely be curtailed or drastically modified in the next few years. Recent Soviet writings suggest that the Chief Political Directorate has

Compared to other services, the Soviet Navy appears to have stricter control of its personnel, with its isolated environments, both afloat and ashore, and a variety of overlapping legal, political and informal disciplinary systems.

reorganized with functions of the political (State) supervision transferred from party to Ministry of Defense. In the last year or so, however, as the hold of the Communist Party over the fabric of Soviet society has begun to break down, the position and influence of the political officers throughout the Soviet armed forces has been considerably diminished. There is no longer a requirement for a political officer to be aboard every ship at sea, and thus the full responsibilities of command are at last devolving on the officer corps of the Soviet Navy.

When compared to other services and the civilian population as a whole, the Soviet Navy appears to have been particularly successful in its political indoctrination and training programs. While much of this success can be

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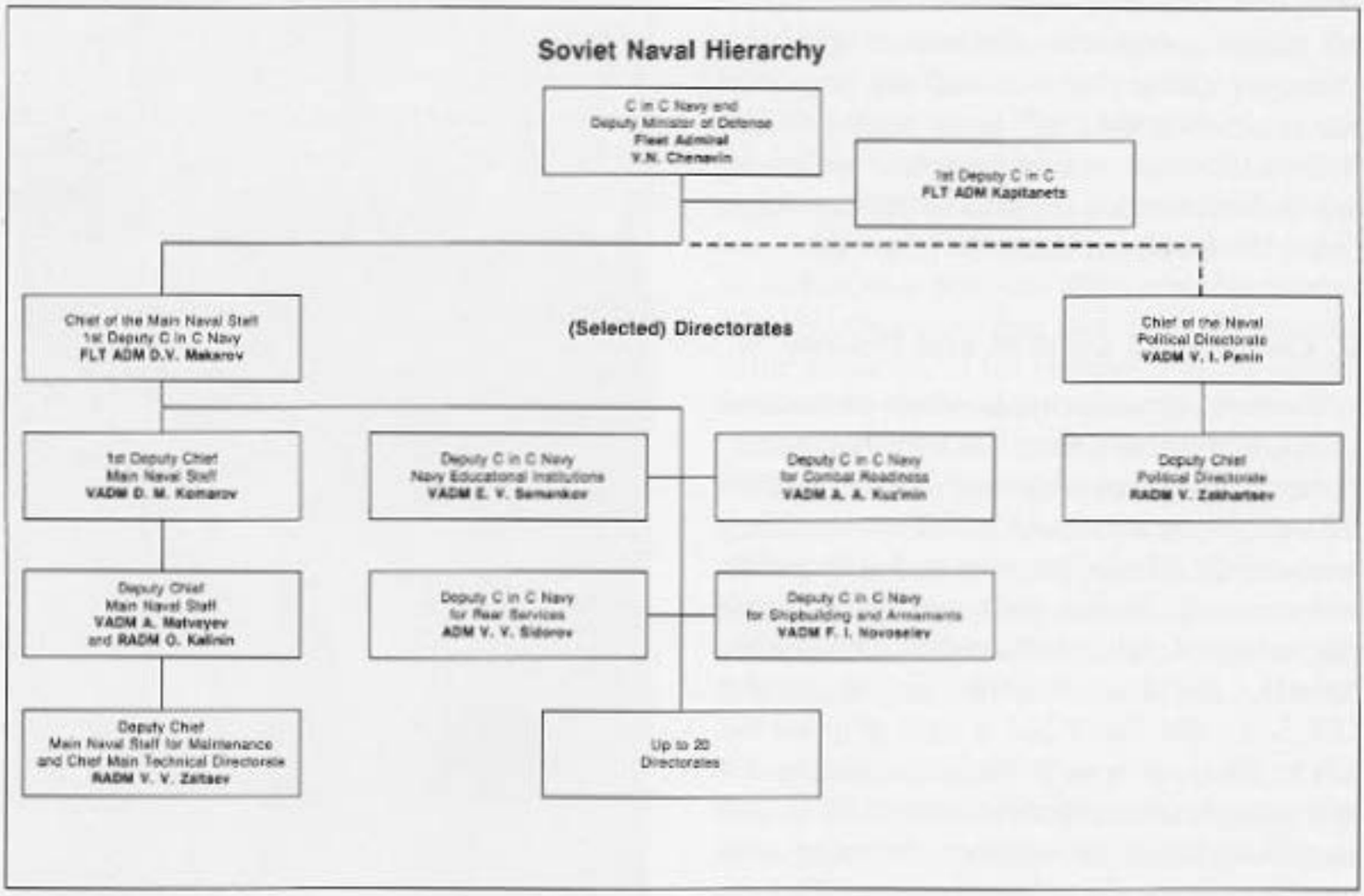
Figure 11



attributed to the generally high political reliability of personnel and an intensive political training program, several other factors were also involved. Compared to other services, the Navy, with its isolated environment afloat, has had much stricter control of its personnel. Even personnel stationed ashore are isolated and have been assigned to locations well away from their native areas. Northern and Pacific Fleet bases are located in remote and desolate areas. Leave and liberty policies, especially for conscripts, also reinforce the isolated experience of Soviet naval personnel.

Discipline is further maintained through a variety of overlapping legal, political, and informal systems. Legally, for violations of regulations—including AWOL, dereliction of duty, and violations of communications security—local commanders can assign extra duty, deny leave, demote offenders, or sentence them to brigs much the same as the US Navy. For more serious offenses, such as theft of state property and assault, there is a legal entity, the Military Procuracy, which is charged with investigating crimes, charging servicemen, and instituting criminal proceedings. Military cases are heard by a military tribunal whose powers include the ability to sentence offenders to the brig, disciplinary battalions, labor camps, and internal exile.

D. Soviet Navy High Command

The composition and responsibilities of the Soviet Navy High Command are without parallel in Western navies. The highest-ranking officer, the Commander-in-Chief (CinC) of the Soviet Navy, holds the equivalent of both the Secretary of the Navy and Chief of Naval Oper-

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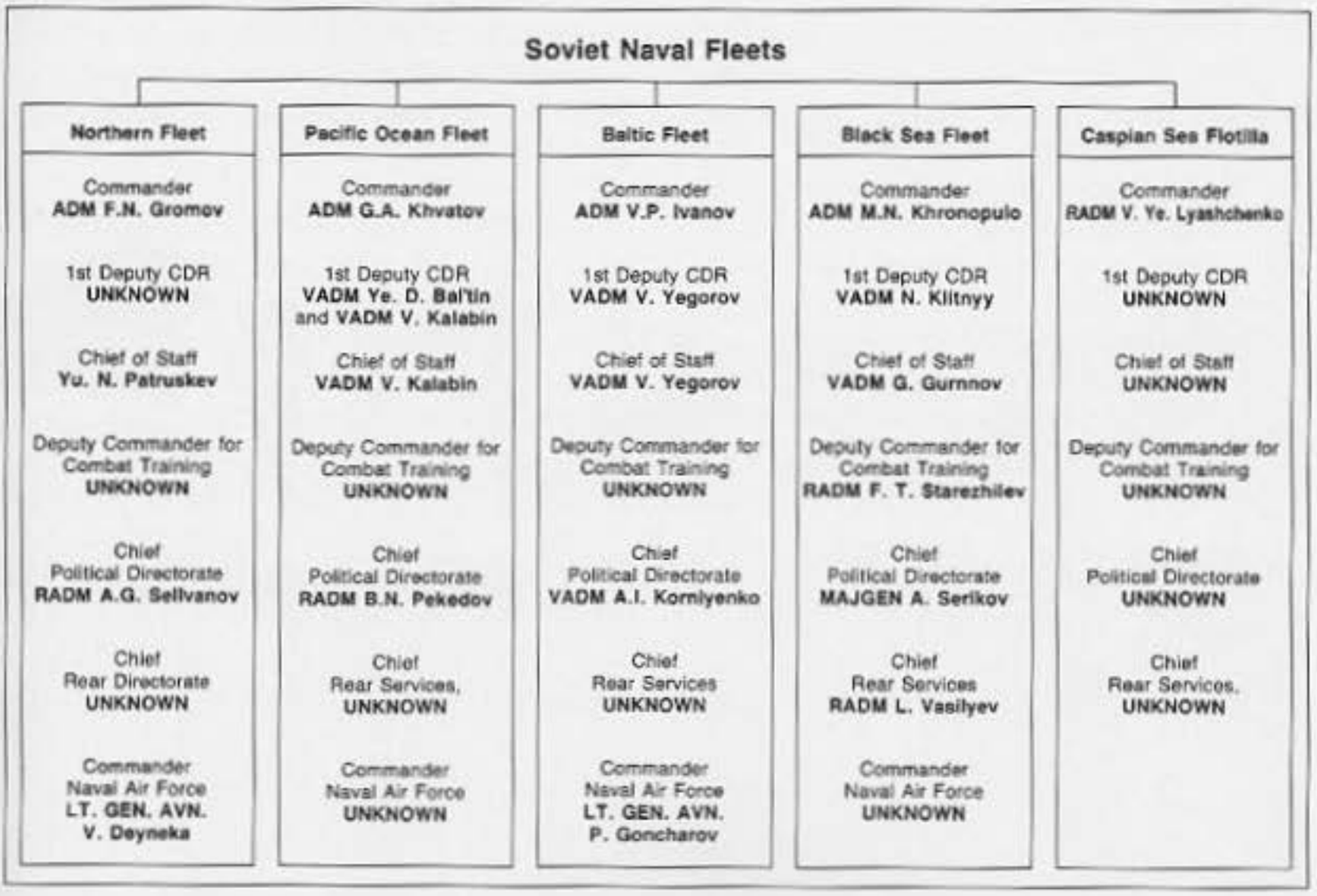
Figure 12



ations positions in the United States. Fleet Admiral Vladimir Nikolayevich Chernavin, who replaced Gorshkov as commander-in-chief in 1985, is the principal spokesman for the Soviet Navy and is directly subordinate to the Minister of Defense in his capacity as a Deputy Minister of Defense (See Figures 11 and 12).

Gorshkov's is a tough act to follow. During his nearly three decades at the helm, Gorshkov was credited with transforming the Soviet coastal defense force into a blue-water navy. But Chernavin brought long overdue "youth" and dynamism to the Soviet Navy's leadership. In many ways, Chernavin's ascendancy to the top of the Soviet naval hierarchy was similar to the rise of Mikhail Gorbachev. Both men, it has been observed, are considered "progressive" socialists, bent on instilling greater discipline and efficiency in their ranks, and on modernizing the Soviet military-industrial complex.

Born in 1928 in the Black Sea port of Nikolayev (Ukrainian SSR)—where Soviet shipbuilders are currently building their first full-sized aircraft carriers—Chernavin is widely hailed as being a "sailor's sailor", a decorated submariner, exuding confidence, preaching readiness, and enforcing stringent training. The son of a Soviet military officer killed in World War II, he studied at the Ul'yanovsk Mechanical Technical School before entering the Caspian Naval College in Baku in 1947. He subsequently transferred to the Frunze Higher Naval School in Leningrad. Following graduation, Chernavin was assigned to the Northern Fleet, first as a mine and torpedo officer, then as executive officer, and later as commanding officer of diesel submarines. From 1959 through 1974, Chernavin served on nuclear submarines, both as commanding officer and division commander. He participated in early operations under the Arctic icecap.

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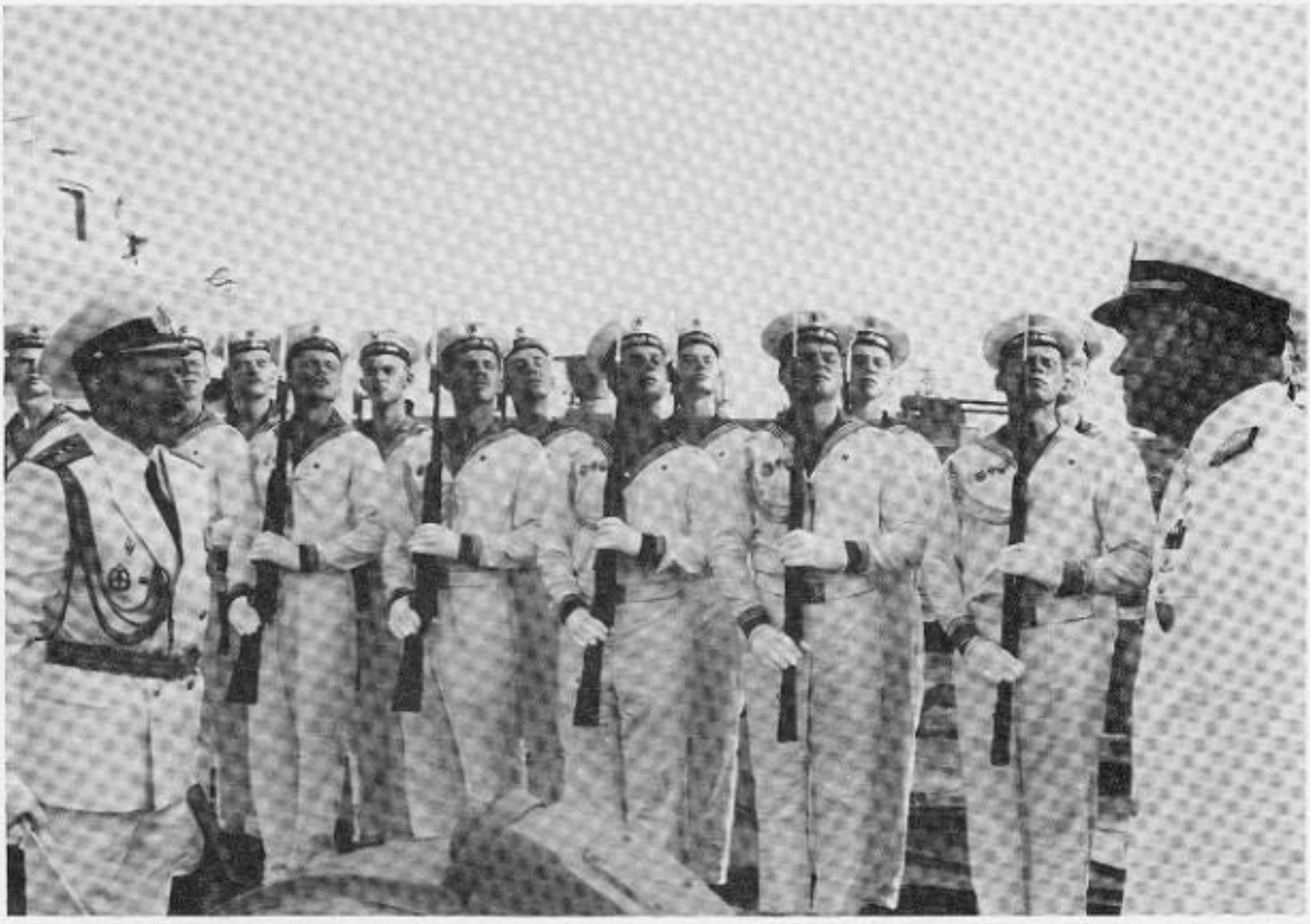

Admiral Frank Kelso, Chief of Naval Operations, prepares to review a contingent of Soviet sailors during the Soviet port visit to Norfolk, Virginia in 1989, when he was USCINCLANT. The port call by a SLAVA class cruiser, a SOVREMENNYY class guided missile destroyer, and a fleet oiler was the first in a new program of port visit exchanges between the US and USSR.

Chernavin was Chief-of-Staff of the Northern Fleet from 1974 to 1977, and Commander of the Northern Fleet from 1977 to 1981. From 1981 through 1985 when he succeeded Gorshkov, he was Chief of the Main Navy Staff. Since 1986, he has been a full member of the Communist Party Central Committee. Chernavin has already served over six years as Commander-in-Chief, and he has survived several rumored retirements, all the while increasing his own influence and that of the Soviet Navy within the Ministry of Defense. While his age alone (he is 63) would preclude a tenure as long as Gorshkov's, Chernavin may prove to have considerable staying power as a focus of continuity in a time of general turmoil in the U.S.S.R.

Chernavin's senior assistants are: his First Deputy CinC, Fleet Admiral I. M. Kapitanets; the Chief of the Main Navy Staff, Admiral K. V. Makarov; and the Chief of the Naval Political Directorate, Admiral V. I. Panin. The latter two each have their own First Deputies. These senior officers are the pivotal members of the Navy's Main Military Council, a collegial body that reviews and ensures the overall coordination of all essential activities.

The First Deputy CinC is next senior to the CinC and is responsible for the Soviet Navy's overall administration. He is assisted by a large directorate organization, headed by various Deputy CinCs for specific areas such as personnel, facilities, procurement, maintenance, logistics, medical services, education and training, as well as the non-operational aspects of naval aviation, naval infantry, and coastal defense.

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The Chief of the Main Navy Staff is responsible for the operational dimension of the navy, including fleet, naval air, naval infantry and coastal defense operations, operational combat training, plans, organization, and intelligence.

The four Soviet Fleets work in close coordination with the Main Navy apparatus. They incorporate the same type of organization at their own level: an overall Fleet Commander, his First Deputy, a Chief of Staff, and a head of Fleet Political Administration, comprising the Fleet Military Council. There are also fleet staff flag officers for the various directorate specialties including shore support functions and warfare components.

The fleet itself is made up of seagoing units, forces ashore, aviation, hydrographic and weather services, bases and support facilities, dockyards, schools, and training establishments. The component ashore includes coastal defense forces as well as naval infantry. The logistics command (Rear Services) is concerned most immediately with the supply and replenishment of seagoing units—the preparation and support of long-distance cruises, for example—while the base command administers and operates the depots, docks, harbor installations, and the like with its own dockyard labor force.

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DIKSON, the third of three Finnish-built MUDYUG class icebreakers, is home ported at Murmansk. Most Soviet icebreakers have been built in Finland since the 1950s.

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SECTION 6. OTHER SOVIET MARITIME ACTIVITIES

Among the main components which we included in the concept of the sea power of the state are the state's capabilities to study (investigate) the ocean and exploit its resources, the condition of the transport and fishing fleet and its ability to support the needs of the state, also the presence of a Navy adapted to the interests of that state, since antagonistic social systems are present in the world.

—S. G. GORSHKOV, (1910-1988),
Admiral of the Fleet of the Soviet Union

The increasingly extensive use of the sea by the Soviet Union over the last two decades has not been limited to naval operations. In the best traditions of US Navy strategist and historian, Alfred Thayer Mahan, the Soviets have embraced the spectrum of other activities which are considered part of the sea power "equation"—merchant marine, fishing, oceanographic research, and shipbuilding.

The Soviet concept of sea power encompasses constant and coordinated use of all aspects of its natural, scientific, industrial, merchant, and naval resources in support of state policy. Each of the various elements of USSR maritime strength is a matter of prime importance to the country.

A. Merchant Marine

The application of the basic Soviet philosophy of sea power is clearly demonstrated in the ongoing development of its merchant marine. At the end of World War II, the Soviet oceangoing merchant fleet consisted of about 400 ships, totaling approximately two million deadweight tons. The ships were relatively small, old, and slow. In fact, the newest and best were the lend-lease "Liberty" ships that the United States provided the Soviets during World War II. Today, Moscow's merchant fleet is one of the world's largest and finest (although there have been recent expressions of concern within the Soviet Union regarding its increasing age and diminishing efficiency).

In one sense, the rapid growth of the fleet stems from the 1962 Cuban missile crisis when the Soviets discovered the inability of their merchant marine to support the Navy. Since that time, the Soviets have realized that a capable merchant marine is an essential element of maritime power and the Soviet oceangoing merchant fleet has emerged from an insignificant, coastal oriented fleet to a maritime power currently ranking third in the world in number of ships and tenth in terms of deadweight tonnage or carrying capacity. As of 1 January 1991, the Soviet oceangoing merchant fleet had 1,555 ships totalling about 20.6 million deadweight tons. In comparison, the U.S. merchant marine, with 445 ships totalling approximately 20.9 million deadweight tons, ranked thirteenth in number of ships and ninth in carrying capacity. Since January 1990, the Soviet merchant fleet had shrunk by about 50 ships as a result of the scrapping of a number of obsolete units, while the figures for the United States, which had had only 411 ships active in January 1990, were enhanced by the reactivation of government-owned Ready Reserve Force ships for Operation DESERT SHIELD. The US merchant fleet is, however, composed primarily of large tankers and non-self-

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The BORIS BUVIN is one of twelve units of the Soviet-built IVAN SKURIDIN class roll-on/roll-off cargo ships. This class loads and unloads via a bow ramp that is capable of supporting 65-tons and is protected from the seas by a visor-type bow.

sustaining container ships, units which would be less useful in time of crisis than many of the more militarily adaptable Soviet ships.

The growth of the Soviet Merchant Marine has occurred during a period of dramatic world wide maritime development, but Soviet accomplishments have been unique. While international shipping growth has been spurred by the demand for big oil tankers, bulk carriers, and container ships, the Soviet Union has carefully directed the growth of its merchant fleet, not allowing purely commercial pressures of modern trade to dictate its composition.

As a result, the Soviets today possess one of the few major merchant fleets which can perform either a peacetime commercial mission or satisfy military logistics requirements effectively and efficiently should a conflict arise. This has been achieved by accepting some economic disadvantages in exchange for functional versatility. Rather than concentrating on supertankers, container ships, liquid gas tankers, and bulk carriers, the Soviets have improved the designs of their large, sophisticated cargo ships and small, multipurpose tankers. They also have stressed the building of high-speed, roll-on/roll-off (RO/RO) combination vehicle and container ships. The RO/RO ships incorporate considerable military potential.

The RO/RO ship is basically a floating garage that loads and unloads cargo via a large

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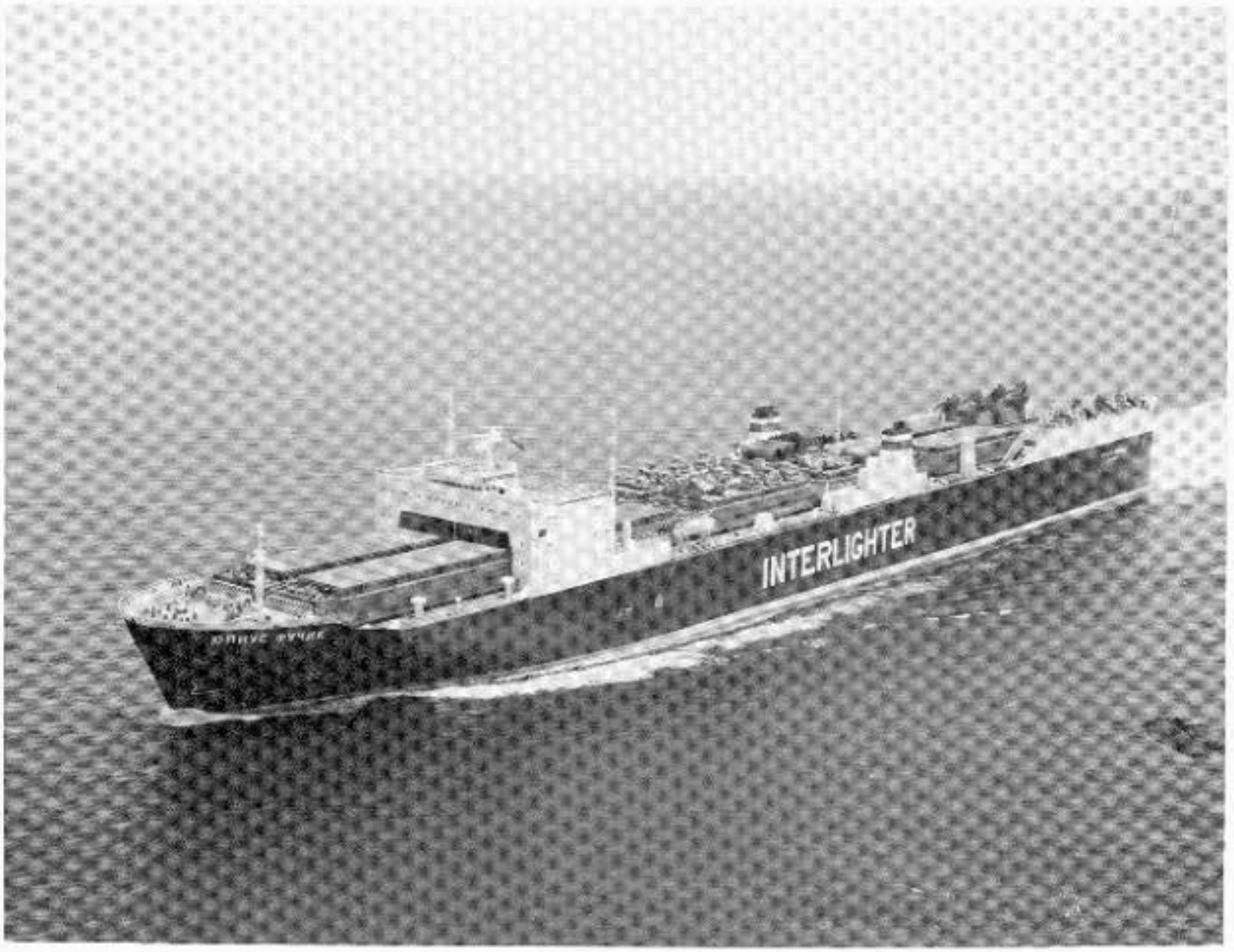
stern and/or bow ramp. A RO/RO can easily transport most forms of military hardware (including tanks) without ship modification, and sophisticated port facilities are not a requirement. A RO/RO requires only a stable platform onto which it can lower its ramp and allow vehicles to be driven off in a ready condition. The Soviet Union has 110 commercial RO/RO ships, all of which can serve as military sealift or logistics ships. Additional RO/RO ships are currently on order.

The modernization of the Soviet Merchant Marine has also been made possible through the extensive use of advanced Western maritime technologies. Many new ships in the Soviet merchant fleet incorporate advanced cargo handling techniques and can be used readily in amphibious lift or military logistical operations; two large US-design SEABEE barge carriers built in Finland for the USSR can each transport up to 26 1,070-ton barges or other large unit loads and offload up to 25,000 tons of cargo within 13 hours. Similar advanced cargo handling capabilities are present on four shallow draft feeder-barge carriers, four ALEKSEY KOSYGIN class LASH-type barge carriers, three STAKHANOVETS KOTOV class roll-on/float-off (RO/FLO) heavy-lift load carriers, and a nuclear-powered LASH-type barge carrier, SEVMORPUT, delivered in early 1989.

Advanced ship design is another prominent feature of many new ships in the Soviet Merchant Marine. The use of ice-strengthened and



The YULIUS FUCHIK class SEABEE barge carrier. These units can carry 26 barges measuring approximately 36 x11 meters each which are loaded and unloaded via a 2,700-ton lift capacity stern elevator.

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The 3,600 ton OTTO SCHMIDT scientific research ship conducts ice edge research and reflects Soviet interest and investment in artic research and exploitation.

experimental hull designs, nuclear power, and the incorporation of helicopter facilities for offloading cargo in remote regions reflect the ongoing and intense Soviet effort to exploit commercially their territory, particularly along the northern sea route.

In the Soviet merchant fleet, ice-strengthened hulls are common in new general cargo ships and tankers. A large fleet of 45 conventionally powered icebreakers is being supplemented by a growing number of large nuclear-powered icebreakers. Two nuclear-powered TAYMYR-class icebreakers built in Finland for the Soviet Union have been delivered. In addition, two ARKTIKA-class icebreakers are under construction in Leningrad to supplement the four ARKTIKA-class nuclear-powered icebreakers already in service.

New maritime technology is also being applied to older conventional ships. As a result of a West German redesign of its hull, the Soviet icebreaker MUDYUG now leaves a clear channel behind its stern while breaking ice more than two meters thick. This clear channel increases the navigational safety and ability of convoy ships following in the wake and may allow greater numbers of ships to transit. A larger icebreaker, KAPITAN SOROKIN, has been refitted with the same capability in West Germany, while another KAPITAN SOROKIN

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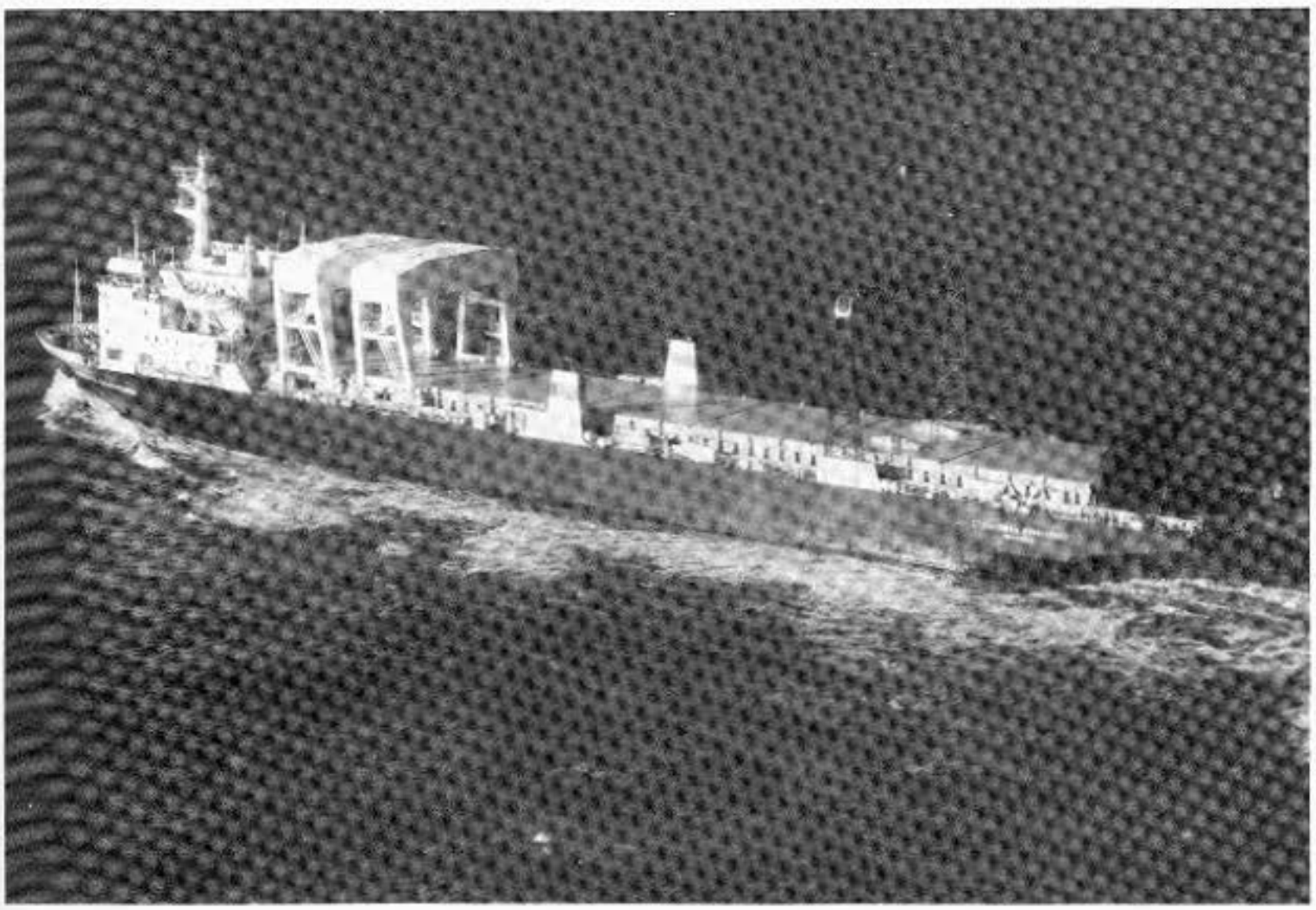
class ship, KAPITAN NIKOLAYEV, has been fitted with similar hull modifications in Finland.

Specialized ship designs, such as the TITAN-1 and STANISLAV YUDIN class crane ships built in Finland and numerous series-built classes of offshore supply ships built in Finland and Poland, continue to supplement the expanding Soviet offshore oil industry. Similar advanced ship design is present in the Finnish-built TRANSSHELF, a heavy-lift, float-on/float-off cargo vessel intended for loading, transporting, and unloading jack-up rigs and other large floating units at sea.

The Soviet Merchant Marine is a vital element of the Soviet economy. For example, the Soviet merchant fleet transports approximately 60 percent of Soviet imports, whereas the US Merchant Marine carries under four percent of America's. The Soviet Merchant Marine traditionally has been heavily subsidized by the state. Excessive operating expenses and capital investments traditionally have been absorbed by the Soviet economy, providing Soviet merchant fleet operators with a significant advantage over their Western counterparts. Under the new Soviet program for economic restructuring (*perestroika*) the Soviet Merchant Marine has undergone administrative and economic changes. Shipping companies are now expected to operate on a basis of full financial autonomy and self-financing through maximizing profits and increasing the efficiency of their operation.

In accordance with the drive for full financial autonomy, the Soviet Merchant Marine has



STAKHANOVETS YERMOLENKO is one of three Finnish-built heavy-lift load carriers of the STAKHANOVETS KOTOV class. These ships can be loaded and unloaded using roll-on/roll-off, lift-on/lift-off and/or float-on/float-off methods. Besides the 700-ton lift capacity gantry cranes, these ships have a floodable well deck with a stern gate.

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begun to seek capital from Western lending institutions to finance the replacement of older ships and the construction of new ships. To provide collateral for these loans, Moscow has placed a number of its merchant ships under foreign flags. Full financial autonomy for Soviet shipping companies will result in a reduced demand for the substantial state subsidies and long-term credits to support this vital component of Soviet sea power.

The Soviet Merchant Marine provides a significant amount of the logistics support required by the Soviet Navy on a regular basis, particularly to those ships operating in waters distant from the USSR. The commonality of design of merchant ships and naval auxiliaries facilitates this support between the fleets. Additionally, Soviet merchant ships have a much greater freedom of access to world ports than do navy ships or auxiliaries, and thus can purchase fresh water, produce, and other supplies for naval use in ports where naval ship visits might otherwise be denied.

The Soviet Merchant Marine is also an effective instrument of national political policy. Its fleet currently operates on about 70 different international trade routes, calling at over 125 countries throughout the world. In the Third World the Soviets use the fleet to show the flag and enhance political contact with developing countries by providing shipping services and have been successful in establishing a significant Soviet presence in the world trade community. The cargo that Soviet bottoms transport between second and third-party nations provides a lucrative source of hard currency for the Soviet Union. This helps to offset their balance of trade deficit while, at the same time, providing competition to many traditional Western flag merchant fleets.

The Soviet oceangoing Merchant Fleet received 25 new ships, totaling nearly 161,000 deadweight tons in 1990. In addition, 5 second-hand ships, totaling over 85,000 deadweight tons, were acquired for the oceangoing fleet. At the same time, however, some 45 ships totalling 634,000 deadweight tons were scrapped in 1990, and 79 ships totalling 1.89 million deadweight tons were reflagged abroad, still under Soviet control but able to operate more freely in international commerce. The Soviets are expected to continue the modernization of their merchant marine and are likely to make further use of foreign "flags-of-convenience" to increase the competitive status of the Soviet-controlled merchant fleet. Older units will be sold for scrap to garner hard currency, while the new ships may increasingly be built in Soviet yards where building capacity has been reallocated from naval construction, thus providing further savings in hard currency payments.

The Soviet Merchant Marine Fleet, with its free access to most of the world's ports, is afforded an excellent opportunity for intelligence collection. This intelligence, while representing only a small, relatively inconsequential portion of all Soviet intelligence, demonstrates how the Soviet government makes maximum use of all its resources.

In summary, Soviet leaders see the Merchant Marine providing the following advantages and capabilities:

- large national resource providing valuable hardcurrency income, services, and employment;
- an instrument to support the foreign policy of the state;
- a visual sign to the world of the prestige and power of the Soviet Union;
- a training environment for an expanding pool of experienced seamen;
- a closely controlled logistics and military support force helping to meet the needs of the Soviet Navy on a regular basis; and
- a worldwide network for intelligence collection.

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The naval replenishment ship VLADIMIR KOLECHITSKY underway in the Mediterranean Sea in 1988.

Overall, the Soviet Union is expected to continue to develop a multi-mission Merchant Marine which can compete economically in international markets and provide many other services in support of State policy, while maintaining the ability to respond rapidly to the need for extensive military support.

B. Fishing

The Soviet Union operates the world's largest fishing fleet, with over 3,500 ships totaling over 8.1 million gross registered tons. The Soviet fishing fleet is second only to that of Japan in total catch tonnage each year.

Considerable resources have been invested in the fishing industry in the postwar period, with emphasis on the construction of large, high-capacity oceangoing ships equipped with elaborate fish-finding devices and processing facilities.

The Soviets exploit fishing grounds throughout the world's oceans with large flotillas of ships. Groups of 100 to 200 trawlers are not unusual and, on occasion, much larger formations have been reported. These fishing flotillas are usually self-contained "communities", supported by specialized repair ships, tugs, tankers, and fresh water vessels. Occasionally, these auxiliary ships also support naval activities. When the Soviet MIKE SSN suffered a fire in the Norwegian Sea in April of 1989, Soviet fishing vessels in the area responded to the distress call and rescued some of the crew before the submarine sank.

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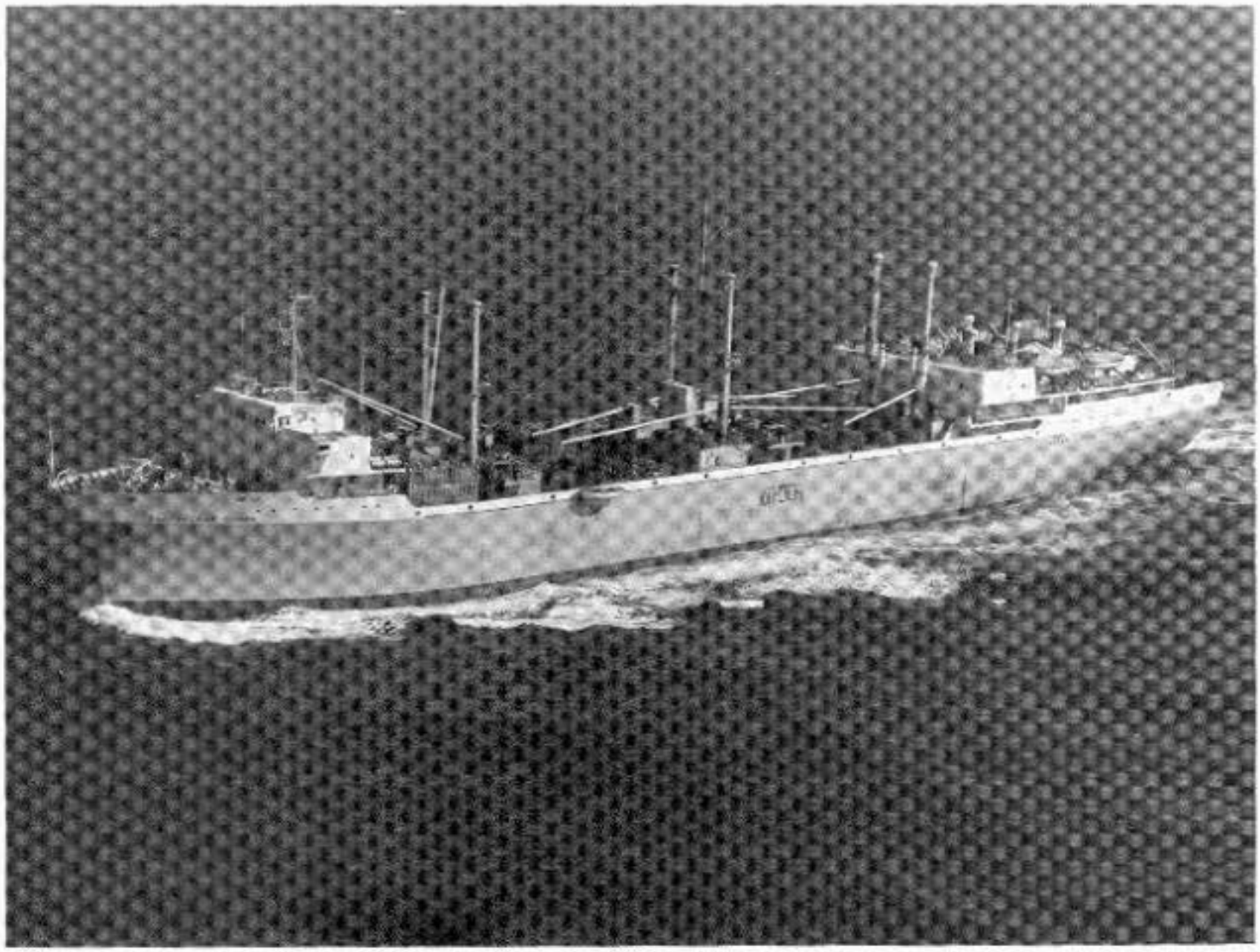

Soviet fishing ships exploit fishing grounds throughout the world. They are often grouped in large flotillas of 100-200 trawlers.

Soviet fishermen are among the highest paid workers in the Soviet Union. They are compensated for the hardships of long voyages and climatic extremes with annual paid vacations often exceeding two months. The industry also is a major employer of Soviet naval reservists.

Most fish caught by the Soviet Union (over 90 percent) are for human consumption, to be eaten by the Soviet people or given as aid to Soviet client states. It has been estimated that 20 percent of Soviet protein consumption consists of seafood. Exports include such delicacies as caviar, squid, and king crab. The crab is caught in great quantities off the coast of Alaska, and has been the subject of a continuing controversy, giving rise to several diplomatic agreements between the United States and the Soviet Union.

Since the Soviet fishing flotillas began operating in US coastal fishing grounds in 1961, there has been much debate on Soviet "vacuum cleaner" fishing methods and the damage done to the US fishing industry. The establishment, in 1977, of a 200-mile economic zone around the United States has placed limits on catch and strict control of fishing activities of foreign ships within the zone. The masters of several Soviet fishing vessels have been placed under arrest by the US Coast Guard for violating these controls. The Soviets are now faced with a large number of such economic zones established by countries with contiguous traditional fishing grounds.

The "universality" of fishing has led to considerable export of Soviet fishing equipment and technology to other countries. Similarly, the Soviet Union has purchased a large number

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of fishing units from Germany, Poland, and other nations.

The Soviet oceangoing fishing fleet also contributes to the support of state interests in international relations. Fishery agreements with Third World nations in Africa, South America, and southwest Asia usually entitle the Soviets to bunkering, vessel repair and maintenance, crew changes, rest and recreation, and transshipment points for return of fish to the Soviet Union, thus increasing commercial and political contact with geographically remote regions.

In the past several years, there has been increasing concern at the highest levels about the lack of efficiency of the Soviet fishing fleet, and *perestroika* may force it better to use its personnel and equipment, or the fleet may shrink over the next few years.

C. Research and Surveying

Soviet maritime activity is also supported by the world's largest fleet of oceanographic and scientific research ships, totaling over 300 vessels. These ships are engaged primarily in academic and economic studies, as well as operational research of the oceans. A number are Navy-subordinated, but the majority belong to government agencies or institutes concerned with ocean research. Obviously, some civilian aspects of ocean research activities have close ties to the Soviet Navy. Space event support ships provide worldwide spacecraft and satellite tracking and recovery capabilities. The use of ships for space support is in marked contrast with the US establishment of a worldwide shore-based spacetracking network.

The activities of the research, surveying, and space-support ships are managed by several

The Soviet fisheries research ship EKVATOR operating in the north Pacific Ocean.

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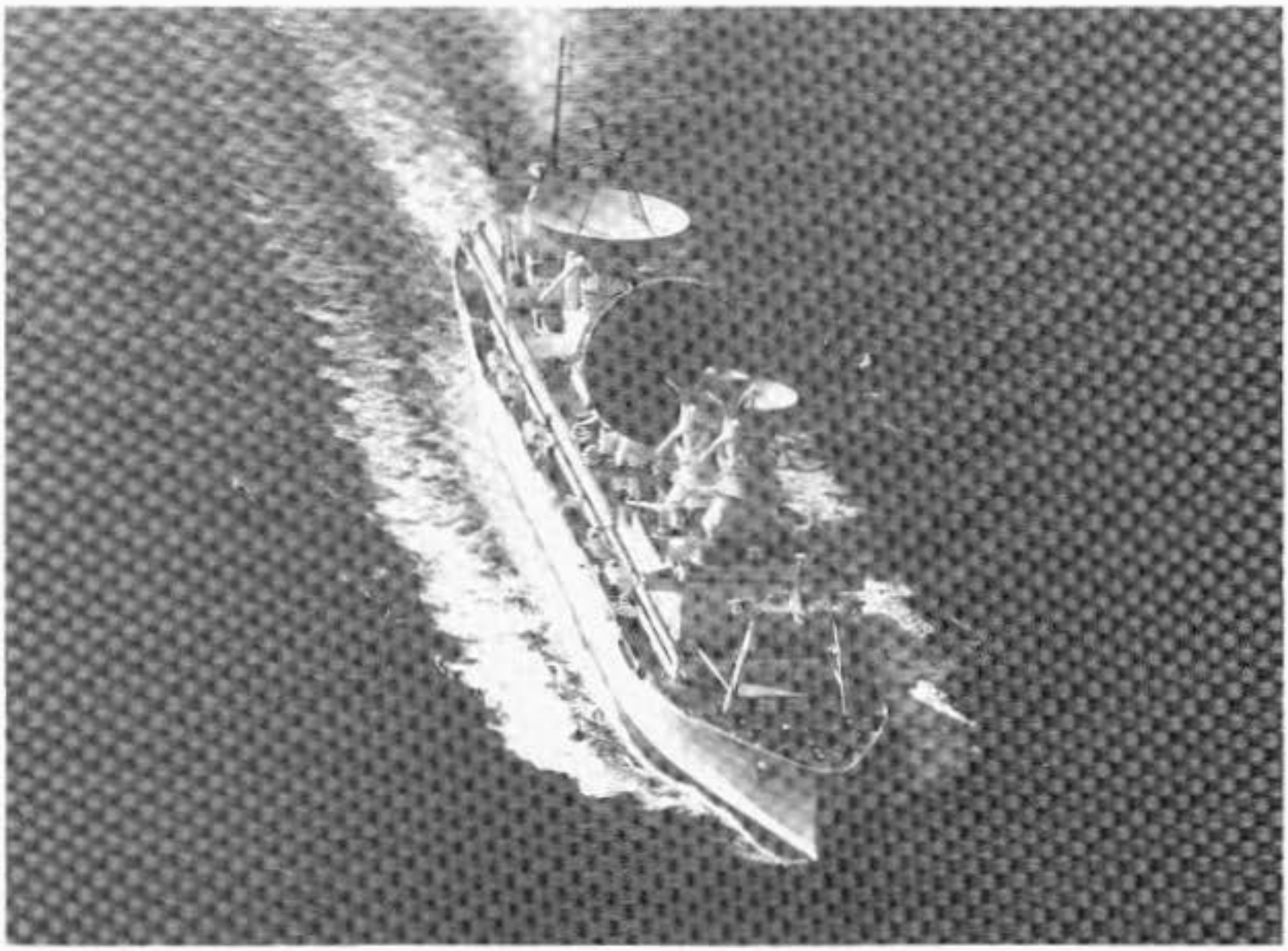

The Soviet satellite tracking ship KOSMONAUT YURIY GAGARIN is one of a fleet of Soviet Space Events Support Ships (SESS) that are employed in civilian and military space and missile programs. Most of these ships are operated by civilian research institutes, but a considerable number are navy-subordinated.

institutes of the Academy of Sciences that direct scientific research. These institutes maintain close coordination with the Navy and the main Fisheries Administration, which also operate a number of research ships.

Soviet research ships have been constructed in Finland, Poland, and formally, East Germany. These ships vary in size from small coastal craft to the giant KOSMONAUT YURIY GAGARIN, a 53,500-ton ship fitted with elaborate equipment for research into the upper atmosphere and support of space events.

D. Shipbuilding

As noted earlier, the Soviet Union long ago decided to develop the industrial base to support its plans for global maritime power. The Soviet priority attached to military power has required a commitment to a dedicated and military-oriented industrial system. The past 40 years have shown a tremendous growth in all sectors of Soviet military industry and a tightly integrated national strategy of military production, from the mining of raw materials to the fabrication of finished weapon systems.

For many years, the Soviet industrial system projected an image of quantity over quality. Recently, however, the Soviets have designated sectors in each basic industry to develop the best state-of-the-art materials for advanced weapon systems. These sectors receive priority for scientists, equipment, research support, and incentives.

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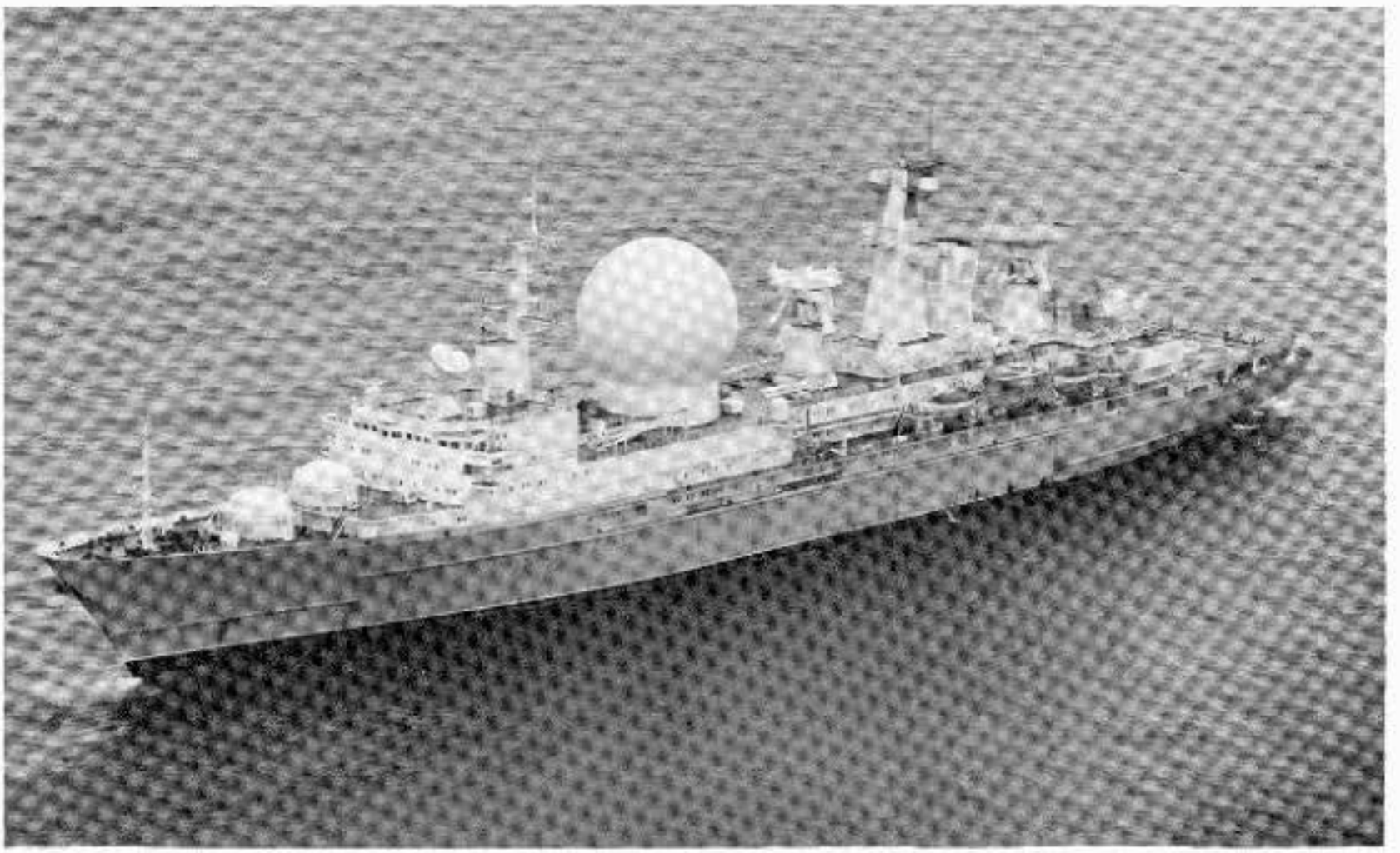
The titanium industry provides a unique insight into Soviet dedication to developing high-risk efforts for the large-scale manufacture of military equipment. Its production and technological growth has been heavily influenced by the advent of titanium-hulled submarines. As a result, Soviet processing and fabricating technology of thick plate titanium is many years ahead of that in the United States, allowing for the construction, for example, of the world's fastest and deepest diving attack submarine class, the ALFAs.

The growth of the facilities during the 1970s and 1980s dedicated to naval systems production has been extraordinary. At Severodvinsk Shipyard, the world's largest submarine production yard, shop space was increased by several hundred thousand square meters, approximately 80 percent, between 1965 and the mid-1980's. Moreover, Severodvinsk is only one of four Soviet yards producing submarines. Thirty-two shipyards build or convert ships and submarines for the Soviet Navy. From 1970 to 1985, yard capacity expanded by some 30 percent, representing over 125,000 square meters of new building ways, and was expanded further in the late 1980s.

This achievement is all the more impressive when it is remembered that the current shipbuilding industry evolved since World War II when the devastated yards of the Baltic and Black Sea coasts were rebuilt. Additionally, new yards were constructed (or enlarged) on the Northern and Pacific coasts to make those naval fleets more independent of the traditional European-area yards.

Today, the Soviet Union is the world's largest ship producer in terms of number of hulls. Because of the Soviet emphasis on small merchant and fishing vessels, however, overall Soviet tonnage production is small for the number of ships produced.

In addition to their large indigenous shipbuilding industry, the Soviets also purchase a considerable amount of merchant, fishing, and naval tonnage from foreign yards. Naval ships, particularly amphibious ships and auxiliaries, have been purchased from Poland, Finland and East Germany. Merchant and fishing ships are also purchased from those countries along with France, Japan, Germany, Sweden, Spain, and Yugoslavia.



The Soviet Navy's missile range instrumentation ship MARSHAL NEDELIN is employed in the Pacific in support of ballistic missile tests.

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The TRIDAKNA is one of the ten units of the Polish-built RODINA class tuna clippers. This class is equipped with a hanger below the main deck beneath the helicopter pad forward.

Soviet submarines are built at Severodvinsk on the White Sea, at Komsomolsk, well up the Amur River near the Pacific coast; at Nizhnyy Novgorod (formerly Gorkiy), located on the Volga River, deep inside the Soviet Union, with ships moving to the open sea via the extensive Soviet inland waterway system; and at the United Admiralty complex in Leningrad, which may be turned to civilian production in the near future. The Soviets have been building as many as ten new combatant submarines annually over the last decade, with six classes currently in series production. Submarine production remains a top priority. The number of combatant submarines launched in 1989, for example, exceeded the total for each year since 1982 and included: one AKULA, one VICTOR III and one SIERRA class nuclear-powered attack submarines; one TYPHOON and one DELTA IV class nuclear ballistic missile submarine, and four diesel-powered KILO class attack submarines. In 1990, ten combatant submarines were launched, six of them nuclear-powered.

Although some shipyards have begun to produce more consumer goods in addition to ships, construction of surface combatants continues. Soviet principal surface combatants have been for the most part, built in Leningrad and Kaliningrad on the Baltic Sea and at Nikolayev on the Black Sea. Seventeen additional shipyards have been engaged in the production of other surface ships for the Soviet Navy.

Surface ship construction has already been somewhat curtailed by *perestroika* and the current resources constraints on the Soviet Union. The keel for a fifth KIROV class nuclear-powered cruiser was cut up on the ways at Baltic Shipyard, Leningrad, and the Soviets stated that henceforth the yard would build only civilian ships. The launch of the fourth SLAVA class cruiser at 61 Kommunars Shipyard, Nikolayev, in August 1990 was accompanied by an announcement that the Soviet Union's only other cruiser-building yard would also build only for the civilian sector in the future.

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Construction of destroyers continues at North Shipyard (formerly Zhdanov), Leningrad and at Kaliningrad, but it is expected that the output may slow somewhat over the 1990s. Smaller combatants, such as frigates, corvettes, missile boats and other patrol types, will probably appear in fewer numbers than before both because the ships and craft are larger, more sophisticated and more resource-consuming than their predecessors and also because other Soviet warship-building facilities are also being in part or wholly converted to civilian activities.

Eastern European shipyards have been major sources of ships for the Soviet Navy, particularly Poland, which has constructed most of the amphibious warfare ships and many of the naval auxiliaries acquired by the Soviet Navy since the 1950s, and East Germany, which has been an important source of auxiliaries and, recently, smaller combatants, with the dissolution of the Warsaw Pact and the sundering of the Soviet hold over Eastern Europe, however, those facilities have either been lost entirely or must be paid for in hard currency, which the Soviets have in limited supply. Thus, the future of Soviet naval shipbuilding will lie increasingly in the Soviet Union, where the building yards will lack the capacity to duplicate the construction rates achieved through the 1980s.

Most of the shipyards which build surface warships also build merchant and fishing ships. The construction of all ships in the Soviet Union, naval or commercial, is managed by the Ministry of Shipbuilding, which is also responsible for all shipyards; for most research, design, and exchange of technologies; and for a coordinated allocation of resources. Each aspect of ship design, construction, and specialized equipment is supported by a specialized research institute. New shipbuilding equipment, from a simple hand tool to a computer-controlled cutting machine, must be approved by the Ministry of Shipbuilding before it is introduced as a standard item.

The Soviet yards have made extensive use of modern shipbuilding techniques and technologies and have established a very strong and viable shipbuilding industry.

KATUN, one of two Soviet-owned ships of the Norwegian-built KATUN class offshore supply vessels is designed to perform a wide range of offshore supply functions, including supply, fire-fighting, and handling anchors down to 500-meters.

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President of the Union of Soviet Socialist Republics Mikhail Gorbachev.

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SECTION 7. THE FUTURE OF THE SOVIET NAVY UNDER GORBACHEV AND *PERESTROIKA*

Perestroika has prompted us to make a critical reappraisal of the state of the Army and Navy and the principles of personnel training and education. There have been structural changes. Our military doctrine has been brought into line with the new political realities. A phased arms reduction has begun. The 27th CPSU Congress set a guideline toward qualitative parameters in military building and we have now gotten right down to a fundamental reorganization of the Army and Navy.

–V. N. CHERNAVIN, Admiral of the Fleet, Commander-in-Chief of the Soviet Navy

In 1985, President Mikhail Gorbachev embarked upon a dramatic and long overdue program of change in the Soviet Union. Under the general rubrics of *perestroika*, or "restructuring," and glasnost or "openess," the program sought to modernize the country by introducing economic competition and accepting political dissent. Glasnost and *perestroika* did initiate sweeping changes in Soviet society but they were accompanied by a marked deterioration in the Soviet economy and caused the Soviet people to question the legitimacy of the Leninist state and the future of the Soviet "Union." While the course of change in the USSR is far from certain, it is clear that the events of the past seven years have had and will continue to have a profound impact on the Soviet Navy.

As stated by FADM Chernavin above, *perestroika* has already deeply affected Soviet national security policy and military doctrine. It has led to a basic change in the articulated military posture of the Soviet Union from direct military confrontation to ostensibly "depriving NATO of its enemy." Central to this concept are lowering global perceptions of the Soviet threat through unilateral force reductions, a series of arms control initiatives, and an aggressive campaign promoting the new Soviet "defensive doctrine." The real measure of Western security will not be these actions or the changes inside the Soviet Union, but rather the residual capabilities of both sides after all unilateral and negotiated reductions have taken place. If the Soviet Union emerges from its current internal problems as a more cohesive and nationalistic if somewhat smaller state, as seems likely, and if *perestroika* ultimately succeeds in modernizing the Soviet economy, then the future Soviet military may well be more capable than that we now face–even though it may be smaller in size.

A. Restructuring the Soviet Navy

Perestroika under Gorbachev has been a dynamic process, with new changes and initiatives announced frequently. Its ultimate impact on the Soviet Navy is difficult to predict at this time, but some trends are already evident. Just as the Soviets are campaigning to lower threat perceptions of Soviet forces ashore, they have also been attempting to lower the West's perceptions of the Soviet threat

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at sea. Since 1985 there has been a steady decline in the Soviets' naval out-of-area operational tempo, while naval exercises have been smaller and conducted closer to home. The Soviets have retired numerous old surface and subsurface platforms, which Moscow characterizes as "naval force reductions," but which is in fact the removal of obsolete, inefficient platforms.

The Soviet fleet is still the largest in the world in terms of numbers of platforms. Historically, the Soviets maintained older surface ships and submarines in active or ready reserve status long after their warfighting capabilities became obsolete, but now it appears that warships will be stricken from service as they reach the end of their effective lives. *Perestroika* within the military is changing the criteria by which effectiveness is measured by emphasizing qualitative vice quantitative factors, thereby making the tactical and operational capability of each individual unit more important than total numbers. Thus, by these new measures of effectiveness, the accelerated retirement of large numbers of obsolete platforms, combined with the introduction of highly capable new ships, is intended to improve the calculated effectiveness of the overall Soviet fleet.

The Soviet diesel-electric submarine force had until recently an average age of over 35 years, but that has now been greatly reduced with the scrapping of units built in the 1950s. Still, however, only about 25 percent of the diesel-powered units are newer than 25 years old. Scrapping a large percentage of the Soviet Navy's obsolete platforms over the next five to seven years will create the illusion of a major drawdown of Soviet naval capabilities. The simultaneous arrival of new, sophisticated units and the resulting residual capability of the Soviet Navy after all these well-publicized reductions will, however, constitute the real threat to Western security on the high seas.

Soviet naval shipbuilding shifted its emphasis in the late 1970s and early 1980s from quantity production of moderately capable units to a lower rate of production of highly sophisticated platforms. For example, within the next six years three new large-deck carriers—two KUZNETSOV class and a larger, follow-on carrier, UL'YANOVSK, will have become operational in the Soviet Navy. Deployment of FLANKER and FULCRUM fighters on those carriers will dramatically upgrade the capability of Soviet sea-based tactical airpower. The major surface combatants and submarines coming off the building ways are orders of magnitude more capable than the 25–30 year-old ships they are succeeding.

The submarine will continue as the Soviets' capital ship for the foreseeable future. Newer classes are larger, quieter, better armed, and far more sophisticated than their predecessors. Soviet literature speaks of developing even more advanced submarines employing new technologies and promises advances in antisubmarine warfare techniques, directed energy weapons, and space-based detection systems. In sum, the Soviet Navy of the future will probably have significantly fewer ships than today's navy but it will be relatively more capable and modern.

B. Combat Readiness Under Perestroika

In a 1986 article that laid the basis for current Soviet policy on naval combat readiness, FADM Chernavin explained the new measures of combat effectiveness being implemented for naval forces:

> *. . . the main factors in determining the combat readiness of the navy are the number of fully manned and trained operational formations, tactical formations and ships, and their ability in a given period of time to begin fulfilling tasks.*

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A variant of this FLANKER B is estimated to be the fighter/interceptor aircraft that will operate from the two new large deck aircraft carrier classes which will join the Red Fleet in the 1990s.

These factors are determined by:

> . . . *the serviceability of armaments and combat equipment, the degree to which they have been mastered, a level of naval, air and field training of personnel that meets modern requirements, and their level of moral-political toughness, discipline, and organization.*

Chernavin, in that article, established the categories in which combat readiness would henceforth be judged: the material condition of armament and systems, training on those systems, indoctrination of personnel, and officer responsibility for insuring readiness. Improvements in those categories will prove difficult for the Soviets. Shortages of computer-literate personnel will hamper progress in assimilating new technologies and in training personnel in their use. The absence of sufficient repair yard capacity will adversely impact proper maintenance of weapon and sensor systems as well as of platforms, no matter how long ships are kept in port. Additionally, the stresses of multiple mission requirements will continue to complicate force allocations.

Foreign as it may be to Western naval traditions, the Soviets apparently feel that the best place to achieve their goals is in port. Relying upon simulators to train crews, Soviet naval forces would put to sea only to exercise what has already been perfected during simulator training. In this way, the material readiness of the ships would be maintained at high levels in port so that the combat systems could be

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Modern, more capable, ships, such as the UDALOY class guided-missile destroyer VITSE ADMIRAL KULAKOV, are indicative of the qualitative improvements in naval platforms that permit the scrapping of large numbers of obsolete ships and submarines.

immediately employed when ships put to sea to fight. Yet a continuing shortage of sophisticated simulators will undoubtedly delay their implementation of this concept over the near-term, potentially degrading combat readiness in the absence of sufficient at-sea training.

Since 1985, the Soviets have reduced their out-of-area operating tempo, driven by both mission changes potentially associated with defensive doctrine and the resource conservation implemented under the umbrella of *perestroika*. The deployment pattern change is indicative of the Soviet Navy's more thorough integration into the overall Soviet strategy for theater war around the Eurasian periphery; it is also a realistic response to the emergence of the high-technology, precision-guided weapons fielded by the West and called by the Soviets "reconnaissance-strike complexes," abbreviated as "RUK" in the Russian acronym.

RUKs are defined by the Soviets as integrated sensor and weapon systems that can detect, target, and strike an objective swiftly and independently. The development of these systems in the West is perceived by Soviet authors to have qualitatively changed the defense-of-the-homeland role of the Soviet Navy. The swiftness with which RUKs can allegedly be employed and the resulting surprise that they can achieve, coupled with the effectiveness of the weapons (approaching that of nuclear weapons), according to Soviet authors, require that the Soviet Navy be prepared to deal with them swiftly and effectively.

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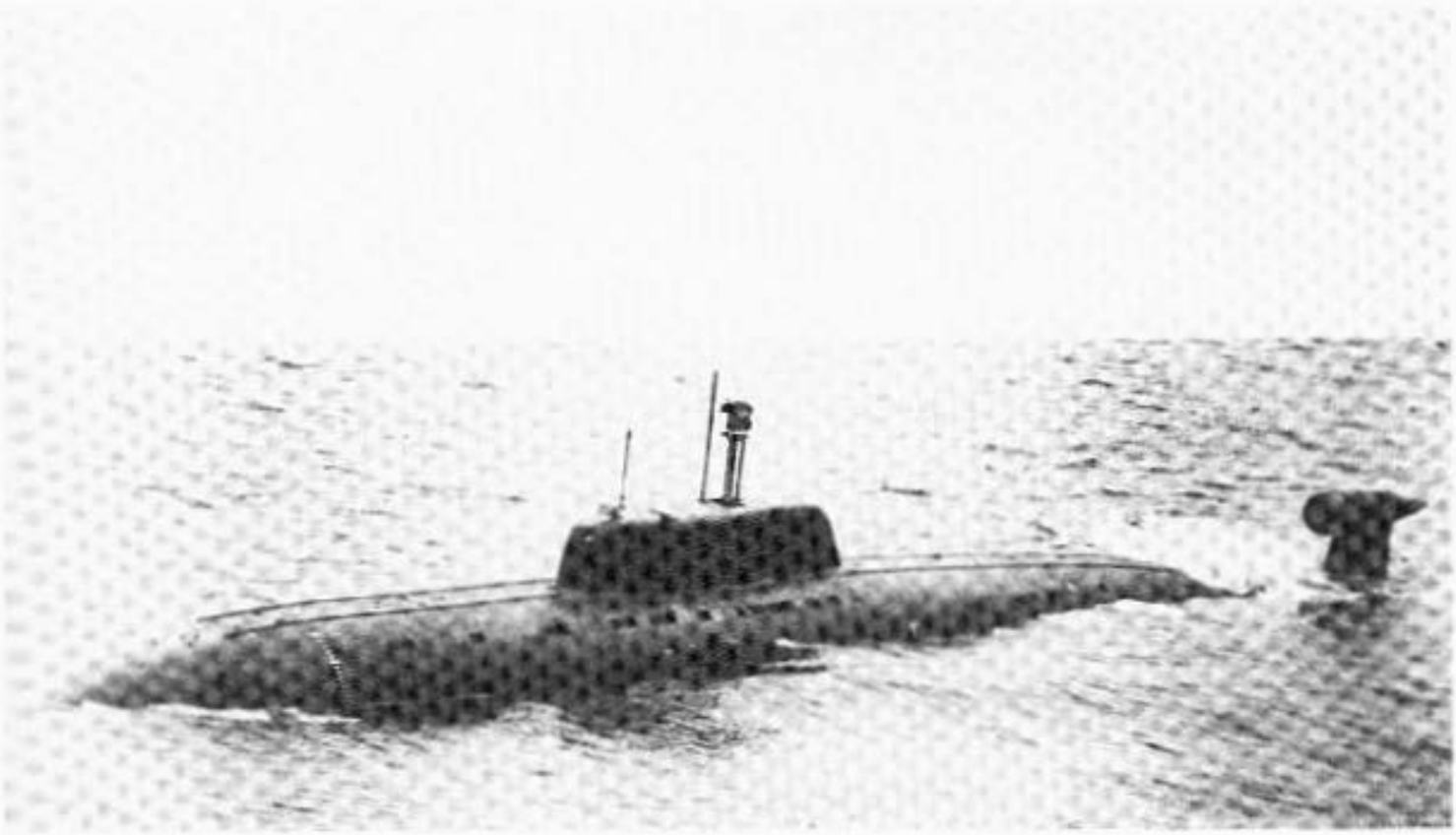
FADM Chernavin has stated that Soviet naval combat readiness must peak as soon as Soviet forces put to sea in order to deal with the "reconnaissance-strike complexes."

Inherent to the emergent defensive posture of Soviet naval forces is an attendant requirement for integrated, all-service, combined arms action against invading forward-deployed Western strike and amphibious forces. Naval control over combined arms forces throughout the oceanic theaters is an emerging trend. This combined arms approach includes the use of space-based assets that will constitute a vital element of Soviet reconnaissance and strike capabilities.

C. Naval Arms Control

The Soviet Navy's warfighting potential will increase in the 1990s due to the arrival of new, high-technology platforms and despite a drop in the total numbers of combatants. To improve their position further vis-a-vis Western navies, the Soviets will continue to use the retirement of Khrushchev-era combatants, combined with formal naval arms control initiatives, to put pressure on the West for naval force reductions. In this way, they hope to achieve through negotiation what has eluded them at sea: an operational parity over the navies of the West.

Soviet naval arms control proposals have proven remarkably consistent over time, whether articulated by Gorbachev himself or by his subordinates. Since at least 1986, Gorbachev has portrayed the US Navy as an offensive force and has proposed a series of measures that would seriously hinder or interfere with US Navy operations and capabilities. These proposals have included: ASW free zones; nuclear free zones; offers to trade reductions in the numbers of Soviet submarines for US aircraft carriers; limitations on the numbers and ranges of land-attack SLCMs; prior notification of major naval exercises; and a ban on naval activity in international shipping lanes, straits, and in designated bodies of water such as the Baltic Sea.



A Sierra class SSN

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Entire classes of obsolete combatants, such as the KOTLIN DD shown here, have been retired.

Soviet arms reduction proposals are directed at areas of Western advantage, such as sea-based airpower and cruise missiles, which are major elements of what the Soviets define as reconnaissance-strike complexes. The effect of the Soviet proposals would be to slow the West's momentum in key naval technologies. The proposals also aim at denying the West naval access to regions accessible to Soviet ground forces or to the naval forces of their client regional powers. This last initiative is particularly important to the Soviets in the aftermath of their deliberate decrease in out-of-area naval operating tempo and reemphasis on naval operations in home waters. In contrast to the West, the Soviets need only to achieve their war aims in the continental theaters of military action contiguous to their borders; they do not need to be able to support warfighting in distant areas.

Should the West accept Soviet naval arms control proposals in even a modified form, the Soviets would succeed in reducing the West's ability to hold vital Soviet interests at risk from the sea, resulting in a need for fewer defensive platforms to defend against the threat perceived by the Soviets. Having thereby achieved a more favorable "correlation of forces" for defense of the continental flanks at potentially lower costs, the Soviets could reallocate resources to other areas such as naval research and development and the development of a capability to conduct offensive missions against the vital sea lines of communication between North America and the Eurasian landmass or

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offensive strikes against the military-economic infrastructure of the NATO allies. With a favorable correlation of forces in their own waters during peacetime, the Soviets could once again build up their peacetime presence out-of-area. The sophisticated warships laid down in the 1980s would serve to showcase Soviet technology worldwide.

In summary, *perestroika* is imposing major changes on the Soviet Navy, and these changes must be taken in context. Even without its Warsaw Pact Allies, the Soviet Union retains the world's largest military force and its second most powerful Navy. The large scale scrapping program currently in effect will reduce the size of that Navy, but will result in a more modern and more capable fleet just as a similar program in the 1950's gave birth to the current Soviet fleet. Thus, regardless of the announced intentions as to pursuit of a "defensive doctrine," the Soviet Navy will retain the capability of undertaking a wide range of operations in support of Soviet national interests.

While the ultimate size and composition of the Soviet Navy remains unclear, some trends are emerging:

- The Soviets are increasing pressure for naval arms control to reduce defense requirements they cannot hope to satisfy in any other way.
- OPTEMPO remains at lower levels than in the past to minimize operating expenses while maintaining proficiency in key areas.
- Scrapping programs continue to eliminate the burden of maintaining obsolescent ships and submarines and allow manning levels to be reduced.
- Construction of sophisticated surface combatants and submarines continues and Soviet naval aviation continues to modernize and grow in size.
- Research and development continues in such diverse areas as sea-based aviation, ASW and submarine technology, land-attack sea-launched cruise and ballistic missiles, and a panoply of other, often exotic, weapons, sensors, and platforms continues.

Thus, although the Soviet Navy of the 1990s will be numerically smaller, it should be far more combat capable than it is today. The enhanced capabilities will be in place no matter how they are applied under Soviet military doctrine, defensively or offensively. The real question is whether the Soviet Navy will be able to keep those capabilities ready for use. Consequently, to understand Soviet naval developments, one must not just listen to what the Soviets are saying or look at what they are scrapping, but, more important, one must watch what they are building and doing and ascertain the capabilities that they are pursuing.

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The IVAN ROGOV class LPD is the largest Soviet amphibious warfare vessel.

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Appendix A. SOVIET NAVY ORDER OF BATTLE (MAY 1991)

1. Active Ships

Submarines—Nuclear Powered

SSBN Ballistic Missile Submarines
- TYPHOON Class..... 6
- DELTA I/II/III/IV Classes... 43
- YANKEE I Class..... 11

SSGN Cruise Missile Submarines
- CHARLIE I/II, ECHO II, OSCAR I/II, YANKEE Classes.. 43

SSN Torpedo-Attack Submarines
- AKULA, HOTEL, SIERRA, VICTOR I/II/III, YANKEE Classes..... 60

SSAN Auxiliary Submarines
- ECHO II, HOTEL, UNIFORM, YANKEE Classes 5

Total.....168

Submarines—Diesel-Electric Powered

SSG Cruise Missile Submarines
- JULIETT Class..... 15

SS Torpedo-Attack Submarines
- FOXTROT, KILO, ROMEO, TANGO, WHISKEY Classes. 100

SSA/SST Auxiliary Submarines
- BELUGA, BRAVO, GOLF, INDIA, LIMA, XRAY, ZULU Classes..... 15

Total.....130

Aircraft Carriers

CVG Guided Missile Aircraft Carriers
- KUZNETSOV Class..... 1

CVHG Guided Missile VTOL and Helicopter Carriers
- KIEV Class..... 4

Total..... 5

Cruisers

CHG Helicopter-Carrying Missile Cruisers
- MOSKVA Class..... 2

CGN Guided Missile Cruisers—Nuclear
- KIROV Class..... 3

CG Guided Missile Cruisers
- SLAVA, KARA, KRESTA, KYNDA, Classes..... 25

Total..... 30

Destroyers

DDG Guided Missile Destroyers
- KASHIN, SOVREMENNYY, UDALOY Classes..... 35

DD Destroyers
- MOD KILDIN, MOD KOTLIN Classes..... 2

Total..... 37

Frigates

FF/WFF Frigates
- KRIVAK I/II/III, NEUSTRASHIMYY, RIGA Classes..... 44

FFL/WFFL Corvettes
- GRISHA, MIRKA, PETYA, Classes.....101

Total.....145

Patrol Combatants/Craft

PGGA/PGG
- DERGACH, UTKA, NANUCHKA, TARANTUL Classes..... 74

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Patrol Combatants/Craft – Continued

PG/WPG Patrol Combatant

PARCHIM II, PAUK, POTI Classes..... 50

WPS Large Patrol Ship

IVAN SUSANIN Class..... 6

Miscellaneous Coastal Patrol Craft (Navy and KGB subordinated)

MATKA, OSA, MURAVEY, STENKA, SVETLYAK TURYA etc. Classes.....230

Total.....360

Amphibious Ships

LPD Amphibious Assault Transport Dock Ships

IVAN ROGOV Class..... 3

LST Amphibious Vehicle Landing Ships

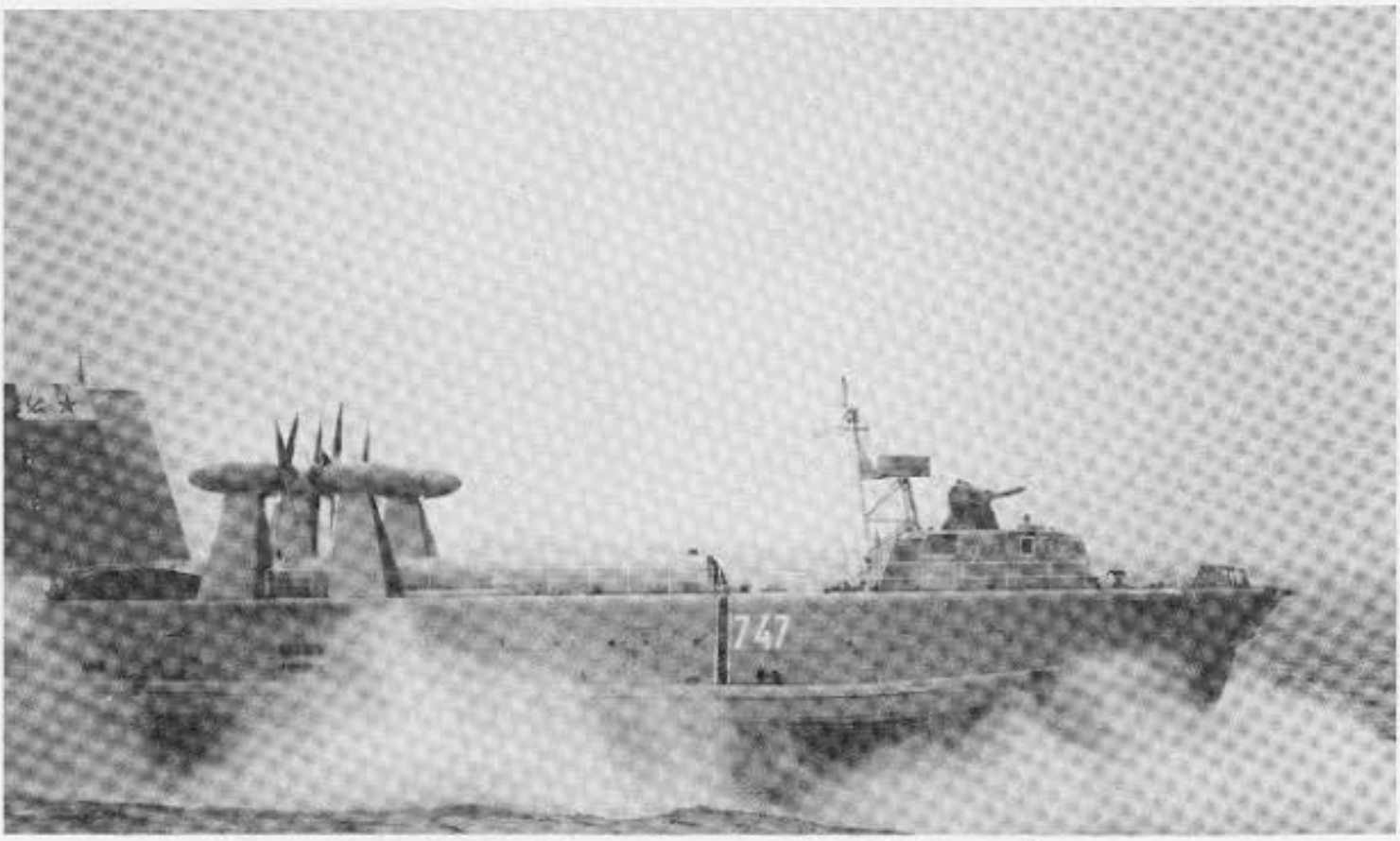
ALLIGATOR, ROPUCHA I/II Classes..... 32

LSM Amphibious Medium Landing Ships

POLNOCNY A/B/C Classes.. 32

Total..... 67

Miscellaneous Amphibious Warfare Craft..... 68



Soviet AIST class air cushion vehicles (ACV) are employed in amphibious warfare.

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A 5,000-ton, BALZAM class intelligence collection ship (AGI) is shown here underway in the Mediterranean. The BALZAM class was introduced into the Soviet fleet in 1980.

Mine Warfare Ships/Craft

MSF Fleet Minesweepers
NATYA, YURKA, T-43 Classes..... 80

Miscellaneous Mine Warfare Ships
MHS, MM, MSFT MSS Types..... 7

Miscellaneous Mine Warfare Craft
MSC, MHC, MSIA, MSI Types.....155

Total.....242

Auxiliary Ships

Logistics Support Ships.....119
Intelligence Collectors..... 56
Other Auxiliary/Research Ships.....565

Total.....740

NOTE: Most "Small Combatant" and "Miscellaneous Amphibious and Mine Warfare Craft" categories encompass vessels that would not be "commissioned" ships in the U.S. Navy. None of the "craft" listed would be commissioned.

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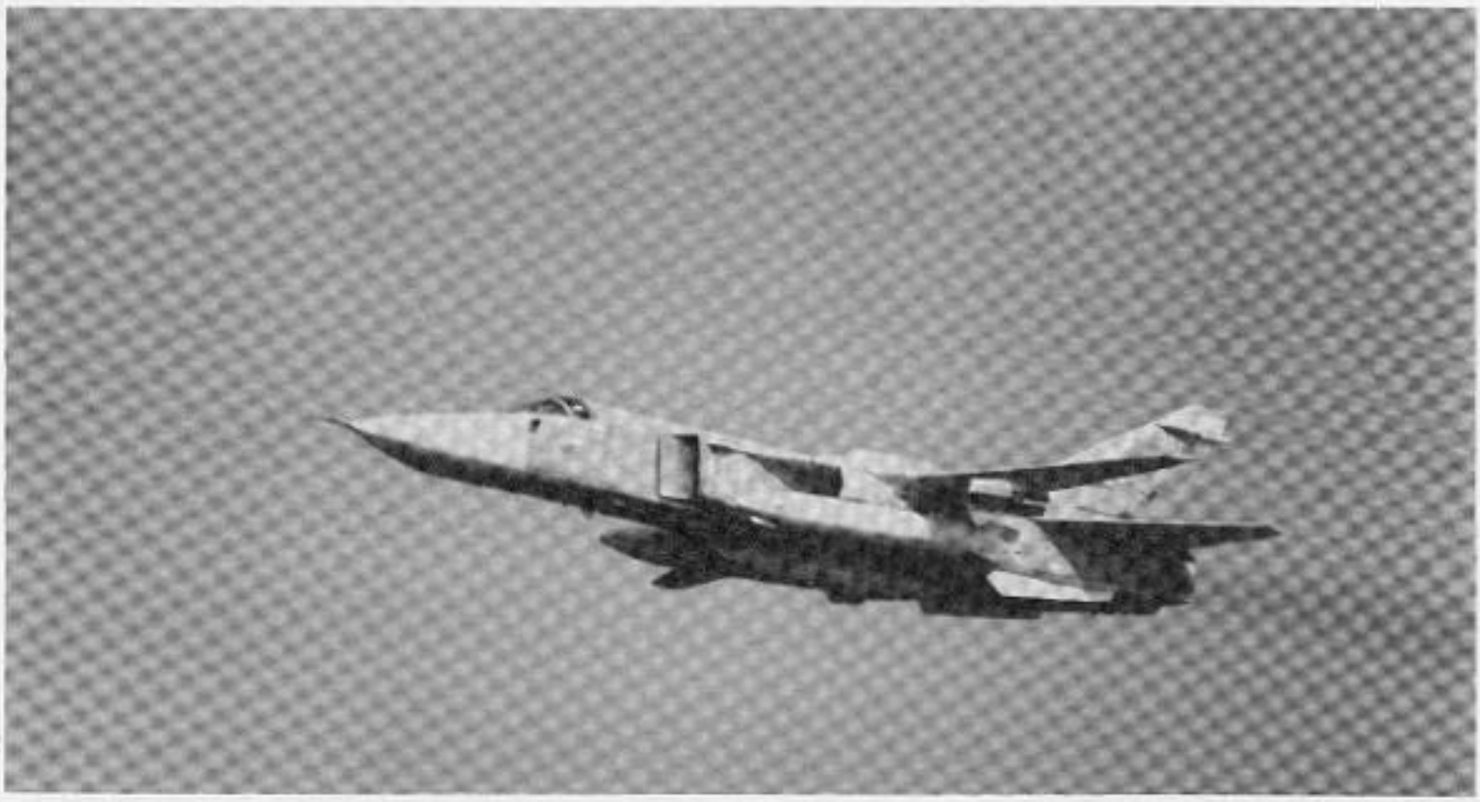

The land-based Su-24 FENCER all-weather, supersonic strikefighter is the latest addition to the Soviet Naval Aviation inventory. About 90 were transferred from the Soviet Air Force in 1989 and more may be resubordinated.

2. Active Aircraft

Strike/Bombers..... 185
- BACKFIRE B/C
- BADGER A/C
- BLINDER A

Fighters and Fighter/Bombers..... 400
- FITTER C/H
- FORGER A
- FLOGGER B
- FULCRUM C
- FENCER A/B/D

Antisubmarine Warfare Aircraft.....480
- BEAR F
- MAIL
- MAY
- HAZE A
- HORMONE A
- HELIX A

Tanker/Transport/Training/R&D Aircraft.....560

Reconnaissance/Electronic Warfare/ Command and Control Aircraft..... 200
- BEAR D/J
- BADGER C/H/J
- BLINDER C/E
- COOT A/B
- CUB B
- FENCER E
- HORMONE B

Mine Warfare/Assault Helicopters..... 50
- HAZE B
- HELIX B

Total.....1,875

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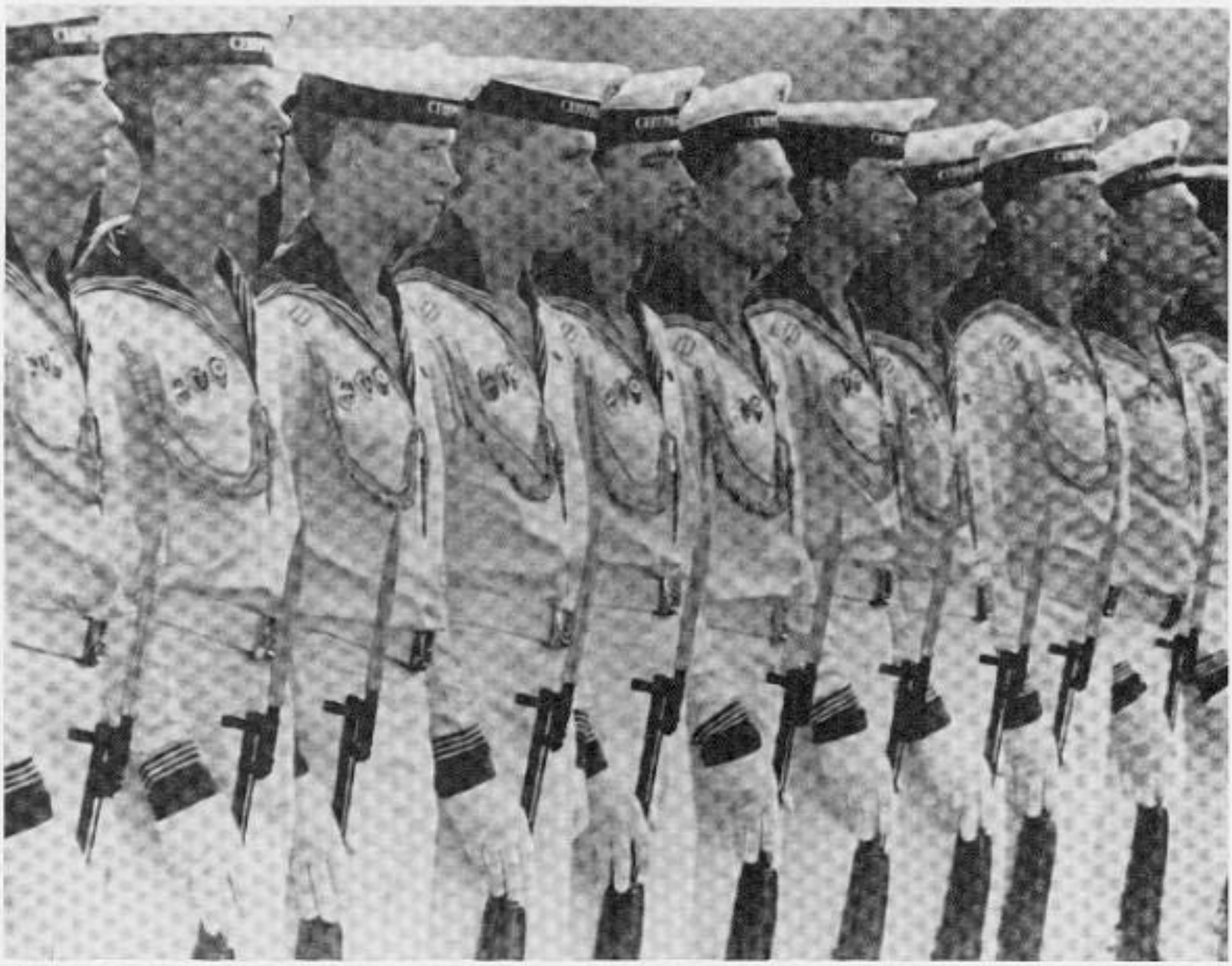
3. Personnel Strength (Uniformed Military Only)

Afloat	124,000
Naval Aviation	75,000
Coastal Defense	23,000
Naval Infantry	17,000
Recruits in Training	48,000
Shore Support	109,000
Communications/Observation	9,000
Total	405,000
Maritime Border Guard (KGB)	25,000



Cuts in Soviet Navy manning are expected over the next few years as many older ships are retired and replaced with fewer more manpower efficient modern units and as overall military reductions are implemented. The innovative personnel programs currently under consideration, however, are likely to result in a more professional force.

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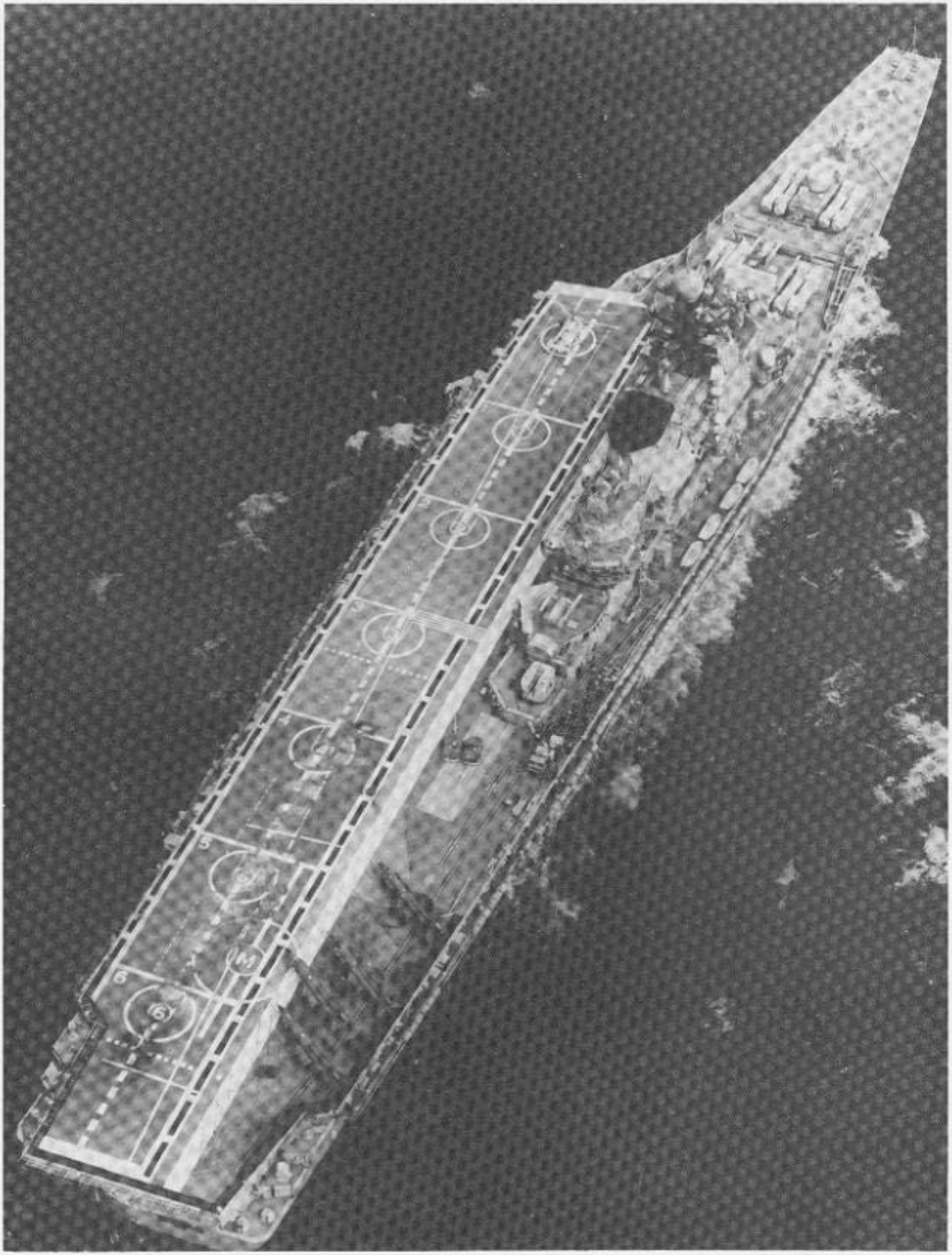

The MINSK was the second KIEV class aircraft carrier.

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Appendix B. SOVIET WARSHIP DESCRIPTIONS

This appendix provides basic descriptive data and photographs of the more significant Soviet submarines and surface ships in the following order: submarine classes (arranged alphabetically); surface combatants (arranged generally by size); and, lastly, amphibious ships. The dimensions, characteristics, and general information are approximate. Simplified ship designations have been used in this appendix; they are not always the formal designations assigned by US/NATO navies. All ships' class names are NATO code names.

The Soviets do not classify all of their ships in the same way that Western nations do. The following are a sampling of the transliterations from Russian of Soviet ship types, with their English meanings and the classes of ships in the category so identified:

BDK – BOL'SHOY DESANTNYY KORABL' (large landing ship): IVAN ROGOV, ALLIGATOR, ROPUCHA

BPK – BOL'SHOY PROTIVOLODOCHNYY KORABL' (large ASW ship): UDALOY, KRESTA II, KARA, KASHIN, MODIFIED KASHIN

EM – ESKADRENNYY MINOSETS (destroyer): SOVREMENNYY

MPK – MALYY PROTIVOLODOCHNYY KORABL' (small ASW ship): GRISHA-I, III, V; POTI

PB – PLAVUCHAYA BAZA (floating base): UGRA, DON, some LAMA

PKR – PROTIVOLODOCHNYY KREYSER (ASW cruiser): MOSKVA

PL – PODVODNAYA LODKA (submarine): KILO, TANGO, FOXTROT, ROMEO, WHISKEY

PLA – PODVODNAYA LODKA ATOMNAYA (nuclear submarine): VICTOR I, II, III; AKULA; SIERRA; ALFA

PLARB – PODVODNAYA LODKA RAKETNAYA BALLESTICHESKAYA ATOMNAYA (nuclear ballistic missile submarine): TYPHOON; DELTA I, II, III, IV; YANKEE

RKA – RAKETNYY KATER (missile cutter): TARANTUL, MATKA, OSA I, II

RKR – RAKETNYY KREYSER (missile cruiser): KYNDA, SLAVA, KRESTA I

SSV – SUDNO SVYAZI (communications vessel): BAL'ZAM, MOMA, PAMIR, PRIMORYE, KAMCHATKA, NIKOLAY ZUBOV, SSV-33

VT – VOYENNYY TANKER (naval tanker): BORIS CHILIKIN, UDA, OLEKHMA, ALTAY, SOFIYA

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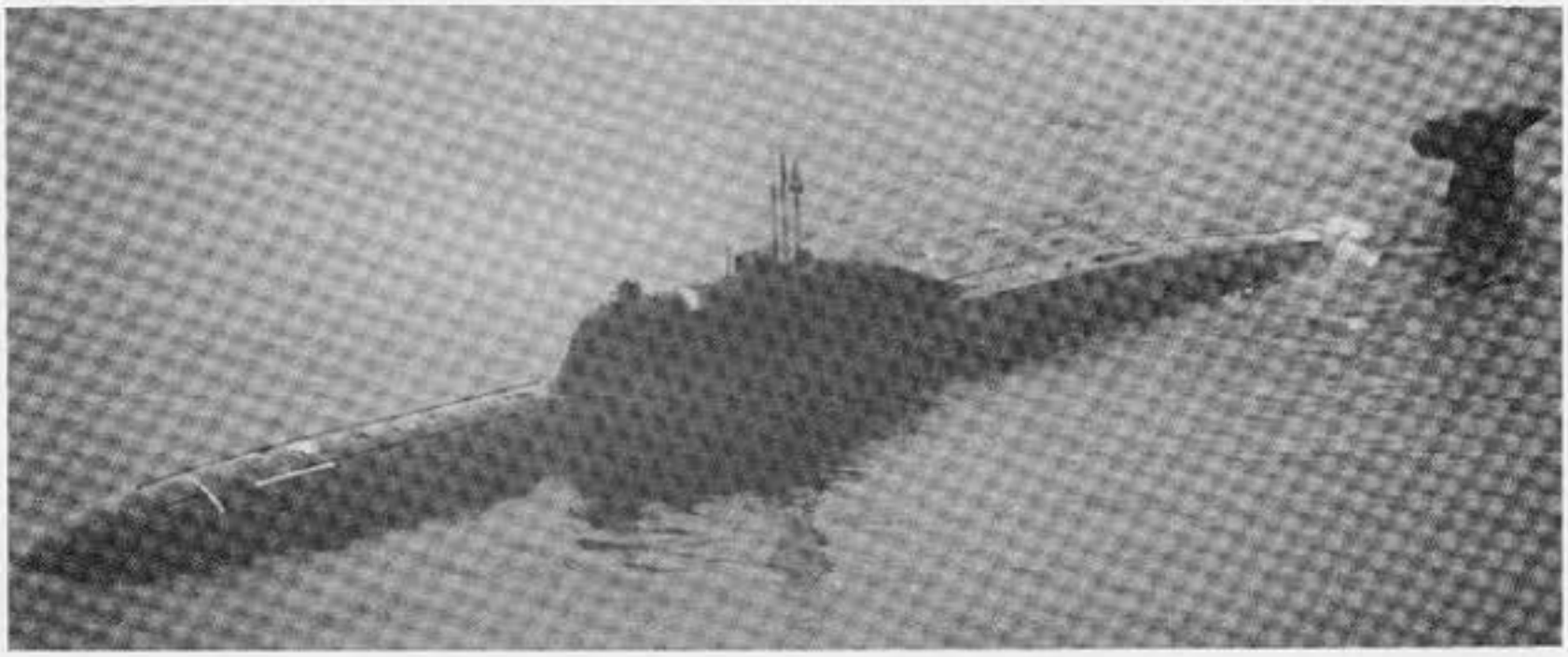
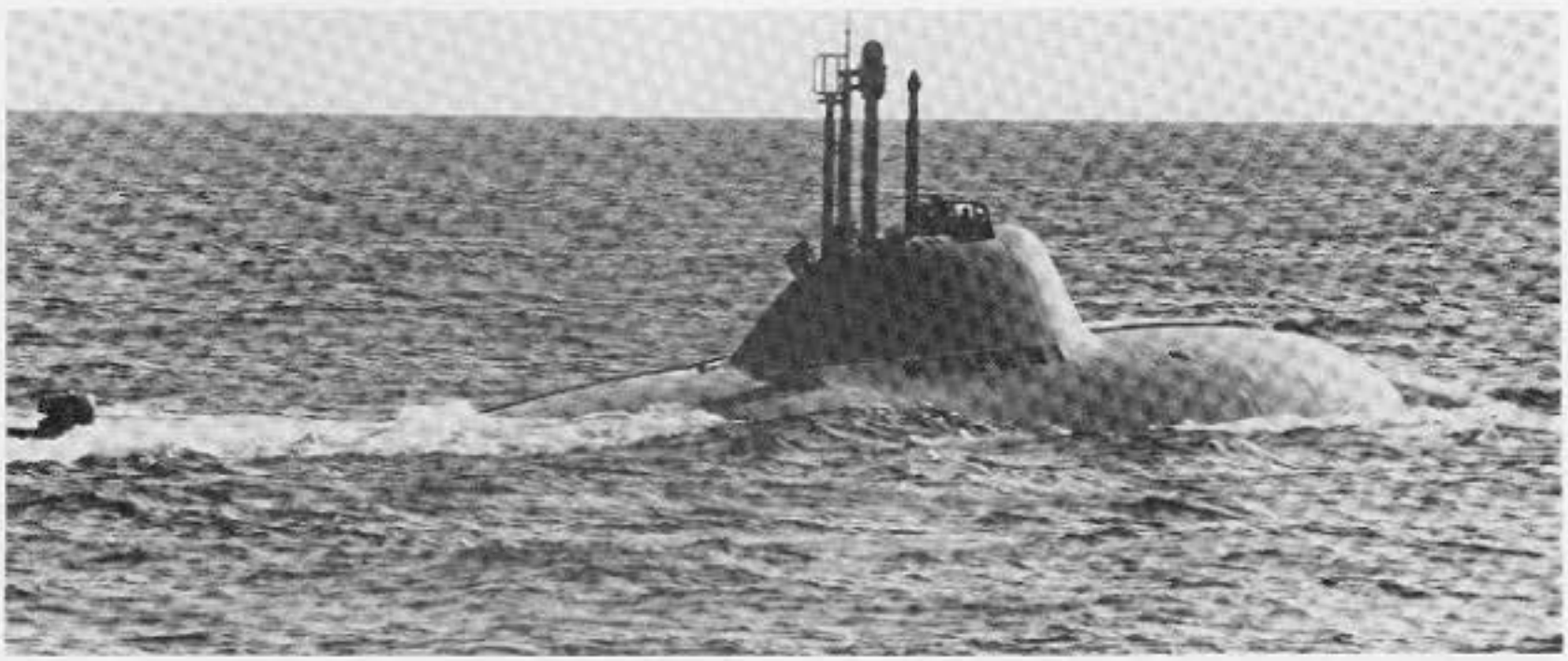


Nuclear Powered Attack Submarine (SSN): AKULA Class

Displacement:	10,000 tons submerged
Length:	113 meters (370 feet)
Main Armament:	Torpedoes; ASW missiles; cruise missiles

The initial unit of the AKULA class was launched in 1984 and construction is continuing at two shipyards. The AKULA SSN is the most advanced submarine the Soviets have produced. Its quieting is at a level the West had thought the Soviets incapable of achieving before the early 1990s, partially due to incorporation of technologies obtained from the US and its allies. It is assessed to be capable of carrying the SS-N-21 SLCM.



Nuclear Powered Attack Submarine (SSN): ALFA Class

Displacement:	3,600 tons submerged
Length:	80 meters (262 feet)
Main Armament:	Torpedoes; ASW missiles

The ALFA's hull, made of lightweight, non-magnetic titanium, is the most streamlined hull shape ever produced by the Soviets. It was designed to maximize speed to over 40 knots, making the ALFA the fastest submarine in the world. A small, high technology submarine with the world's deepest combatant submarine diving ability, ALFA was fitted with advanced weapons.

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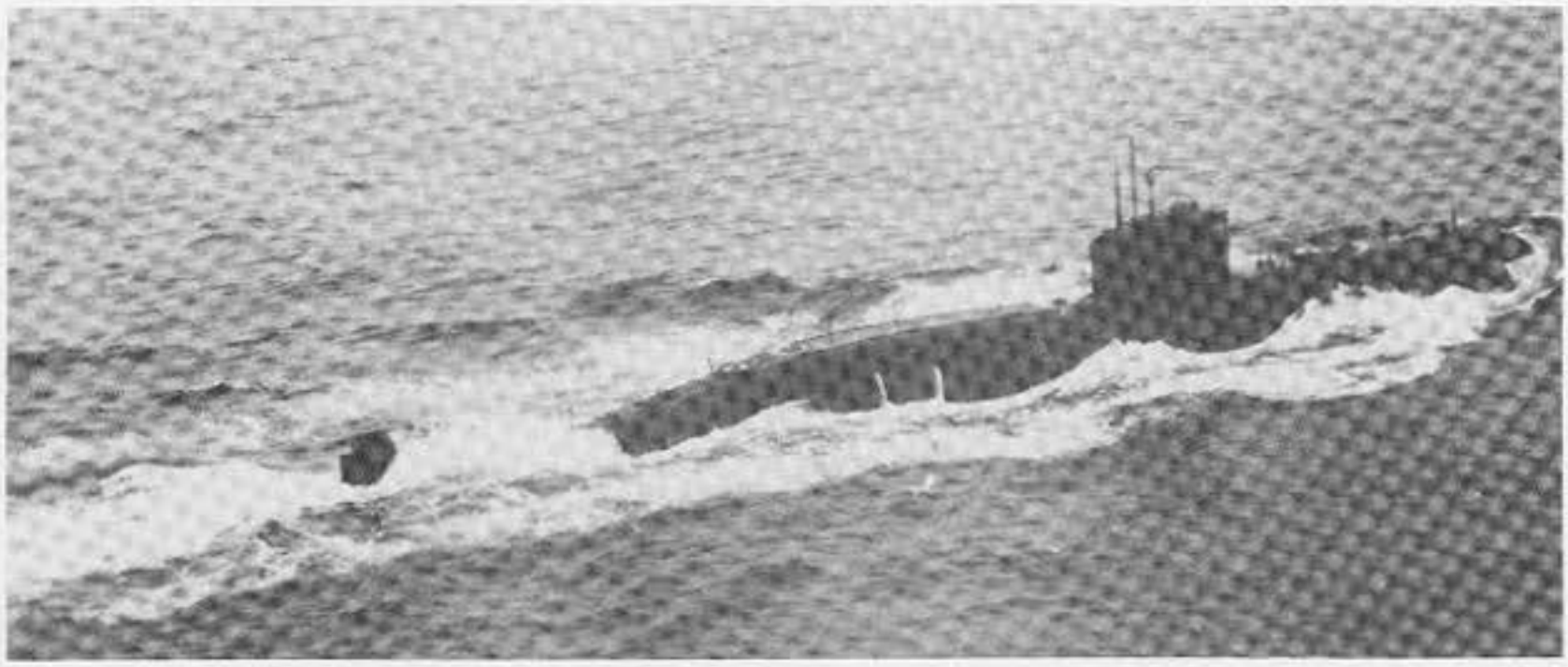
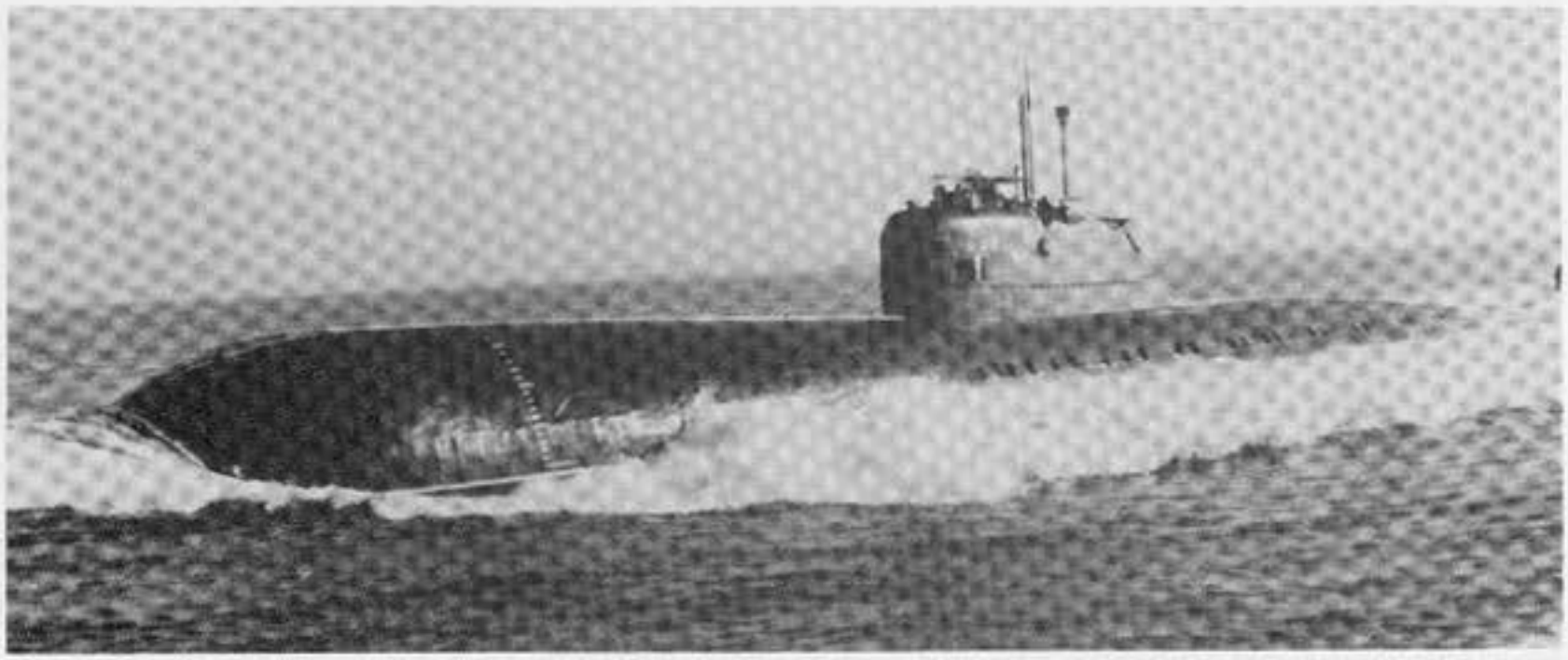


Training Submarine (SST): BRAVO Class

Displacement:	3,000 tons submerged
Length:	73 meters (240 feet)
Propulsion:	Diesel-electric
Main Armament:	Torpedoes

The BRAVO class SSTs entered the Soviet Navy in the late 1960s as target training submarines. Only four units were produced. Although they are not primarily attack submarines, they are believed to be armed with torpedoes.



Nuclear Powered Cruise Missile Submarine (SSGN): CHARLIE I Class

Displacement:	4,700 tons submerged
Length:	96 meters (315 feet)
Main Armament:	Eight SS-N-7 antiship missiles; torpedoes

The first unit of this class became operational in 1968. Eleven CHARLIE I SSGNs were built before being succeeded by the improved CHARLIE II class SSGN. One unit of this class was leased to the Indian Navy from January 1988 to December 1990, and one has been discarded.

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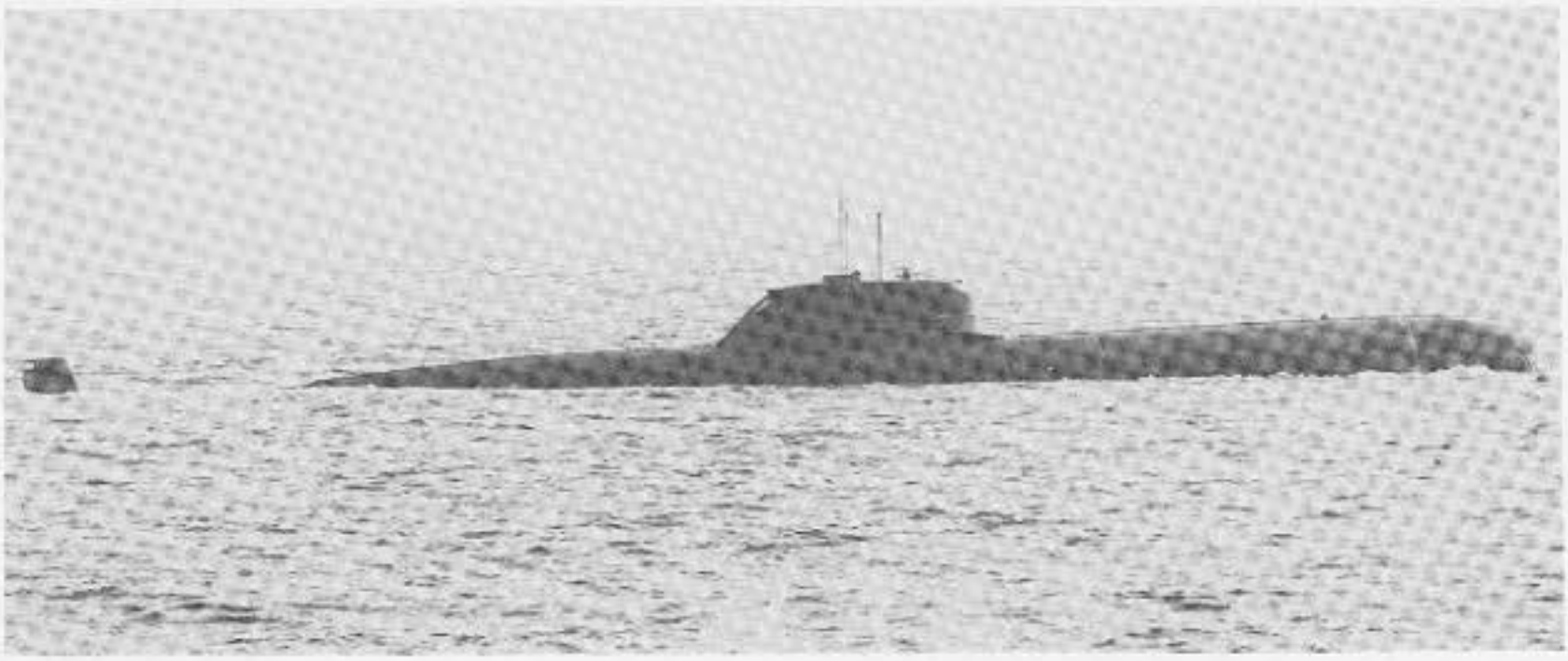
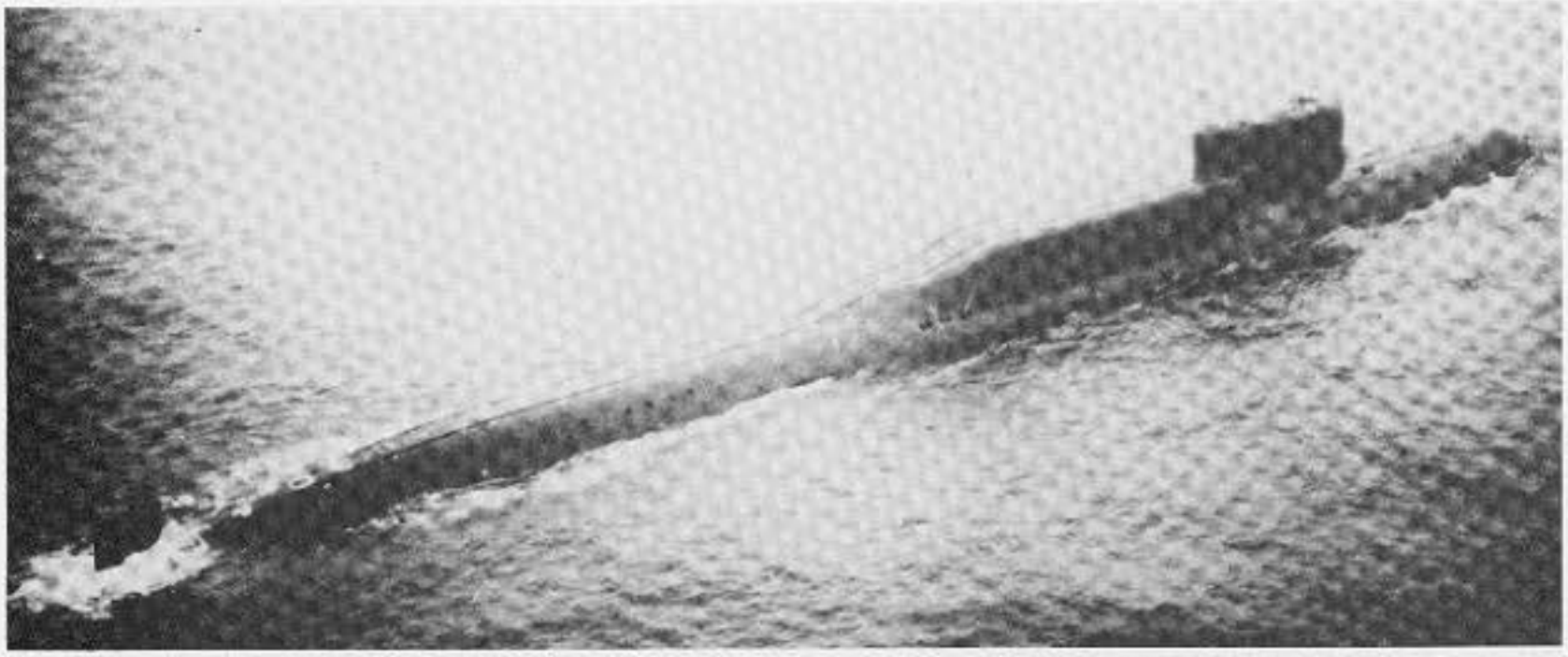


Nuclear Powered Cruise Missile Submarine (SSGN): CHARLIE II Class

Displacement:	5,400 tons submerged
Length:	104 meters (343 feet)
Main Armament:	Eight SS-N-9 antiship missiles; torpedoes

This is an improved Charlie I class SSGN. The larger size may accommodate an increased weapons and sensors capability. The SS-N-9 has a submerged launch capability and a range of about 60 nautical miles. Six Charlie II boats were built.



Nuclear Powered Ballistic Missile Submarine (SSBN): DELTA I Class

Displacement:	11,300 tons submerged
Length:	140 meters (460 feet)
Main Armament:	12 SS-N-8 strategic SLBMs; torpedoes

The DELTA class SSBNs are follow-on submarines to the YANKEE class. The first DELTA I went to sea in 1973. This SSBN carries 12 SS-N-8 SLBMs capable of reaching most North American targets while still in home waters. Eighteen DELTA Is were built.

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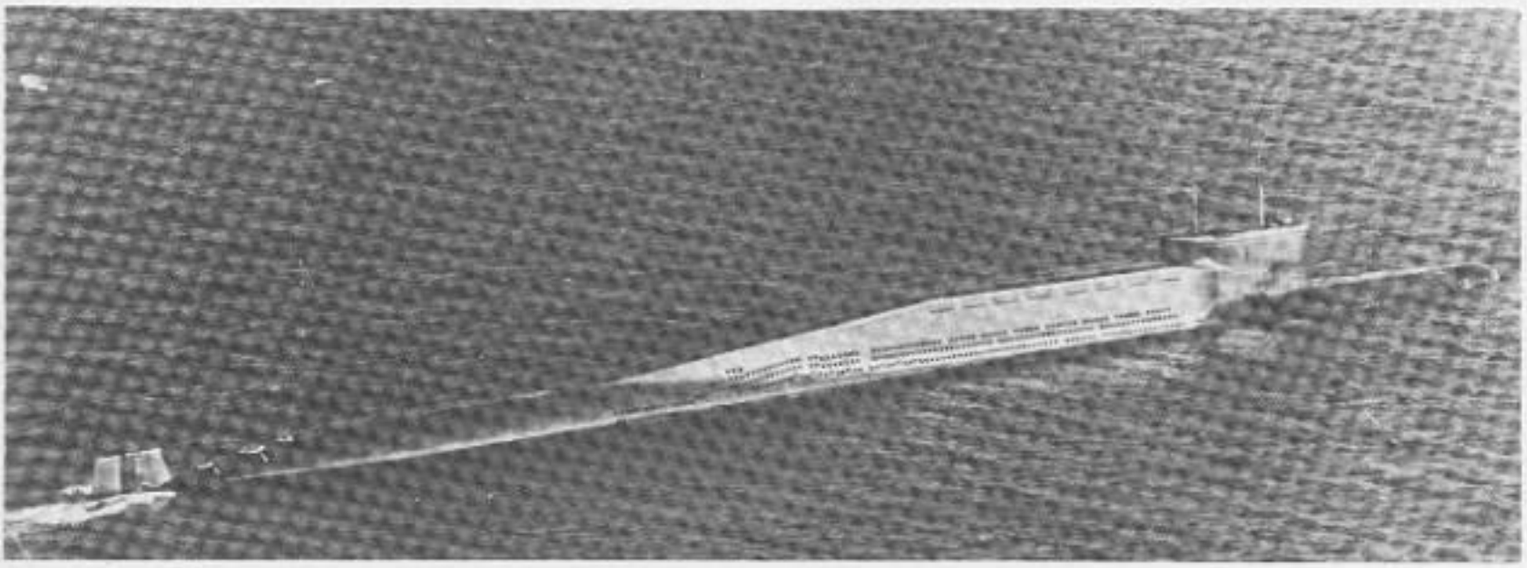
Nuclear Powered Ballistic Missile Submarine (SSBN): DELTA II Class

Displacement:	13,200 tons submerged
Length:	155 meters (518 feet)
Main Armament:	16 SS-N-8 strategic SLBMs; torpedoes

The DELTA II class, a lengthened version of the DELTA I, was first deployed in the Soviet Northern Fleet in early 1976. Other than its greater length and larger missile battery, the DELTA II is similar to the DELTA I SSBN. Four DELTA IIs were built.



Nuclear Powered Ballistic Missile Submarine (SSBN): DELTA III Class

Displacement:	13,250 tons submerged
Length:	155 meters (518 feet)
Main Armament:	16 SS-N-18 strategic SLBMs; torpedoes

The DELTA III SSBNs are a follow-on to the DELTA II and are similar in most respects except for their more advanced, MIRV capable SS-N-18 missile. This weapon has a range of approximately 5,000 nautical miles. The missile compartment is higher in the DELTA III than in the DELTA II to accommodate the longer SS-N-18. Fourteen DELTA IIIs were built.

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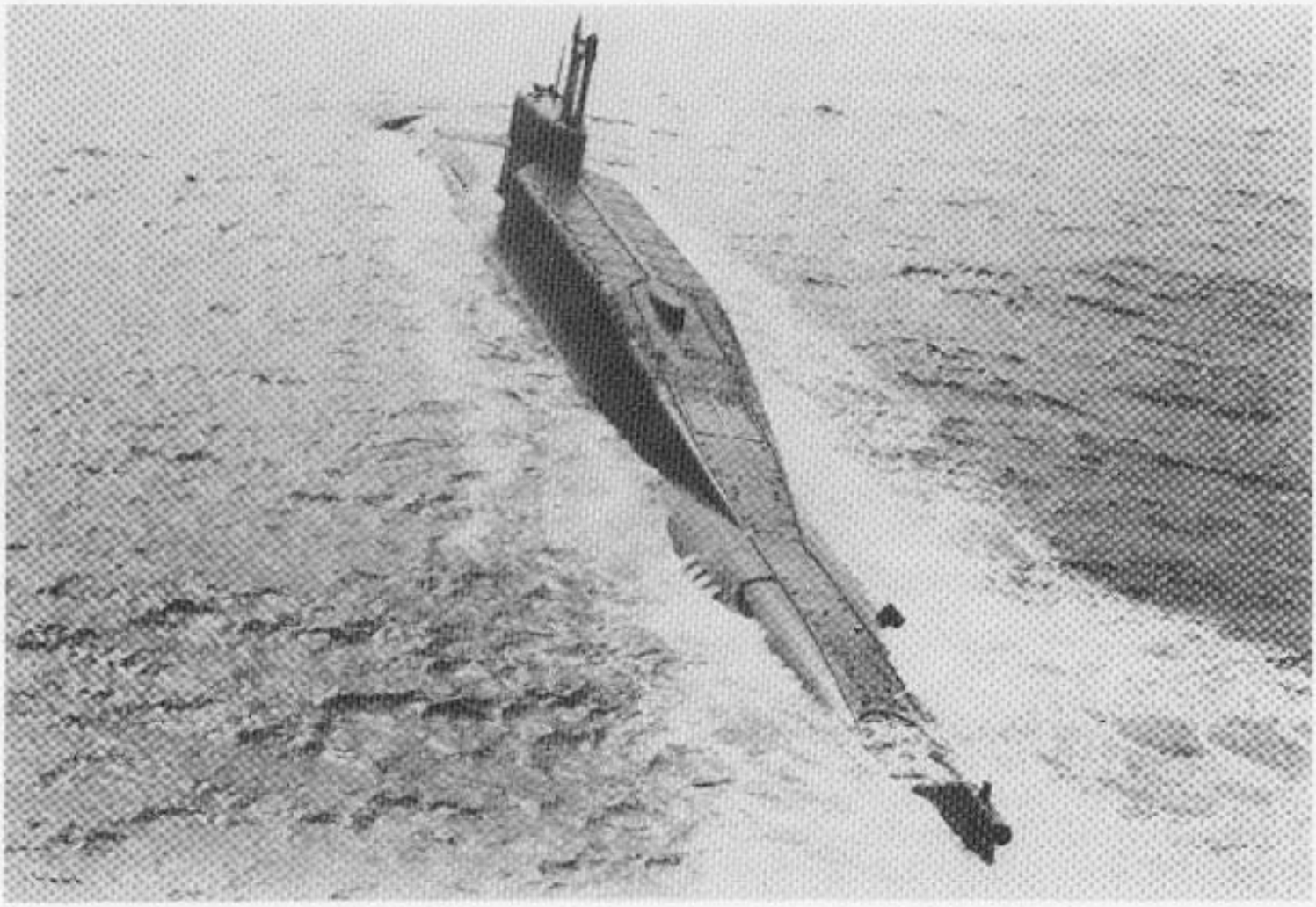

Nuclear Powered Ballistic Missile Submarine (SSBN): DELTA IV Class

Displacement:	13,500 tons submerged
Length:	165 meters (540 feet)
Main Armament:	16 SS-N-23 strategic SLBMs; torpedoes

The DELTA IV class SSBN is the latest continuation of the successful DELTA series. The DELTA IV carries 16 SS-N-23 SLBMs, a significantly improved MIRVed strategic system with increased accuracy. Six DELTA IVs have been launched, with construction continuing.

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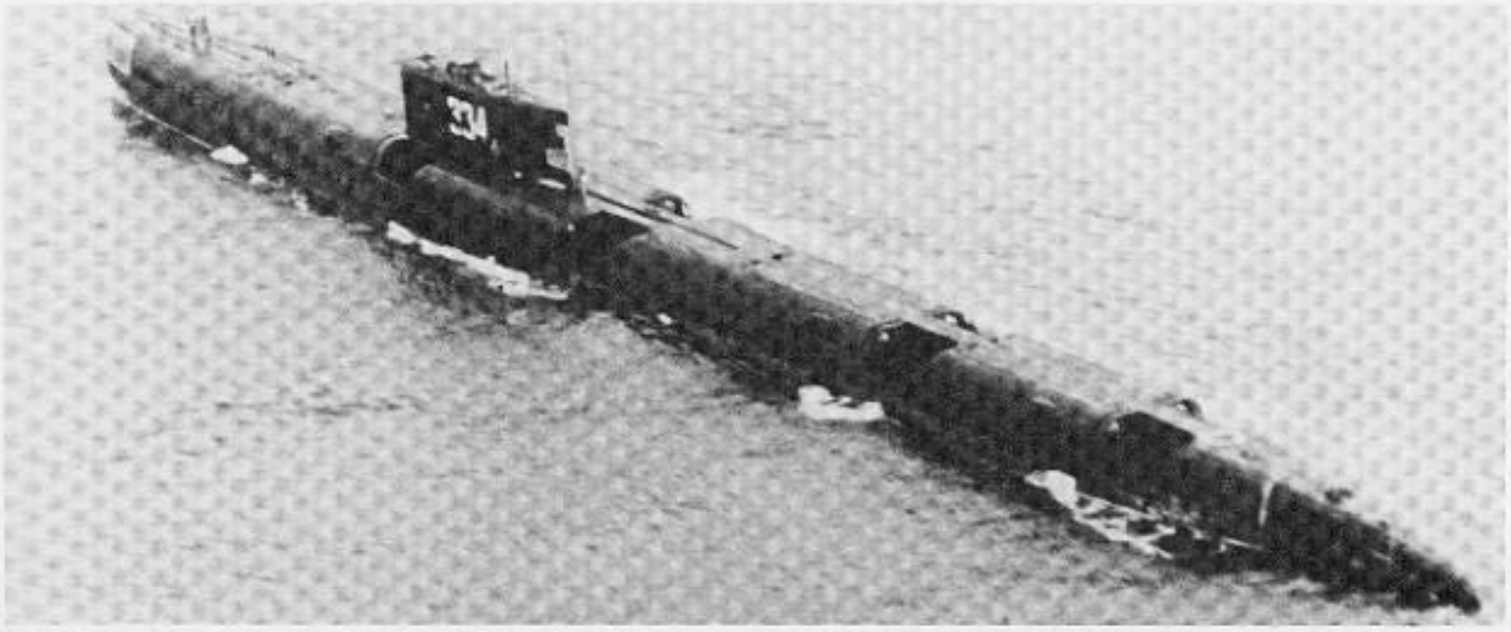

Nuclear Powered Cruise Missile Submarine (SSGN): ECHO II Class

Displacement:	6,300 tons submerged
Length:	115 meters (380 feet)
Main Armament:	Eight SS-N-3/12 antiship cruise missiles; torpedoes

Twenty-nine ECHO II class SSGNs were completed between 1962 and 1967. These submarines are armed with eight SS-N-3 (or, in about half, SS-N-12) cruise missiles plus torpedoes and must surface to fire their missiles. The maximum effective range of the SS-N-3 missile in the antiship role is about 375 kilometers (250 nautical miles). The submarine must rely on some outside source (such as BEAR D, HORMONE B, or satellites) for targeting information when firing its missiles beyond visual/radar range. ECHO-IIs are now being retired.

Attack Submarine (SS): FOXTROT Class

Displacement:	2,400 tons submerged
Length:	91 meters (295 feet)
Propulsion:	Diesel-electric
Main Armament:	Torpedoes

The FOXTROT attack submarine was introduced in the late 1950s and is still widely used. Eight were also provided to India, six to Libya, two to Poland, and three to Cuba. About 40 remain active in the Soviet Navy. The Soviets have routinely deployed units of this class to the Mediterranean Sea, Indian Ocean, Cam Ranh Bay and, on occasion, to the Caribbean.

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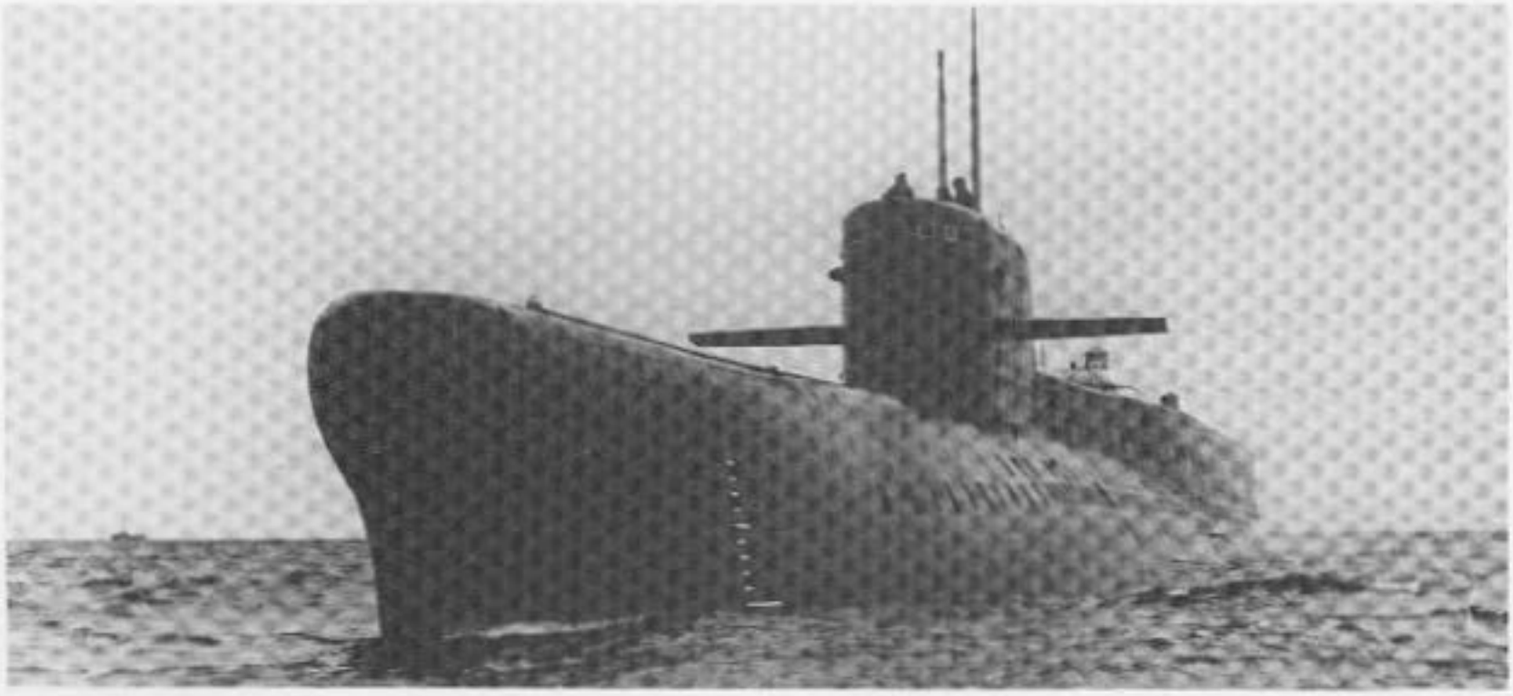

Auxiliary Submarine (SSA): INDIA Class

Displacement:	3,200 tons submerged
Length:	108 meters (354 feet)
Propulsion:	Diesel-electric
Main Armament:	Probably none

The INDIA is a salvage and rescue submarine that carries two submersible vehicles nested in wells aft of the sail. Two were built, one for the Northern Fleet and one for the Pacific Ocean Fleet.

Cruise Missile Submarine (SSG): JULIETT Class

Displacement:	4,400 tons submerged
Length:	87 meters (285 feet)
Propulsion:	Diesel-electric
Main Armament:	Four SS-N-3 antiship missiles; torpedoes

Sixteen JULIETT submarines were built during the early 1960s. The JULIETT is fitted with four tubes for the SS-N-3 antiship cruise missile, which is a surface-launched weapon of about 250nm range. As with the ECHO II class, over-the-horizon targeting must be accomplished from outside sources.

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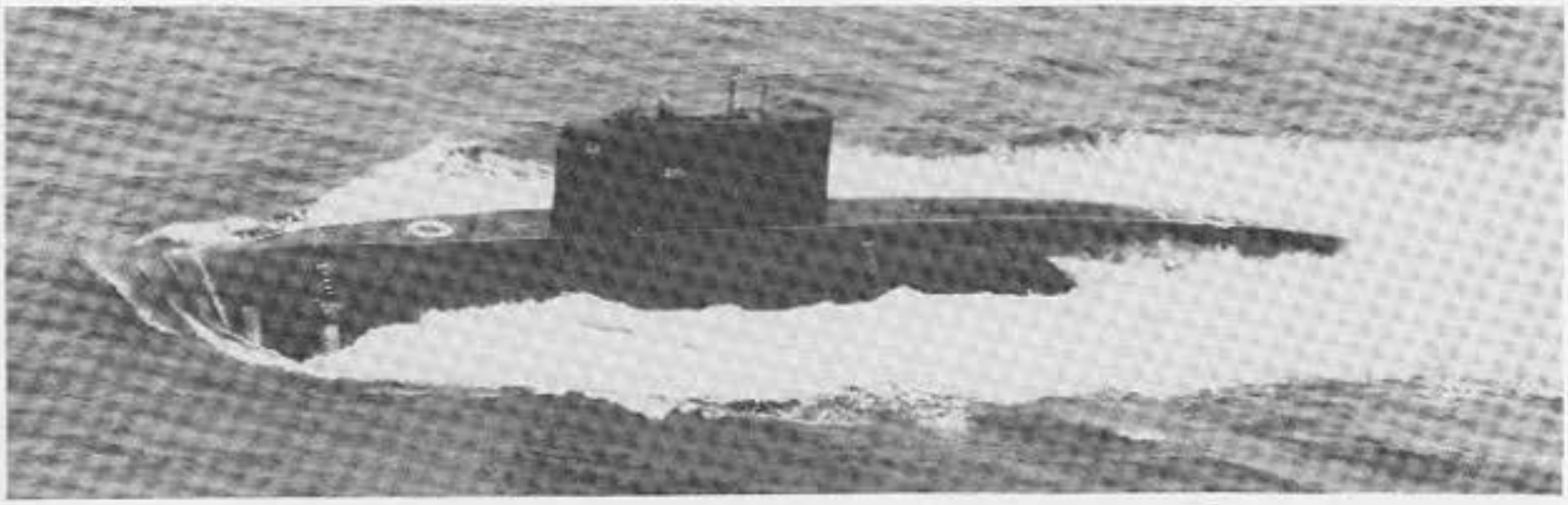

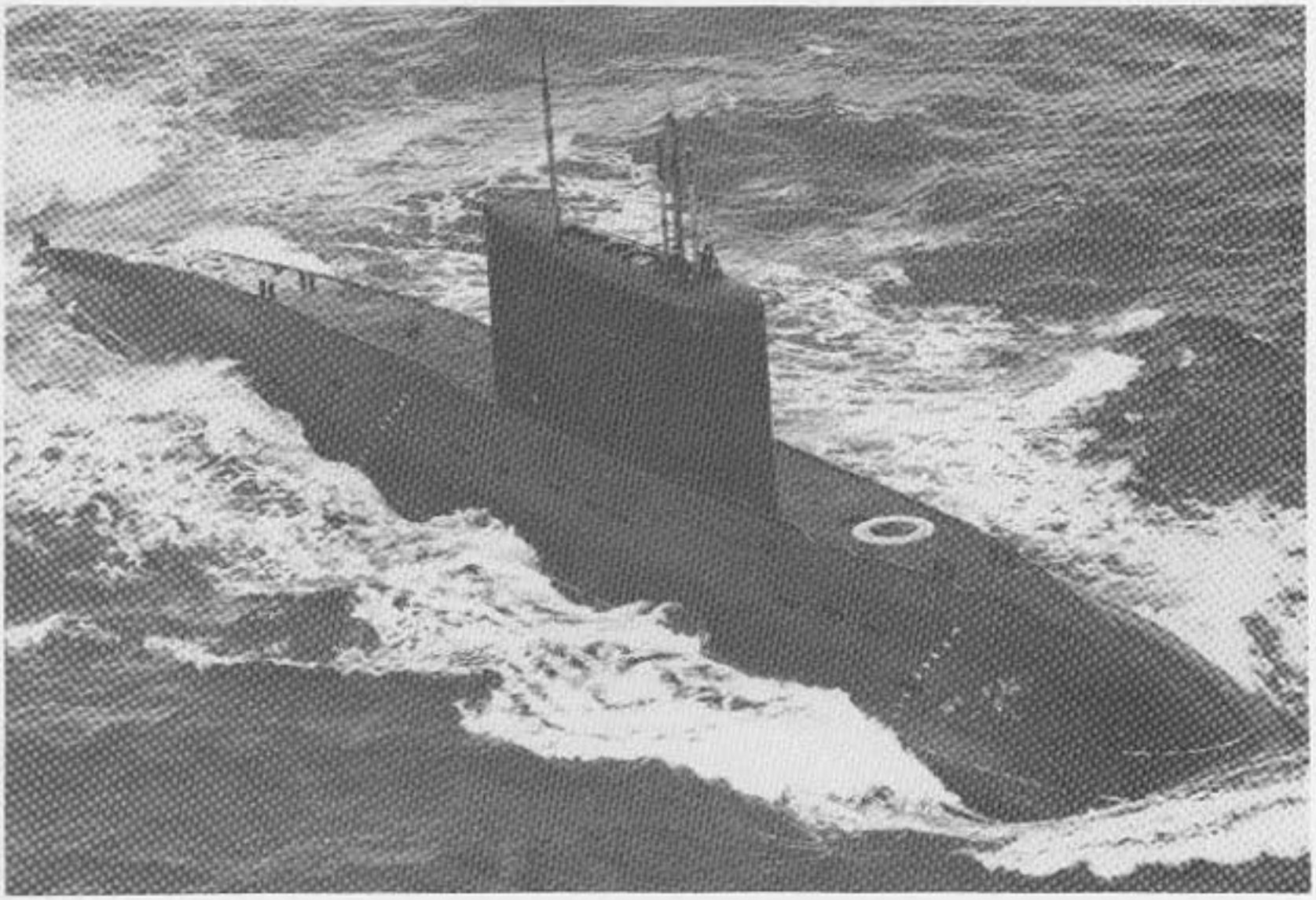

Attack Submarine (SS): KILO Class

Displacement:	3,000 tons submerged
Length:	73 meters (240 feet)
Propulsion:	Diesel-electric
Main Armament:	Torpedoes;

The KILO class is a modern diesel-electric boat in series production and demonstrates the Soviet Navy's continued interest in advanced diesel submarines. More than thirty have been launched thus far. At least fifteen are operational in the Soviet Navy, and it is expected more will be built both for use by the Soviets and for export to client states. Thus far India, Algeria, Poland, and Romania have received KILOs.

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Nuclear Powered Cruise Missile Submarine (SSGN): OSCAR I Class

Displacement:	16,700 tons submerged
Length:	143 meters (470 feet)
Main Armament:	24 SS-N-19 cruise missiles; torpedoes; possible surface-to-air missile system

The initial unit of the OSCAR class SSGN was launched in the spring of 1980; the second unit became operational in 1983. OSCAR was the largest non-ballistic missile submarine in the world. This submarine carries 24 SS-N-19 cruise missiles–the same large weapon carried by the KIROV class nuclear-powered missile cruiser and the KUZNETSOV class aircraft carriers.

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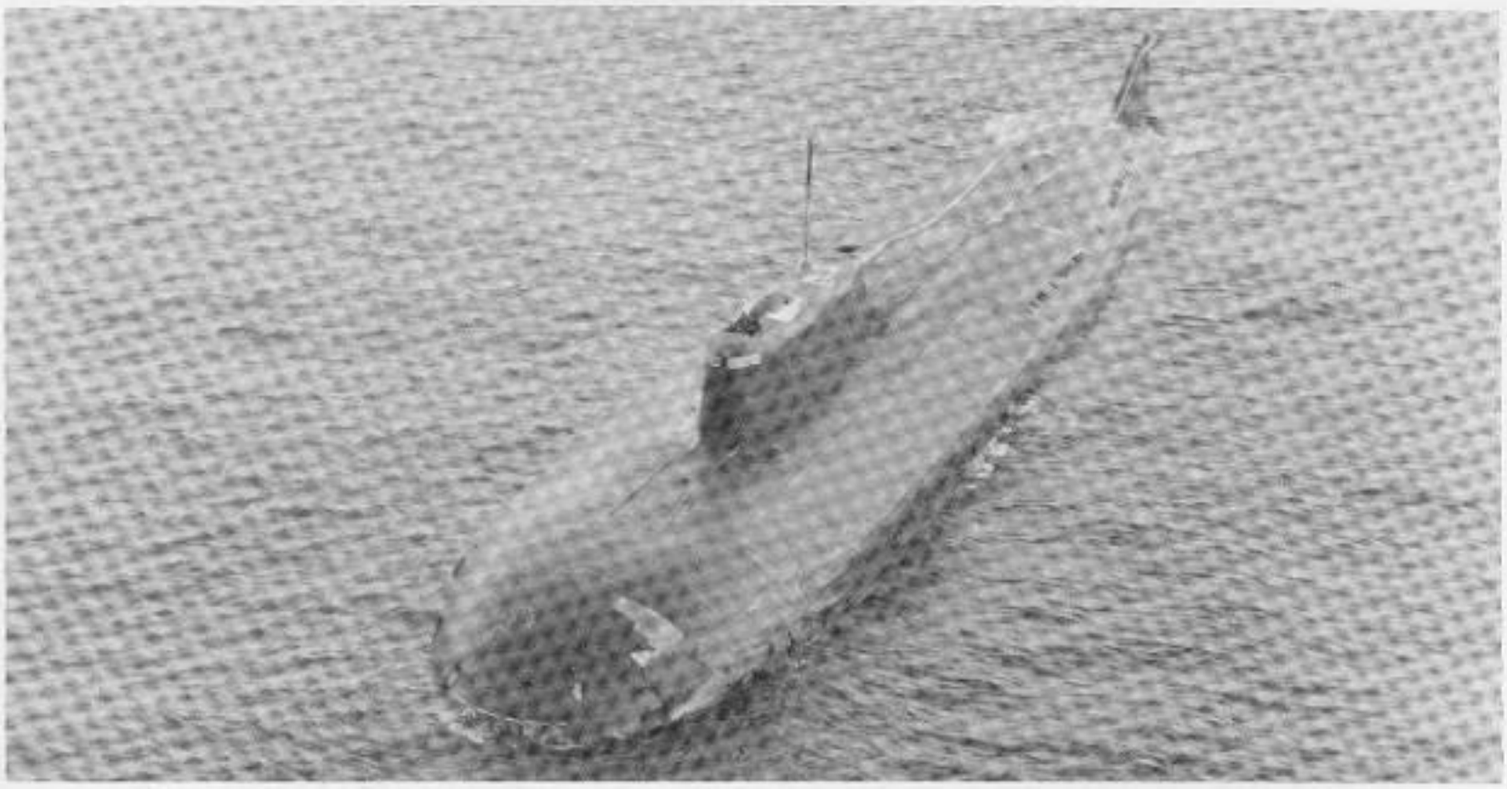
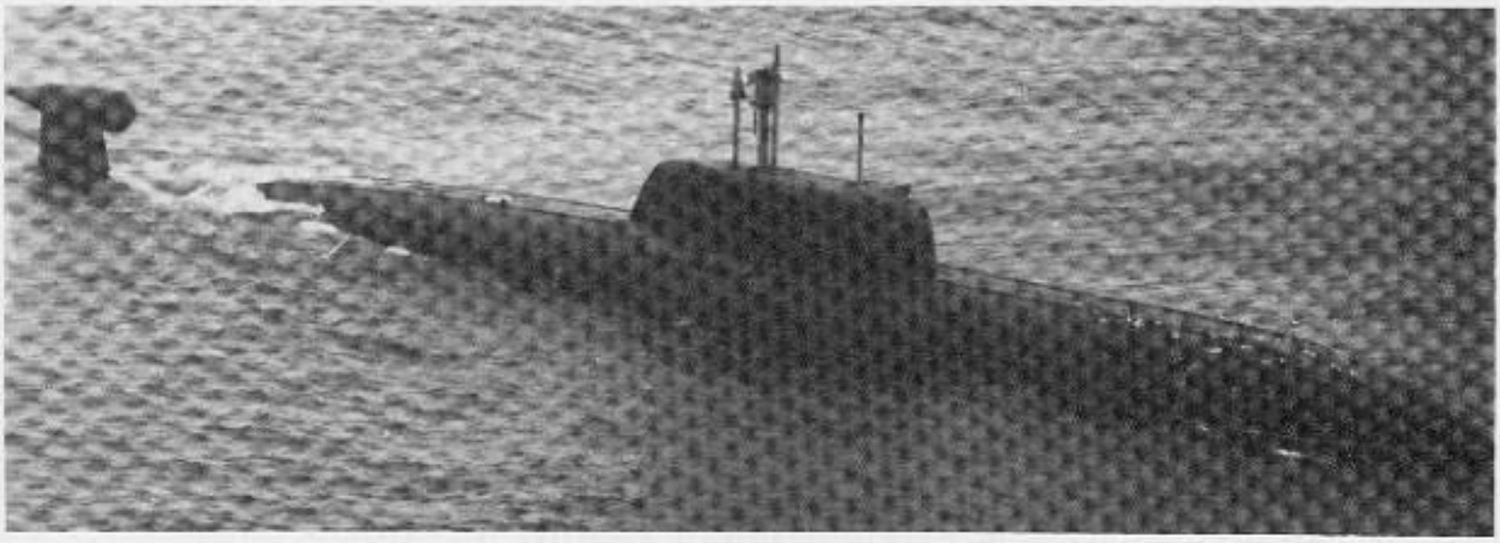


Nuclear Powered Cruise Missile Submarine (SSGN): OSCAR II Class

Displacement:	18,000 tons submerged
Length:	154 meters (506 feet)
Main Armament:	24 SS-N-19 cruise missiles; torpedoes; possible surface-to-air missile system

The OSCAR II SSGN became operational in 1983. A modification to the OSCAR I class, the OSCAR II is thirty-six feet longer. It retains the submerged-launch SS-N-19 antiship cruise missile capability. Six are operational, a seventh has been launched, and construction of others is continuing.



Nuclear Powered Attack Submarine (SSN): SIERRA Class

Displacement:	7,600 tons submerged
Length:	110 meters (360 feet)
Main Armament:	Torpedoes; ASW missiles; cruise missiles

The initial unit of the SIERRA class SSN was launched in 1983 and became operational in 1984. Three SIERRA SSNs have been built, and construction continues. The class is similar in advanced technology, including quieting, to AKULA, but is believed to employ a titanium pressure hull for a deeper diving capability.

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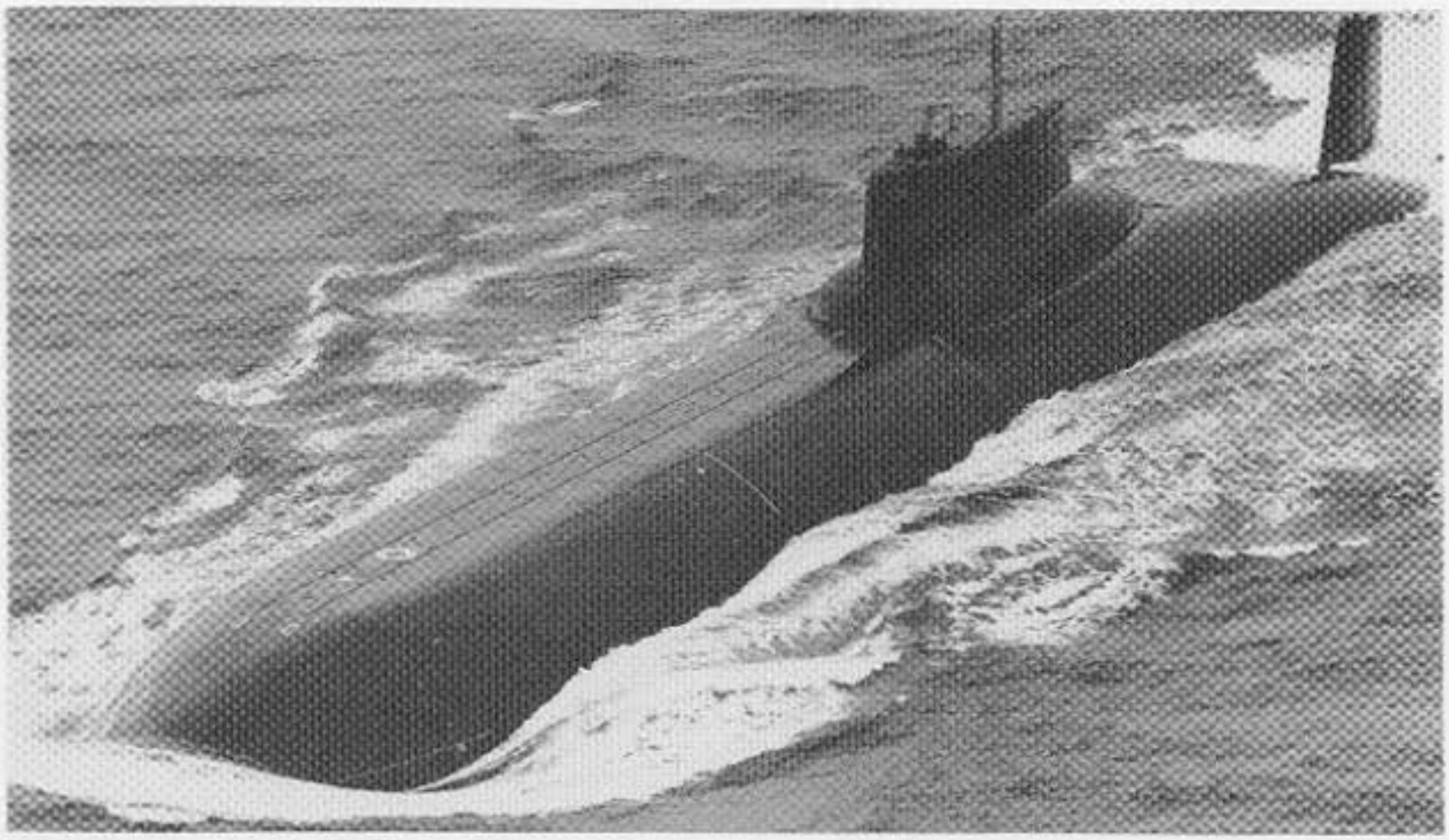
Attack Submarine (SS): TANGO Class

Displacement:	3,900 tons submerged
Length:	91 meters (300 feet)
Propulsion:	Diesel-electric
Main Armament:	Torpedoes

The TANGO is a modern diesel-powered, torpedo-attack submarine. It has a long submerged endurance when it operates slowly and quietly on batteries. The first TANGO became operational in 1973 and 17 others were constructed over the following decade.



Nuclear Powered Ballistic Missile Submarine (SSBN): TYPHOON Class

Displacement:	25,000 tons submerged
Length:	172 meters (564 feet)
Main Armament:	20 SS-N-20 MIRVed missiles; torpedoes; ASW missiles; possible surface-to-air missile system

The initial unit of the TYPHOON class was launched in the fall of 1980 and six were built. This huge submarine is one-third larger in tonnage than the US Navy's OHIO class SSBN (the OHIO displaces 18,750 tons submerged and carries 24 TRIDENT missiles). TYPHOON carries twenty SS-N-20 SLBMs. This missile has a range of about 8,300 kilometers (4,600 nautical miles) and is capable of carrying up to ten independently targeted warheads. TYPHOON can deploy in ice-bound regions of the Arctic.

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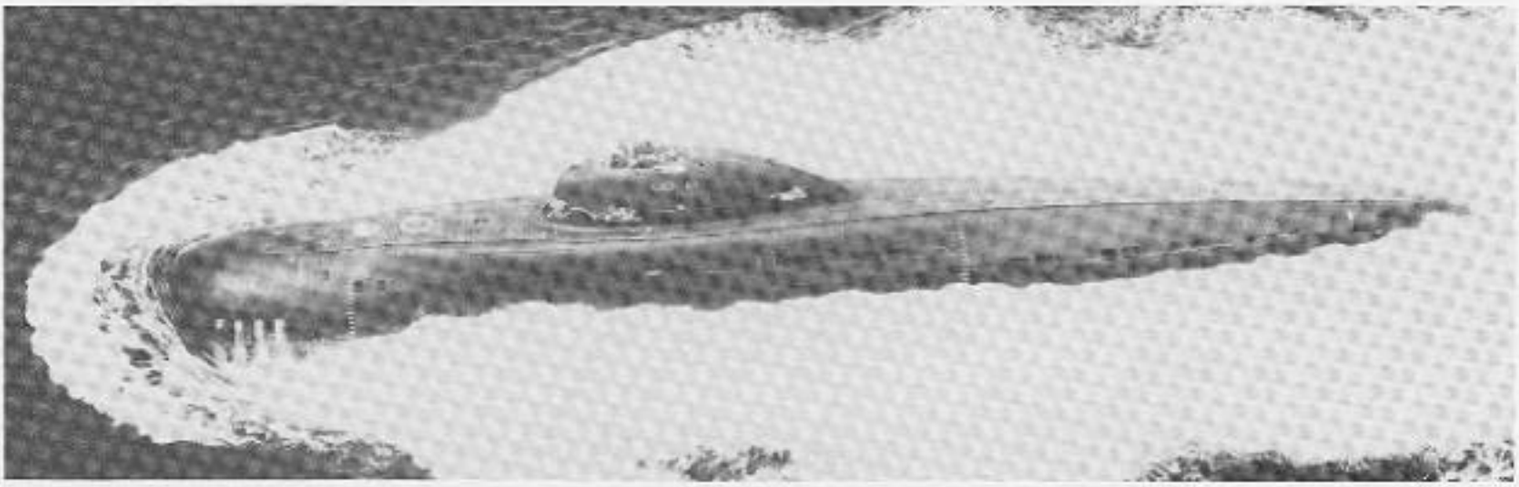
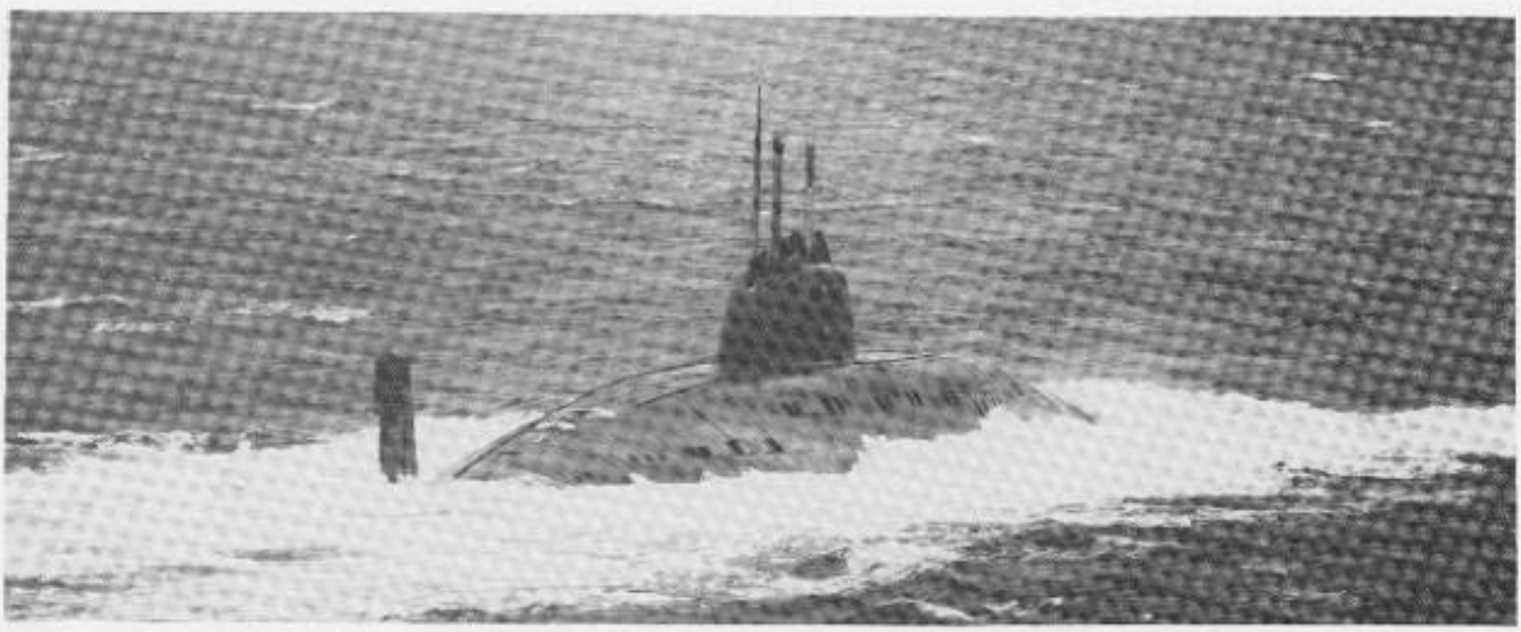


Nuclear Powered Attack Submarine (SSN): VICTOR I Class

Displacement:	5,300 tons submerged
Length:	93 meters (305 feet)
Main Armament:	Torpedoes; ASW missiles

The first VICTOR class SSN was completed in 1967, and 16 were built by 1975. This high-speed attack submarine was developed as a successor to the NOVEMBER class and represented a significant Soviet qualitative improvement in nuclear submarine design.



Nuclear Powered Attack Submarine (SSN): Victor II Class

Displacement:	6,000 tons submerged
Length:	103 meters (337 feet)
Main Armament:	Torpedoes; ASW missiles

These submarines are improved versions of the VICTOR I class. Seven were completed between 1973 and 1979. They are slightly larger than the VICTOR I and are believed to have improved weapons and sensor fits. VICTOR IIs carry a submerged launch antisubmarine missile system similar to the US Navy's SUBROC.

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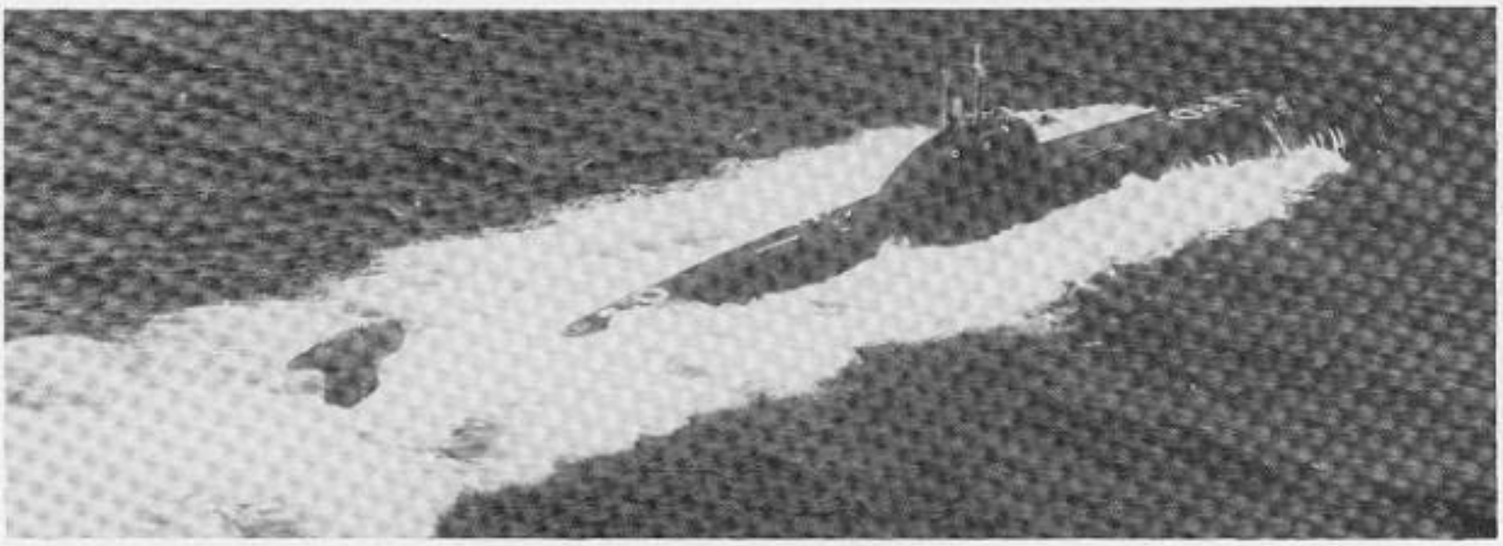
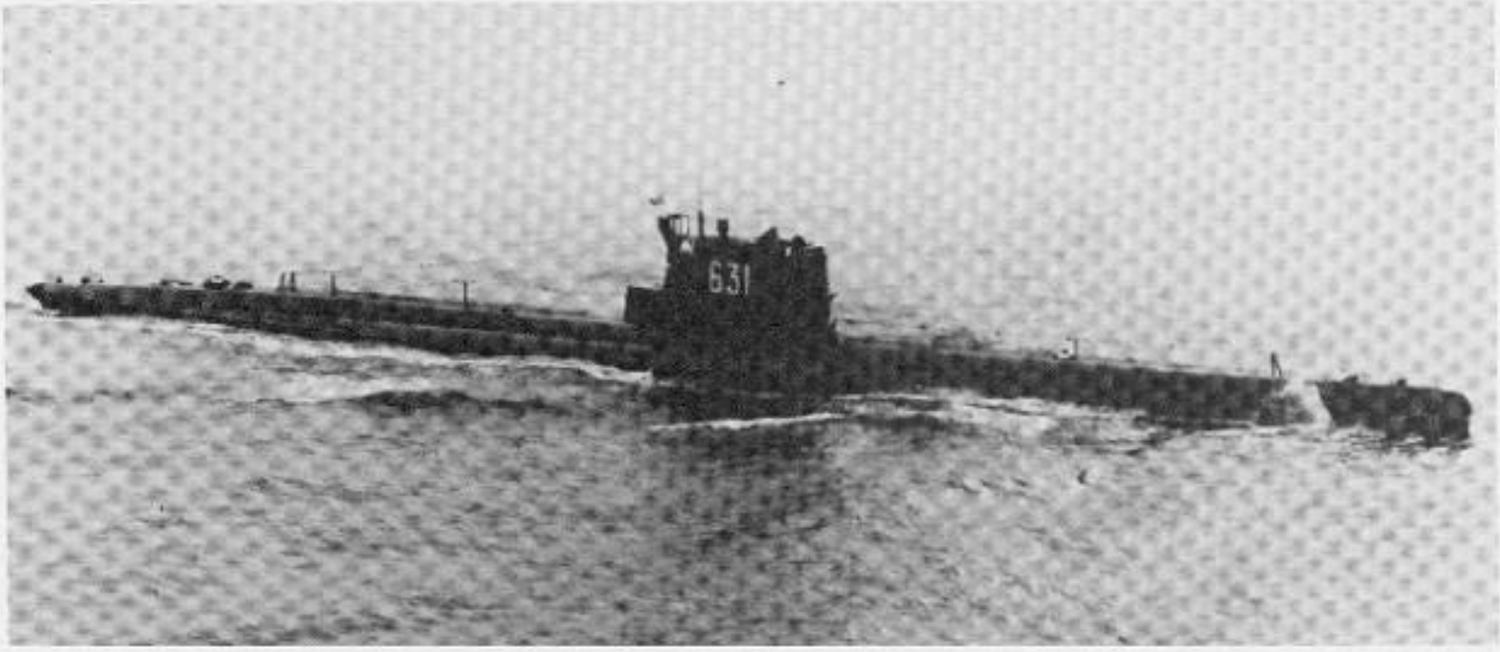


Nuclear Powered Submarine (SSN): VICTOR III Class

Displacement:	6,200 tons submerged
Length:	107 meters (352 feet)
Main Armament:	Torpedoes; ASW missiles; cruise missiles

The VICTOR III class is a lengthened, improved variant of the VICTOR II. The main improvements are probably in ASW weapons, sensor capabilities, and quieting. Note the large pod mounted on the vertical stabilizer at the stern, believed to house a towed sonar array—a sophisticated piece of detection gear which has been operational in Western navies for many years. There are currently 25 VICTOR III class submarines in the Soviet inventory, and construction is continuing.



Attack Submarine (SS): WHISKEY Class

Displacement:	1,340 tons submerged
Length:	75 meters (246 feet)
Propulsion:	Diesel-electric
Main Armament:	Torpedoes

The design of the medium-range WHISKEY class SS was based on late World War II concepts. During the 1950s, 236 were built in what was the largest submarine construction program of the post-war era. WHISKEYs served as early test platforms for antiship cruise missile development. Some 40 to 50 have served in the navies of Albania, Bulgaria, China (PRC), Egypt, Indonesia, North Korea, and Poland. They are now nearly phased out of the Soviet inventory.

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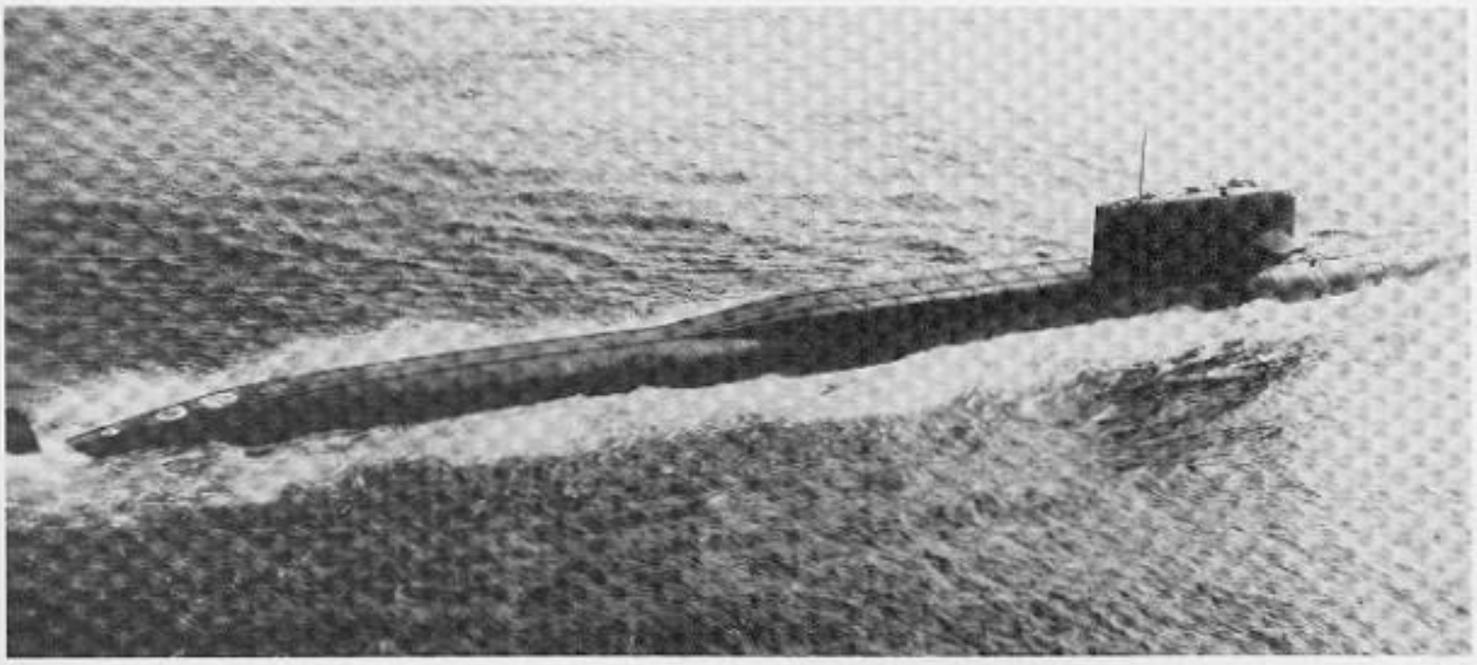

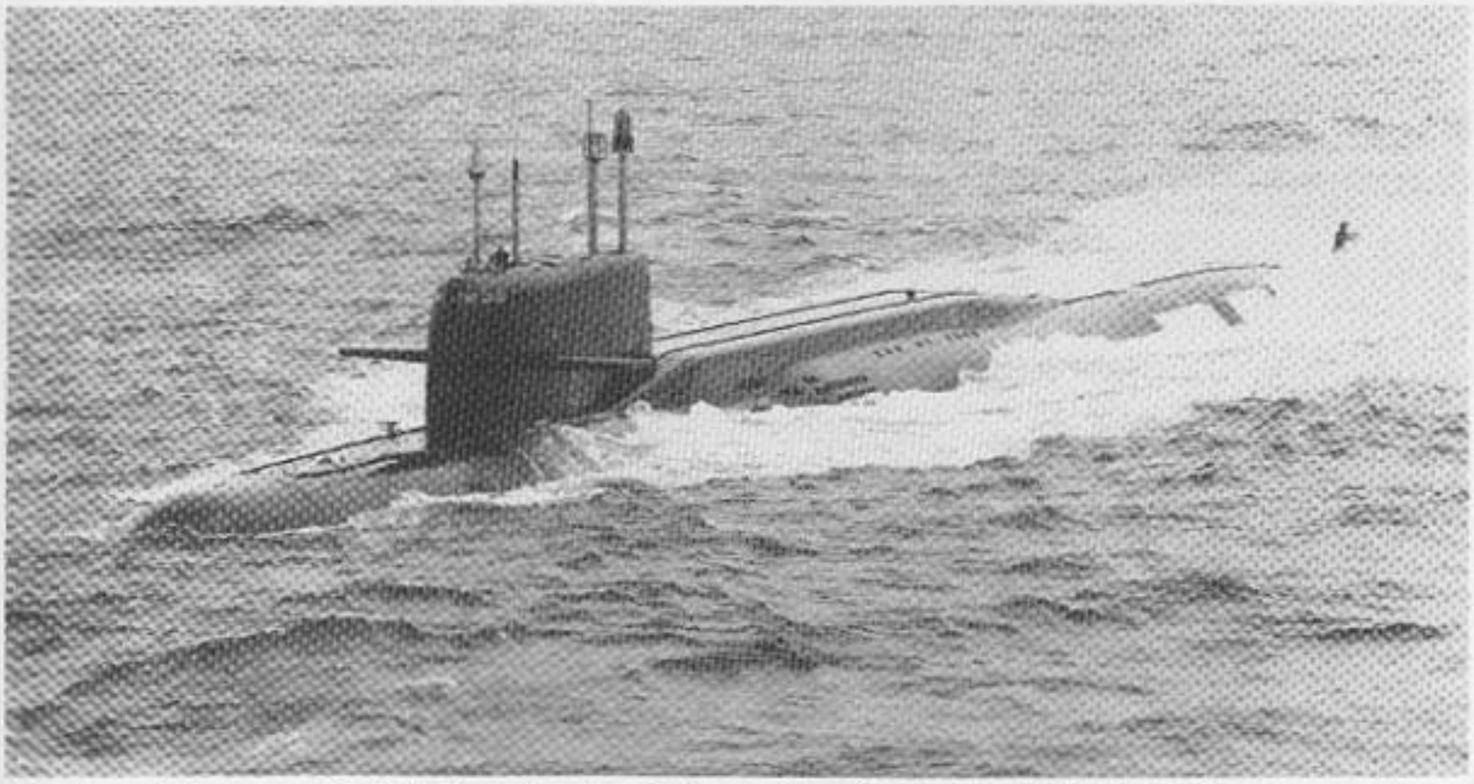

Nuclear Powered Ballistic Missile Submarine (SSBN): YANKEE Class

Displacement:	10,000 tons submerged
Length:	130 meters (430 feet)
Main Armament:	16 SS-N-6 strategic SLBMs; torpedoes

The YANKEE I class, which became operational in 1968, was the first modern design SSBN in the Soviet Navy. A total of 34 were built. One unit of this class sank in the mid-Atlantic in October 1985, after suffering a fire in one of the missile tubes. The SS-N-17 is a longer-range, solid fuel, more capable missile which is fitted in the single YANKEE II variant of this class. In order to keep within the limits of the SALT I agreement made with the US, as each new SSBN joins the fleet, at least one older YANKEE I class SSBN has its missile tubes removed. Three of them have been converted into two different configurations of cruise missile submarines (NOTCH and SSGN) and one other was converted into an attack submarine (SSN): the majority of the remaining "de-fanged" SSBN YANKEEs will probably be scrapped, however.

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Guided-Missile Aircraft Carrier (CVG): KUZNETSOV CLASS

Displacement:	64,000 tons full load
Length:	Approximately 300 meters (975 feet)
Propulsion:	Steam turbines, 30 knots
Armament:	Twelve SS-N-19 launchers Twenty-four SA-N-9 launchers Eight CADS-1 close-in weapon systems with two 30mm Gatling guns and eight missiles per mount Six single 30 mm Gatling guns Two RBU-12000 ASW rocket launchers
Aircraft:	(Estimated) Two or more squadrons (20-40 aircraft) of Su-27 FLANKER and/or MiG-29 FULCRUM fighters; 4-12 helicopters

Follow-on to the KIEV class VTOL aircraft carriers and the largest combatant yet completed by the Soviet Union, ADMIRAL FLOTA SOVETSKOGO SOYUZA KUZNETSOV (formerly TBILISI) is the centerpiece of the naval surface forces the Soviets intend to carry them into the next century. Built at Nikolayev the Black Sea, it first went to sea in October 1989. Initial aircraft takeoff and landing trials began in mid-November 1989 with navalized versions of the MiG-29 FULCRUM, Su-27 FLANKER and Su-25 FROGFOOT aircraft. KUZNETSOV is equipped with two deck edge aircraft elevators, a ski ramp for launching aircraft (no catapults), and U.S. Navy-style arresting gear. Acceptance trials began in late-May 1990. A second ship of this class, VARYAG (originally named RIGA), was launched in 1988 and is expected to be completed in 1992. A third, larger carrier with nuclear propulsion, UL'YANOVSK, is under construction.

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Guided-Missile VTOL Aircraft Carrier (CVHG): KIEV Class

Displacement:	Over 40,000 tons full load
Length:	273 meters (910 feet)
Propulsion:	Steam turbines, over 30 knots
Main Armament:	Units 1-3: Four twin SS-N-12 launchers (24 missiles) Two twin SA-N-3 SAM launchers (72 missiles) Two twin SA-N-4 SAM launchers (40 missiles) One twin SUW-N-1 ASW launcher Two 53cm torpedo mounts Two twin 76mm dual-purpose gun mounts Eight single 30mm Gatling guns Unit 4: Six twin SS-N-12 launchers (12 missiles) Four banks (24 launchers) SA-N-9 SAMs (192 missiles) Two RBU-12000 ASW rocket launchers Two single-barrel 100mm dual-purpose guns Six 30mm Gatling guns
Aircraft:	Approximately 26-29: 12 Yak-38 FORGER VTOL aircraft and 14-17 Ka-25 HORMONE or Ka-27 HELIX helicopters

There are four units of the KIEV class. KIEV became operational in 1976, MINSK in 1978, NOVOROSSIYSK in 1983, and BAKU now renamed ADMIRAL FLOTA SOVETSKOGO SOYUZA GORSHKOV in 1987. This class is considered the first Soviet "aircraft carrier" with the flexibility to deploy a mix of fixed and rotary-wing aircraft for a number of missions. The KIEVs are the first ships since the KYNDA class CGs to carry reloads for their cruise missile systems. For ASW, the ships each have rocket launchers, torpedoes and hull-mounted and variable-depth sonars. The KIEV class features a starboard "island" superstructure and an angled flight deck, but the lack of catapults and arresting gear limits the KIEV to operating helicopters and vertical take-off and landing (VTOL) aircraft. Aircraft observed aboard the KIEV class to date are the FORGER A and B fighter/bombers as well as HORMONE and HELIX helicopters. KIEV and GORSHKOV are based in the Northern Fleet, while MINSK and NOVOROSSIYSK are based in the Pacific Ocean Fleet. Several new radar, communications, missile and gun systems were introduced in GORSHKOV, the fourth ship of the class, which has more cruise missile launchers (but no reloads) and lacks torpedo tubes.

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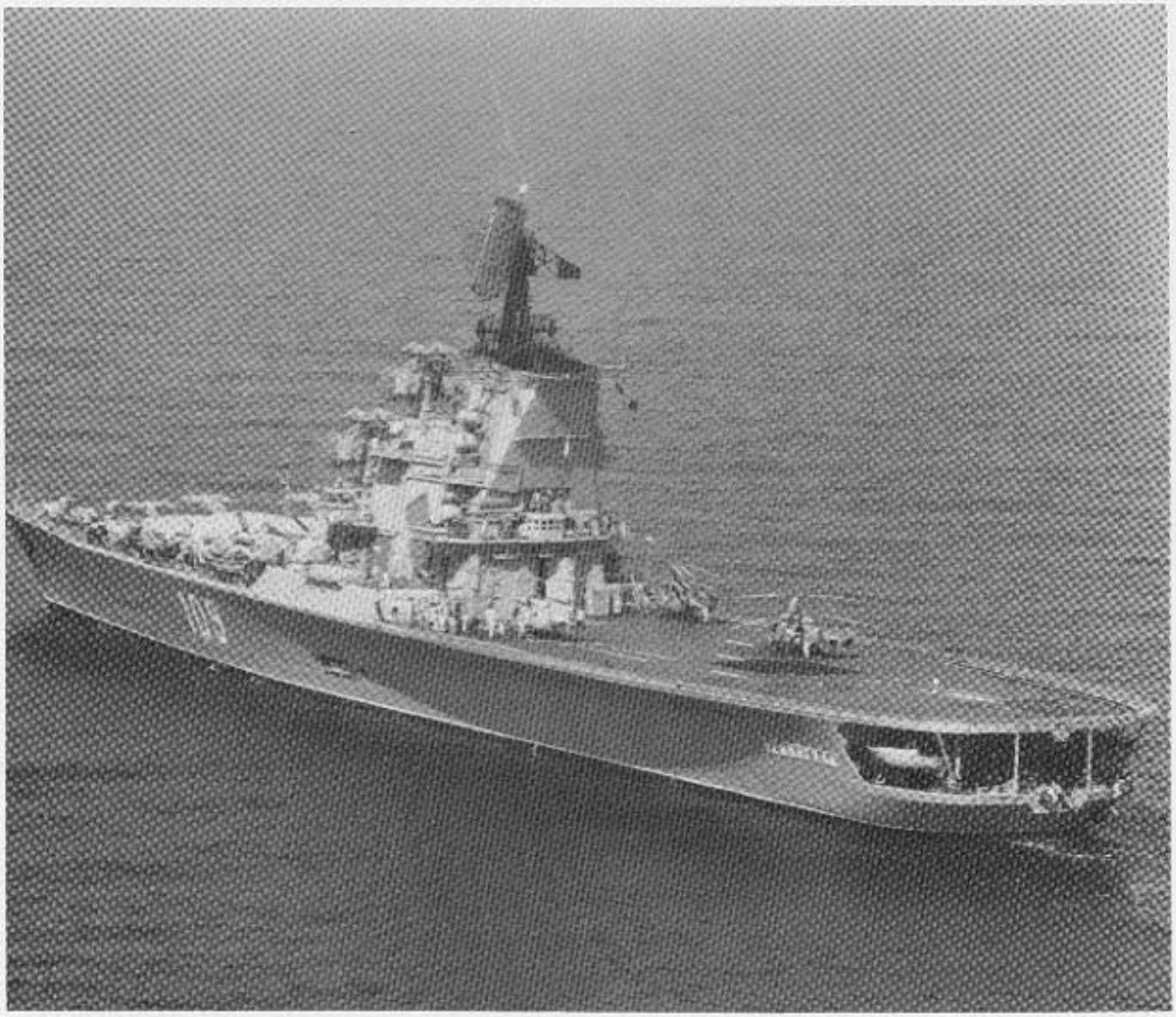

Guided-Missile Helicopter Cruiser (CHG): MOSKVA Class

Displacement:	14,590 tons full load
Length:	189 meters (620 feet)
Propulsion:	Steam turbines, 30 knots
Main Armament:	Two twin SA-N-3 SAM launchers
	One twin SUW-N-1 ASW launcher
	Two twin 57mm dual-purpose gun mounts
Aircraft:	14 HORMONE or HELIX helicopters

MOSKVA and LENINGRAD were completed in 1967 and 1968, respectively. The design of the ship includes a guided-missile cruiser configuration forward and helicopter deck aft. There is a hangar deck below the flight deck which is serviced by two aircraft elevators, and a smaller hangar is located at the forward end of the flight deck. The MOSKVA class weapon suite includes antiaircraft and antisubmarine missile launchers, and antisubmarine rockets. The ships have hull-mounted and variable-depth sonars. Both ships are based in the Black Sea.

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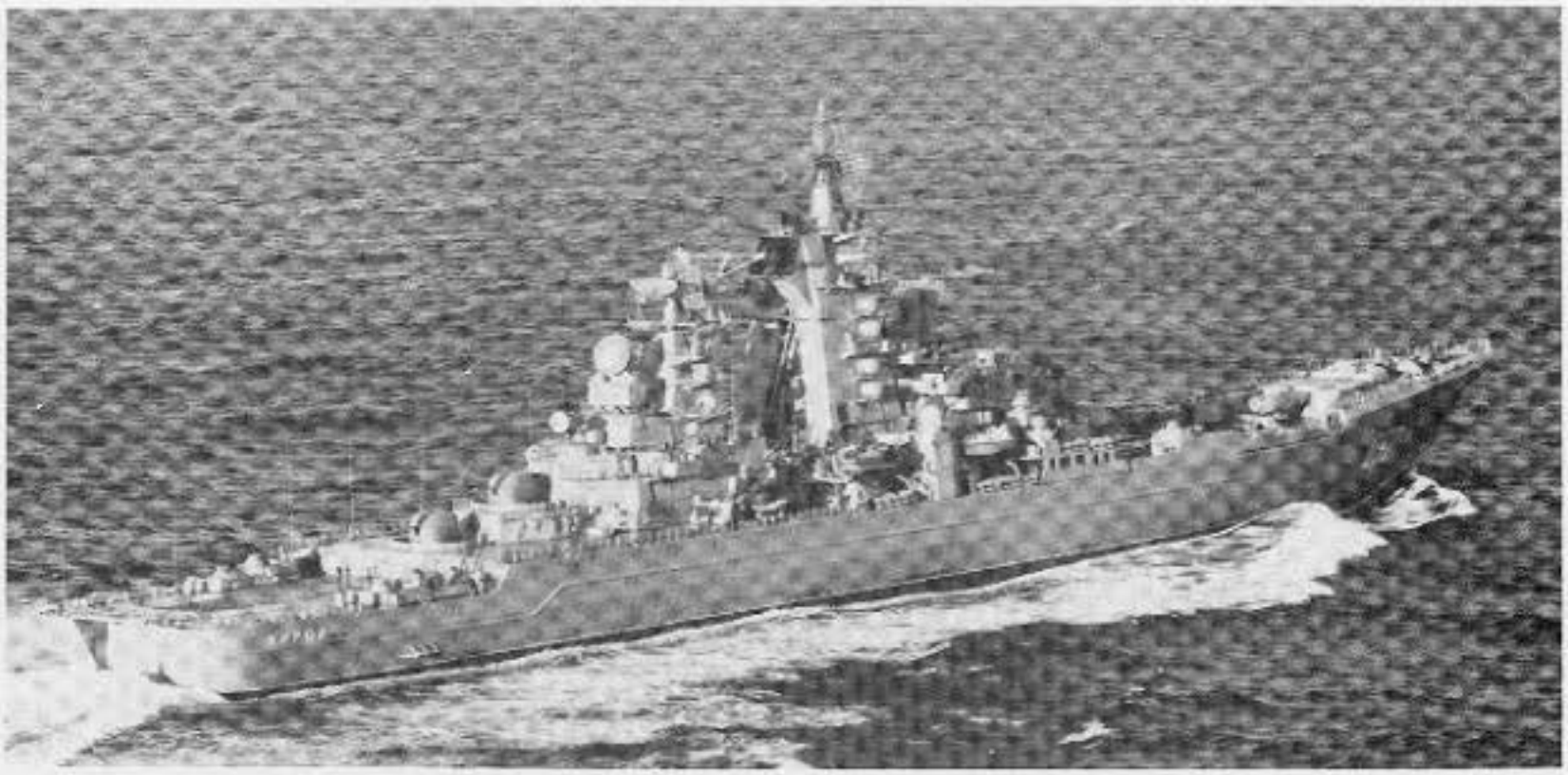

Nuclear-Powered Guided-Missile Cruiser (CGN): KIROV Class

Displacement:	24,300 tons full load
Length:	248 meters (814 feet)
Propulsion:	Nuclear with fossil-fueled supplement, over 32 knots
Main Armament:	20 SS-N-19 cruise missiles Two SA-N-6 SAM launchers Two twin SA-N-4 SAM launchers One twin SS-N-14 ASW/SSM missile launcher with reloads (KIROV only) Two single 100mm dual-purpose gun mounts (one twin 130mm on FRUNZE and KALININ) Six CADS-1 point defense systems (KALININ) Eight single 30mm Gatling guns (KIROV and FRUNZE) Two 53cm quad torpedo mounts One 12-tube RBU 6000 or RBU 12000 ASW rocket launcher Two 6-tube RBU-1000 ASW rocket launchers
Aircraft:	Three HORMONE/HELIX helicopters with elevator and hangar aft

KIROV was the Soviets' first nuclear-powered surface warship. After Baltic sea trials in the summer of 1980, KIROV joined the Northern Fleet. Besides their large and varied weapons fit, the ships are equipped with a vast array of electronics sensors and equipment including a large variable depth sonar, which is trailed from the stern. They are armed with the SS-N-19 cruise missile and the SA-N-6 long-range SAM system for antiship and antiair warfare missions, respectively. The weapons fit on the second unit—FRUNZE, launched in May 1981—was extensively modified from that of KIROV and included provision for 16 vertical-launch tubes for the new SA-N-9 point defense SAM. The third unit of the class, KALININ, joined the fleet in 1988, and is equipped with a new six element missile/point defense system, each with two probable 30mm cannon and up to eight SA-19 missiles, replacing the eight 30mm Gatling guns. The fourth unit of the class, YURI ANDROPOV, was launched in 1989, and a fifth was begun but was scrapped shortly thereafter.

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Guided-Missile Cruiser (CG): SLAVA Class

Displacement:	12,500 tons full load
Length:	187 meters (615 feet)
Propulsion:	Gas turbines, 34 knots
Main Armament:	16 SS-N-12 SSM launchers
	Eight SA-N-6 vertical SAM launchers
	Two SA-N-4 SAM launchers
	One twin 130mm dual-purpose gun mount
	Six single 30mm Gatling guns
Aircraft:	One HORMONE or HELIX helicopter

The first SLAVA class missile cruiser became operational in 1982. Although most of the weapons on this large ship are older, proven systems, the numbers and variety installed are impressive. No reloads are carried for the SS-N-12 missile launchers, but a sixteen missile capacity gives the class a formidable surface-to-surface capability. The eight SA-N-6 vertical launchers are installed flush with the deck, aft of the twin stacks, and each consists of a revolving magazine containing eight of the high-speed SAMs. ASW rockets and torpedoes are also included in the armament. The first unit, SLAVA, is homeported in the Black Sea; the second, MARSHAL USTINOV, is in the Northern Fleet; the third, CHERVONA UKRAINA is in the Pacific Ocean Fleet; and the fourth, ADMIRAL LOBOV, was launched in August 1990. According to the Soviets, no more are to be built.

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Guided-Missile Cruiser (CG): KARA Class

Displacement:	9,700 tons full load
Length:	173 meters (567 feet)
Propulsion:	Gas turbines, 34 knots
Main Armament:	Two quad SS-N-14 ASW/SSM missile launchers (no reloads) Two twin SA-N-3 SAM launchers Two twin SA-N-4 SAM launchers Two twin 76mm dual-purpose gun mounts Four single 30mm Gatling guns Two 53cm probable quint torpedo mounts Two 12-tube RBU 6000 ASW rocket launchers Two 6-tube RBU 1000 ASW rocket launchers
Aircraft:	One HORMONE or HELIX helicopter

The KARA class is a highly capable, heavily armed warship, first seen at sea in 1973. Considered to be a large destroyer by the Soviets, KARA is equipped with both hull-mounted and variable depth sonars. KARA also has a helicopter platform and hangar fitted aft. Seven ships of the KARA class are operational in the Black Sea and Pacific Ocean fleets. One unit, AZOV, is extensively modified aft and was the test platform for the SA-N-6 SAM system.

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Guided-Missile Cruiser (CG): KRESTA I Class

Displacement:	7,600 tons full load
Length:	155 meters (508 feet)
Propulsion:	Steam turbines, 32 knots
Main Armament:	Two twin SS-N-3 SSM launchers (no reloads) Two twin SA-N-l SAM launchers Two twin 57mm dual-purpose gun mounts Ten 53cm torpedo tubes
Aircraft:	One Ka-25 HORMONE helicopter

The KRESTA I is a versatile and heavily armed ship with antiship cruise missile tubes, two antiaircraft missile launchers, guns, ten torpedo tubes, antisubmarine rocket launchers and a helicopter deck with hangar. The KRESTA I was the first Soviet combatant to have a helicopter hangar. The first unit reached initial operating capability in 1967. Four units of this class were completed prior to development of the KRESTA II follow-on design. One ship has been fitted with four rapid-fire Gatling guns. The KRESTA I carries the SS-N-3, which is estimated to be capable of delivering either a nuclear or high explosive warhead over a distance of about 250nm. The two Pacific Ocean Fleet units of the class, VLADIVOSTOK and SEVASTOPOL, have been retired.

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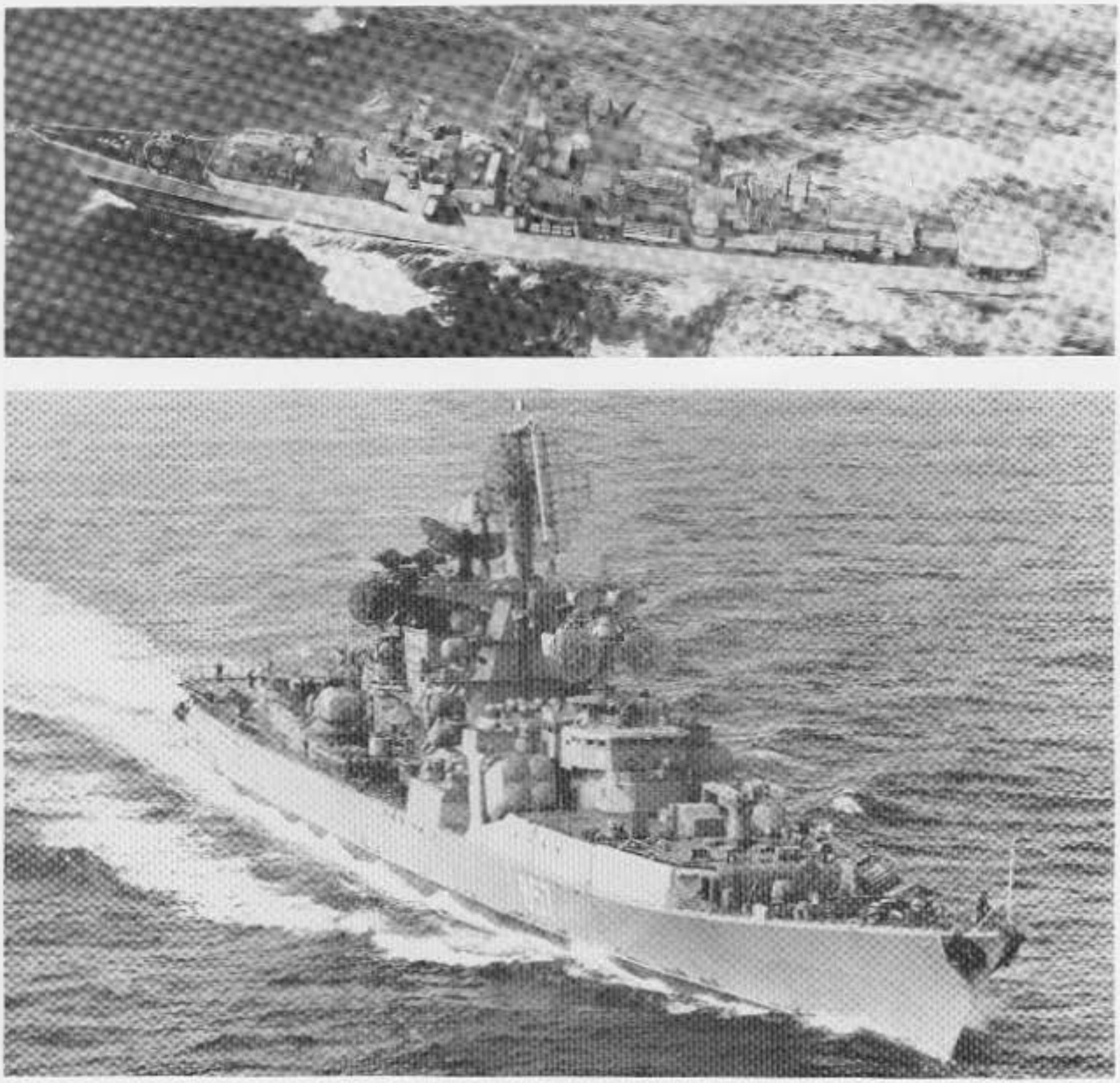

Guided-Missile Cruiser (CG): KRESTA II Class

Displacement:	7,700 tons full load
Length:	159 meters (522 feet)
Propulsion:	Steam turbines, 32 knots
Main Armament:	Two quad SS-N-14 ASW/SSM launchers (no reloads)
	Two twin SA-N-3 SAM launchers
	Two twin 57mm dual-purpose gun mounts
	Four single 30mm Gatling guns
	Ten 53cm torpedo tubes
Aircraft:	One HORMONE helicopter

The first KRESTA II cruiser became operational in 1970. Ten ships of the class were built. KRESTA IIs are armed with eight tubes for the 30nm range dual-purpose SS-N-14 antisubmarine/antiship missiles. All have antisubmarine weapons, and a helicopter platform with hangar.

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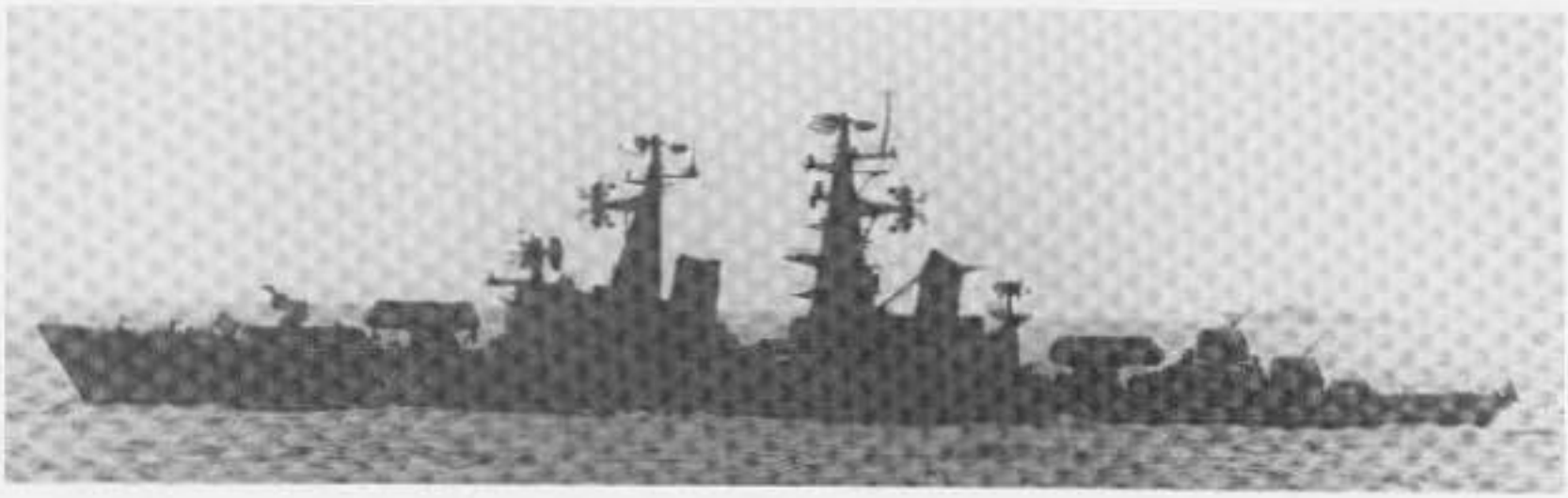

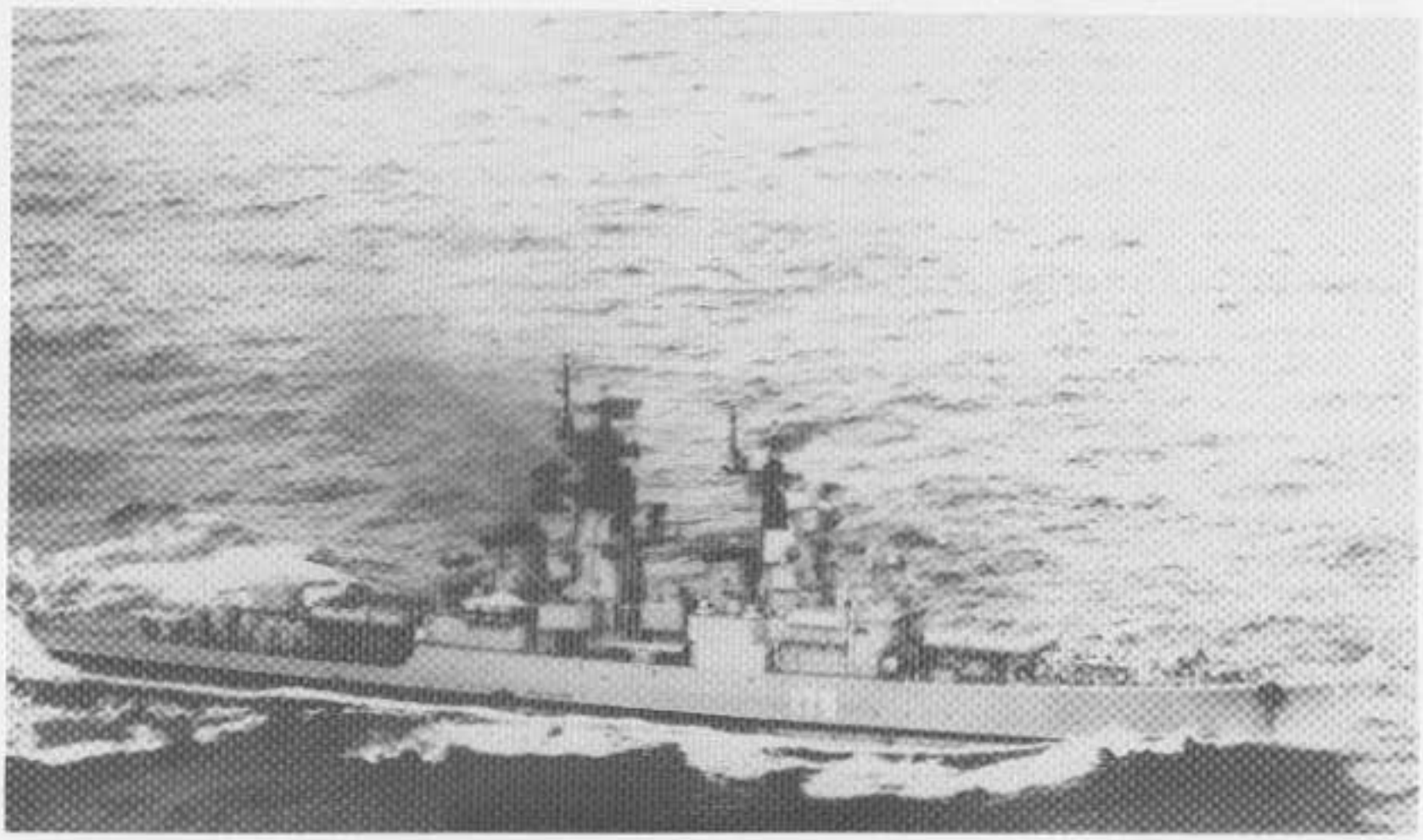

Guided-Missile Cruiser (CG): KYNDA Class

Displacement:	5,500 tons full load
Length:	142 meters (467 feet)
Propulsion:	Steam turbine, 34 knots
Main Armament:	Two quad SS-N-3 SSM launchers
	One twin SA-N-1 SAM launcher
	Two twin 76mm dual-purpose gun mounts
	Six 53cm torpedo tubes

The first of four KYNDA class cruisers appeared in 1962. When introduced, this class was unique in carrying antiship missiles as its main battery. The ship also carries antisubmarine rockets, as well as a helicopter landing area (no hangar). Two of these ships have been back-fitted with four 30mm Gatling guns. As in the KRESTA I cruiser and the JULIETT and ECHO II class submarines, SS-N-3 surface-to-surface cruise missiles carried by this class of ship are estimated to be capable of delivering either a nuclear or high explosive warhead as far as 250nm using target information from BEAR D or HORMONE B aircraft. One ship of the class, VARYAG, was retired in 1990.

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Guided-Missile Destroyer (DDG): UDALOY Class

Displacement:	8,200 tons full load
Length:	162 meters (522 feet)
Propulsion:	Gas turbines, 30 knots
Main Armament:	Eight SS-N-14 ASW launchers
	Eight SA-N-9 SAM launchers
	Two single 100nm dual-purpose mounts
	Four single 30mm Gatling AA guns
	Ten 53cm torpedo tubes
	Two HELIX A helicopters

The UDALOY class is designed primarily for antisubmarine warfare, although its dual purpose SS-N-14 cruise missiles can also be employed against surface targets. UDALOY was the first Soviet destroyer-sized design to carry two helicopters and is equipped with bow-mounted and towed, variable-depth, low-frequency sonars. Eleven units have been completed since the first unit went to sea in 1980, and construction is continuing. Only the later units of the class have operational SA-N-9 vertical-launch SAM systems.

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Guided-Missile Destroyer (DDG): SOVREMENNYY Class

Displacement:	7,300 tons full load
Length:	156 meters (512 feet)
Propulsion:	Steam turbines, 32 knots
Main Armament:	Two quadruple SS-N-22 SSM launchers
	Two single SA-N-7 SAM launchers
	Two twin 130mm dual-purpose gun mounts
	Four single 30mm Gatling AA guns
	Four 53cm torpedo tubes
Aircraft:	One HORMONE helicopter

The first SOVREMENNYY joined the fleet in 1981. This class is primarily intended for surface warfare duties but has ASW rockets in addition to the armament listed above. A single helicopter can be housed in the telescoping hangar. The SS-N-22 cruise missile system is a formidable high speed, low flying antiship missile. By 1991, thirteen had been completed, with seven delivered to the Northern Fleet, and the others intended for the Pacific Ocean Fleet. Later units have more advanced air search radar systems.

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Guided-Missile Destroyer (DDG): KASHIN/MOD KASHIN Class

Displacement:	4,500-4,900 tons full load
Length:	144/147 meters (472/482 feet)
Propulsion:	Gas turbines, 35 knots
Main Armament:	Two twin SA-N-1 SAM launchers
	Two twin 76mm dual-purpose gun mounts
	Four improved SS-N-2 SSMs and
	Four Gatling guns on MOD KASHIN
	Five 53cm torpedo tubes

KASHIN was the world's first large gas-turbine powered warship. The first unit was completed in 1962 and 20 ships of the KASHIN class were built for the Soviet Navy. The ship's armament consists of two twin antiaircraft missile launchers, dual purpose guns, mine rails, antisubmarine rockets, and a helicopter landing pad (no hangar). Six ships of the MOD KASHIN class were provided with improved antiair, antisubmarine, and antiship capabilities over the basic KASHIN class, including four launchers for SS-N-2 STYX-type missiles and antiaircraft Gatling guns; one of these was transferred to Poland in 1988. One KASHIN suffered an internal explosion and sank in the Black Sea in August 1974. Another, PROVORNYY, was extensively altered during the 1970s to serve as a test bed for the SA-N-7 SAM missile. By 1990, a number of KASHINS and MODIFIED KASHINS had been retired from Soviet Navy service. The Indian Navy operates five ships of this class built specifically for them by the Soviets.

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Destroyer (DD): MOD KILDIN Class

Displacement:	3,500 tons full load
Length:	126 meters (413 feet)
Propulsion:	Steam turbines, 36 knots
Main Armament:	Four improved SS-N-2 SSMs (no reloads) Two twin 76mm dual-purpose gun mounts Two quad 45mm or 57mm AA gun mounts Four 53cm torpedo tubes

Three of the original four KILDIN class destroyers, completed in 1958, underwent extensive modifications (1973-77), and the fourth was scrapped. The new armament included four STYX-type missile tubes and two 76mm twin gun mounts aft in place of the SS-N-1 missile launcher originally installed. These ships were built on the KOTLIN class destroyer hull. By 1991, only one Baltic Fleet unit, PROZORLIVYY, remained in service.

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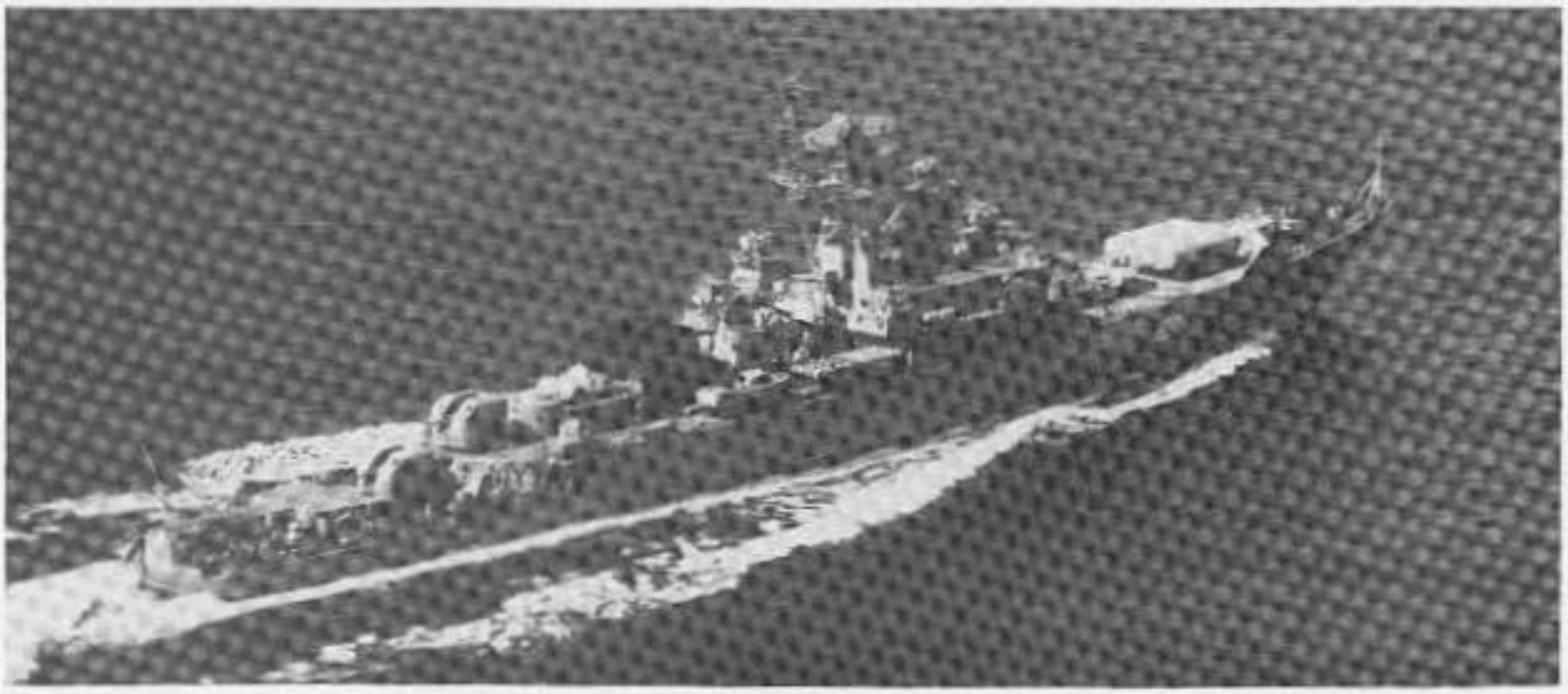

Missile Frigate (FFG/WFF): KRIVAK I/II/III Classes (Photo shows a KRIVAK I)

Displacement:	3,670 tons full load
Length:	124 meters (407 feet)
Propulsion:	Gas turbines, 30 knots
Main Armament:	Four SS-N-14 ASW/SSM launchers (None on KRIVAK III)
	Two twin SA.N-4 SAM launchers (One twin launcher on KRIVAK III)
	KRIVAK I: Two 76mm dual-purpose guns
	KRIVAK II: Two single 100mm mounts
	KRIVAK III: One 100mm mount
	ASW rockets
	Torpedo tubes
	Mine rails

The KRIVAK frigates are primarily antisubmarine ships, with hull-mounted and variable-depth sonars. The first KRIVAK put to sea in 1970; a total of 32 KRIVAK I/II units are operational. KRIVAK Is have 76mm dual-purpose guns; KRIVAK IIs have 100mm dual-purpose guns. Six greatly modified versions of this frigate (KRIVAK III WFF) have been delivered to the KGB Maritime Border Guard since 1984, and construction continues. A helicopter deck and hanger on KRIVAK III replaces two gun mounts and a SAM launcher. The KRIVAK class ship STOROZHEVOY was the ship seized by Soviet naval mutineers in 1975; the ship steamed for Sweden, but was turned back by Soviet aircraft and ships and surrendered to Soviet authorities. KRIVAK I and II class ships are called "Guard Ships" by the Soviet Navy and are used either for independent patrol duties or as escorts for larger vessels.

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Corvette (FFL): PETYA I/II Classes

Displacement:	960 tons full load
Length:	82 meters (269 feet)
Propulsion:	Combination diesel/gas turbines, 29 knots
Main Armament:	Two twin 76mm dual-purpose gun mounts Two ASW rocket launchers PETYA I has four ASW rocket launchers and only one ASW 5-tube torpedo mount

The PETYA class corvette is designed primarily for coastal defense, although PETYAs operate regularly in the North Atlantic and Western Pacific. The older PETYA I units became operational in 1960. The improved PETYA II units have two sets of five 400mm ASW torpedo tubes and two antisubmarine rocket launchers. Some PETYA Is and one PETYA II were modified to carry variable-depth sonar. About 65 PETYAs were built, with most now transferred to foreign countries or stricken.

Corvette (FFL): MIRKA I/II Classes

Displacement:	1,140 tons full load
Length:	83 meters (272 feet)
Propulsion:	Combination diesel/gas turbine, 30 knots
Main Armament:	Two twin 76mm dual-purpose gun mounts

The MIRKA class, similar to the PETYA class FFL, is a small fast combatant armed with 76mm guns, torpedo tubes, and antisubmarine rocket launchers. The second nine of the 18 MIRKAs built have two banks of five torpedo tubes with no ASW rocket launchers aft and were designated the MIRKA II class. Most have now been retired.

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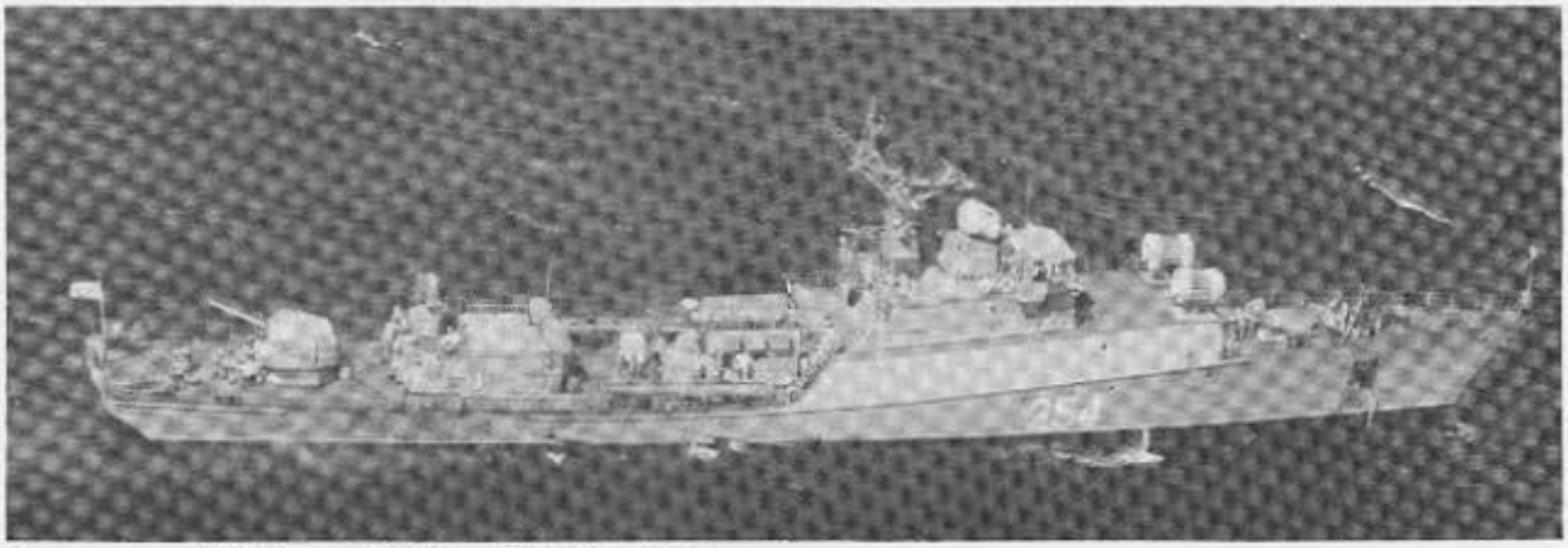

Corvette (FFL): GRISHA I/II/III/IV/V Classes

Displacement:	950 tons full load
Length:	71.6 meters (235 feet)
Propulsion:	Gas turbine/diesel, 30 knots
Main Armament:	GRISHA I– One twin 57mm dual-purpose gun mount One twin SA-N-4 SAM launcher Four torpedo tubes GRISHA II– One or two twin 57mm dual-purpose gun mounts Four torpedo tubes GRISHA III– One twin 57mm dual-purpose gun mount One twin SA-N-4 SAM launcher One 30mm Gatling gun Four torpedo tubes GRISHA IV– One 30mm Gatling gun mount Two torpedo tubes Three SA-N-9 SAM launchers GRISHA V– One single 76mm One twin SA-N-4 launcher One 30mm Gatling gun

The first GRISHA I was delivered in 1968, and all versions are capable of coastal antisubmarine operations. The GRISHA II class is used exclusively by the Border Guards of the KGB, and most incorporate a second 57mm mount in place of the SA-N-4. GRISHA III, with the Gatling gun, has improved close-in air defense. All ships carry 12-barreled ASW rocket launchers, mines and depth charges as well as a hull-mounted sonar. All units carry a dipping sonar for use in "sprint and drift" tactics, during which the ship lays dead in the water while "dipping" (listening on the sonar), then sprints to a new position to "dip" again, working in conjunction with a sister GRISHA. GRISHA IV appears to be a test platform for a new SAM system and propulsion plant. GRISHA V, the version delivered since 1985, substitutes a single 76mm gun for the twin 57mm mount and has only one 12-barrel ASW rocket launcher as weight compensation for an improved search radar. There are about 65 GRISHAs in the operational inventory; construction continues even as the oldest units of the class are being retired.

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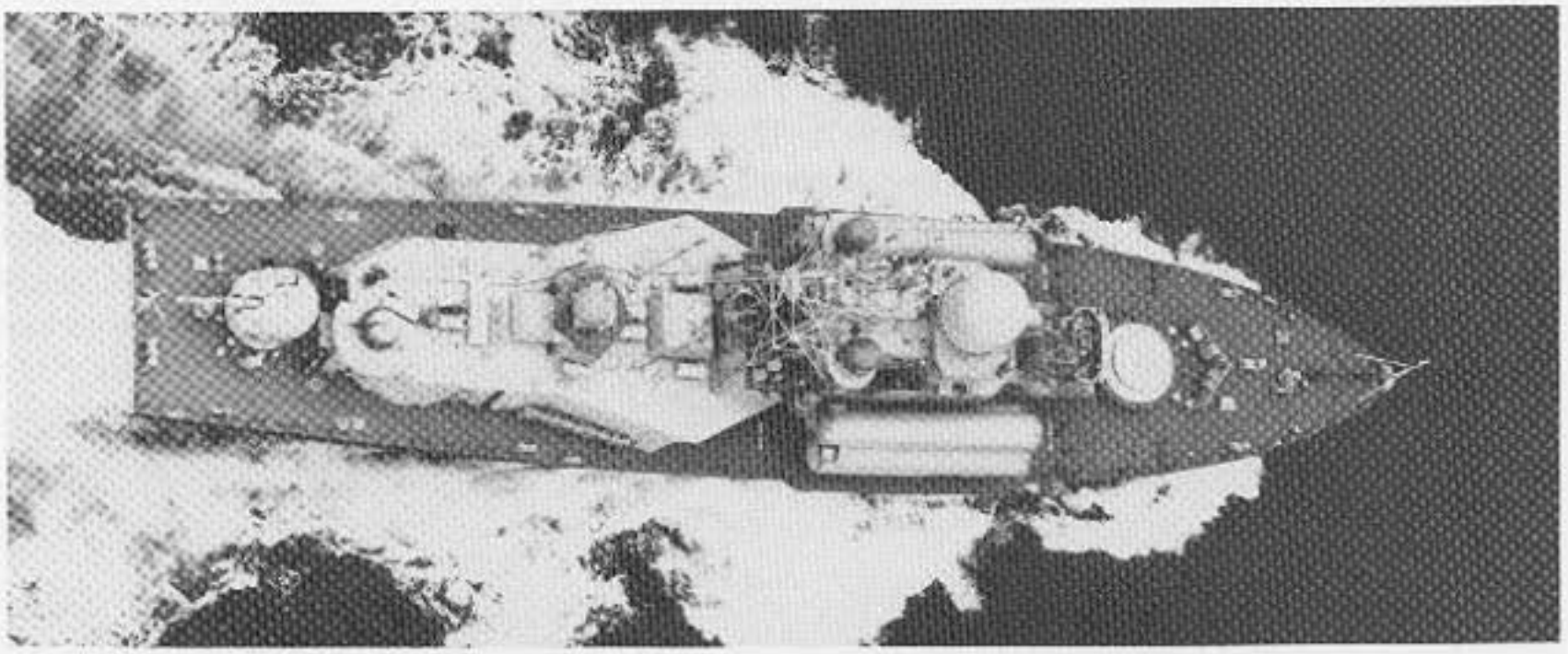

Guided-Missile Patrol Combatant (PGG): NANUCHKA I/III Classes

Displacement:	675 tons full load
Length:	59.3 meters (195 feet)
Propulsion:	Diesel, 30 knots
Main Armament:	Six SS-N-9 SSM launchers
	One twin SA-N-4 SAM launcher
	One twin 57mm dual-purpose gun (NANUCHKA I)
	One single 76mm dual-purpose gun (NANUCHKA III)
	One 30mm Gatling AA gun

The NANUCHKA I and III classes are the largest of the Soviet guided-missile patrol combatants. The NANUCHKA class was designed for improved endurance and better sea-keeping qualities than earlier missile craft. NANUCHKA armament includes six SS-N-9 antiship cruise missiles with a range of about 60 nautical miles. The first NANUCHKA was completed in 1969. Over 30 NANUCHKAs have been built for the Soviet Navy. Units of the NANUCHKA II class, which is produced solely for export, have been delivered to India, Libya and Algeria.

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Guided-Missile Attack Boat (PGG): TARANTUL I/II/III Classes

Displacement:	580 tons full load
Length:	56 meters (184 feet)
Propulsion:	Gas turbines, 36 knots
Main Armament:	Four SS-N-2 SSM launchers on TARANTUL I/II
	Four SS-N-22 SSM launchers on TARANTUL III
	One single 76mm dual-purpose gun
	Two 30mm Gatling guns
	One quad SA-N-5 SAM launcher

TARANTUL production began in the late 1970s as a replacement for the OSAs. Units of this class have been exported to Poland, India, and East Germany. There are three variations: the simpler TARANTUL I for export, and the TARANTUL II and TARANTUL III used by the Soviet Navy. TARANTUL II has an improved radar over the export model, and TARANTUL III is equipped with SS-N-22 missiles in place of the SS-N-2.

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Missile-Attack Boat (PTG): OSA I/II Classes (Photo shows OSA-I)

Displacement:	215/245 tons full load
Length:	39 meters (129 feet)
Propulsion:	Diesel, 36 knots
Main Armament:	Four SS-N-2 SSM launchers
	Two twin 30mm AA gun mounts

The OSA is still numerically the largest class of missile-attack boats in the Soviet Navy, even though a large number have been retired. Over 100 OSA class missile boats have been transferred to other countries, including Bulgaria, China, Cuba, Egypt, Algeria, Libya, East Germany, India, Poland, Romania, Syria, Yugoslavia, Iraq, Finland, North Korea, and Somalia. The OSA II units have an improved, longer-range SS-N-2 missile. Most Soviet Navy units have been retired, having been replaced by the larger and more capable TARANTUL II and III.

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Amphibious Assault Transport Dock (LPD): IVAN ROGOV Class

Displacement:	12,000 tons full load
Length:	158 meters (520 feet)
Propulsion:	Gas turbines, about 24 knots
Main Armament:	One twin 76mm dual-purpose gun mount One twin SA-N-4 SAM launcher Four single 30mm Gatling guns One 122mm multiple barrage bombardment rocket launcher

With the introduction of IVAN ROGOV in 1978, the Soviet Navy gained two new capabilities for its amphibious assault forces. First, ROGOV has a floodable well deck that is intended to carry air cushion vehicles as well as conventional landing craft. The LEBED class air cushion landing craft has been deployed with ROGOV. A total of three LEBEDs can be carried in the well. Additionally, the ROGOV has a helicopter hangar and two landing decks. To date, HORMONE and HELIX are the only helicopters observed operating from the ROGOV class. Included are bow doors and a ramp for over the beach off-loading, as well as a roll-on/roll-off capability from the weather deck and tank decks forward of the well. These ships are by far the largest amphibious units in the Soviet Navy. It is estimated that IVAN ROGOV can lift approximately 525 troops and associated equipment/vehicles. A second ROGOV, ALEKSANDR NIKOLAYEV joined the fleet in 1982, and the third, MITROFAN MOSKALENKO, became operational in 1990.

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Tank Landing Ship (LST): ALLIGATOR Class

Displacement:	4,700 tons full load
Length:	110.5 meters (362 feet)
Propulsion:	Diesel, 18 knots
Main Armament:	Three SA-N-8 quad SAM launchers (some units) One twin 57mm AA gun mount One multiple tube shore bombardment rocket launcher (some units)

The ALLIGATOR, a landing ship with a tank deck, bow doors, and a stern ramp, is used to transport Naval Infantry units with their equipment and vehicles. These ships has been used regularly on distant deployments to the Mediterranean, Indian Ocean, and off West Africa.

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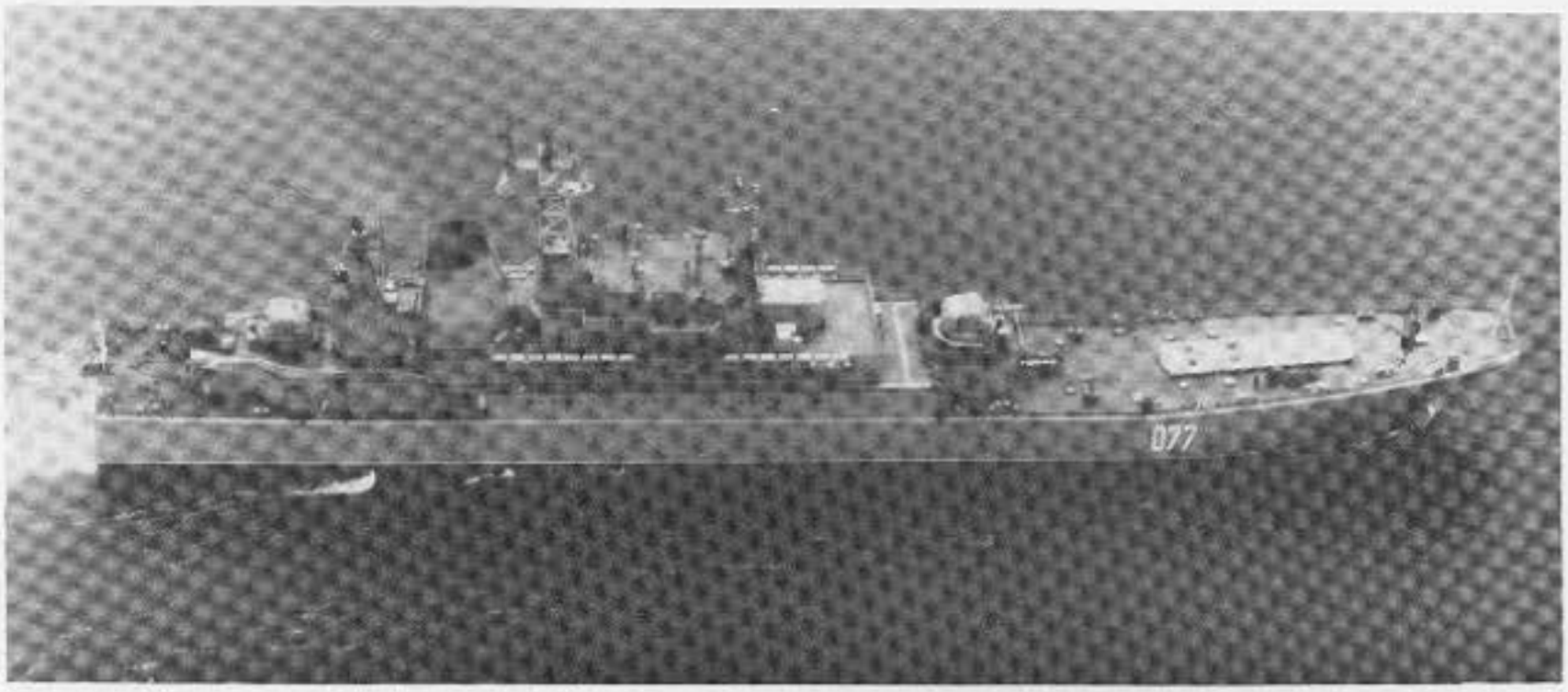

Tank Landing Ship (LST): ROPUCHA Class

Displacement:	3,900 tons full load
Length:	113 meters (371 feet)
Propulsion:	Diesel, 18 knots
Main Armament:	Two twin 57mm dual-purpose gun mounts Some units have four SA-N-8 quad SAM launchers Several have two 122mm shore bombardment rocket launchers

The Polish built ROPUCHA class LSTs have a covered vehicle deck with both bow and stern doors. The newest of Soviet LSTs, ROPUCHA was designed to carry a balanced load of troops and vehicles. Like the ALLIGATORs, ships of this class have often deployed to the Indian Ocean, and off West Africa. A new variant, ROPUCHA-II, appeared in 1990 with an improved air defense armament.

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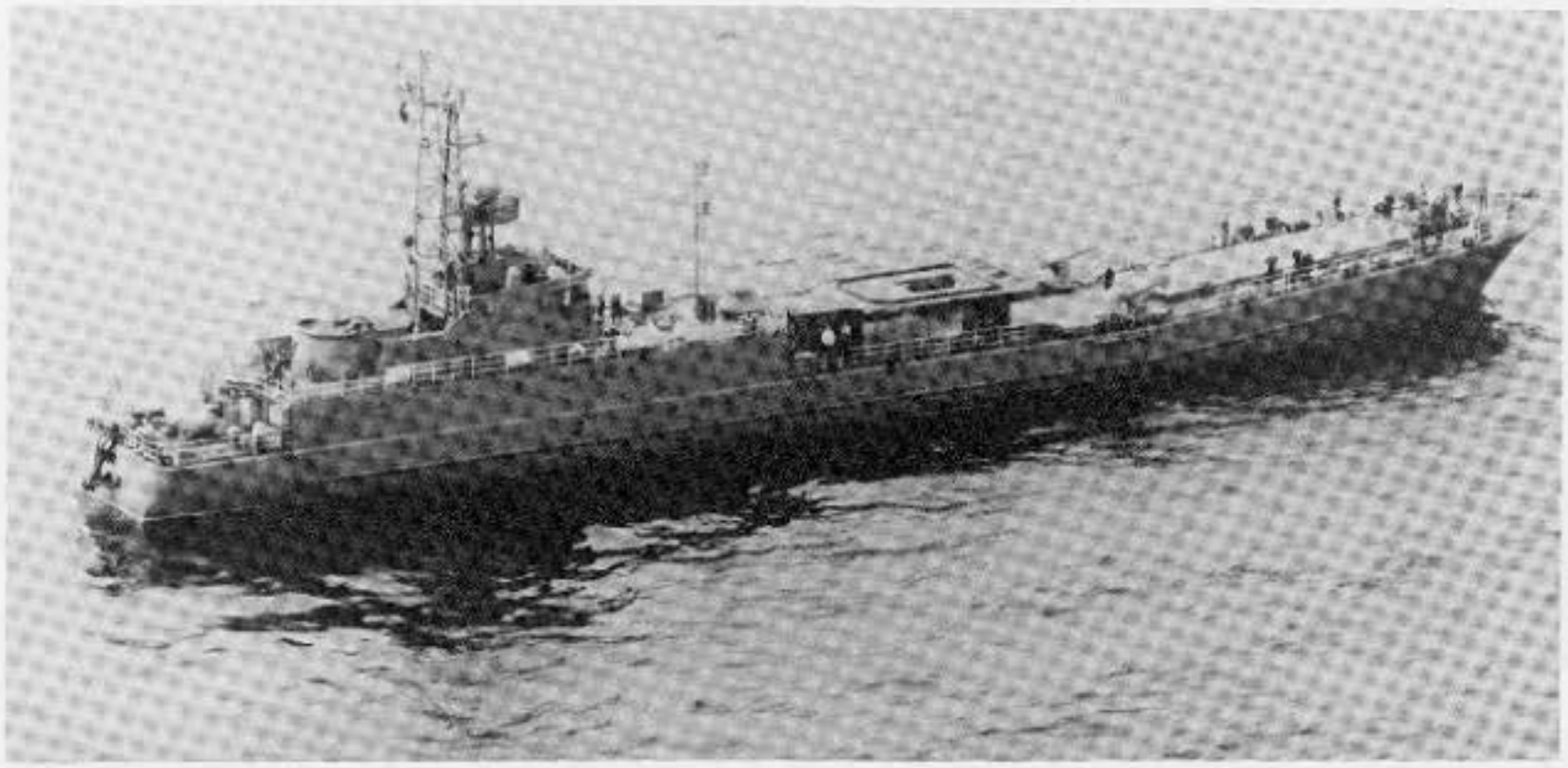

Medium Amphibious Assault Landing Ship (LSM): POLNOCNY A/B/C/D Classes

Displacement:	770 to 1,150 tons full load
Length:	73 to 81 meters (240-265 feet)
Propulsion:	Diesel, 18 knots
Main Armament:	One or two twin 30mm AA gun mounts Two 18-tube shore bombardment rocket launchers Either four SA-N-5 quad SAM launchers or two SA-N-8 quad SAM launchers

The POLNOCNYs are Polish-built medium landing ships with bow doors and a covered deck. There are three basic variants, each of different length and displacement, and several bridge configurations, armament and payloads. In addition to a large number retained in the Polish Navy, units have been transferred to Algeria, Bulgaria, Cuba, Egypt, Indonesia, India, Iraq, Somalia, Angola, Libya, Ethiopia, Vietnam, and South Yemen. The older Soviet Navy units are now being retired.

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The Yak-38 FORGER A.

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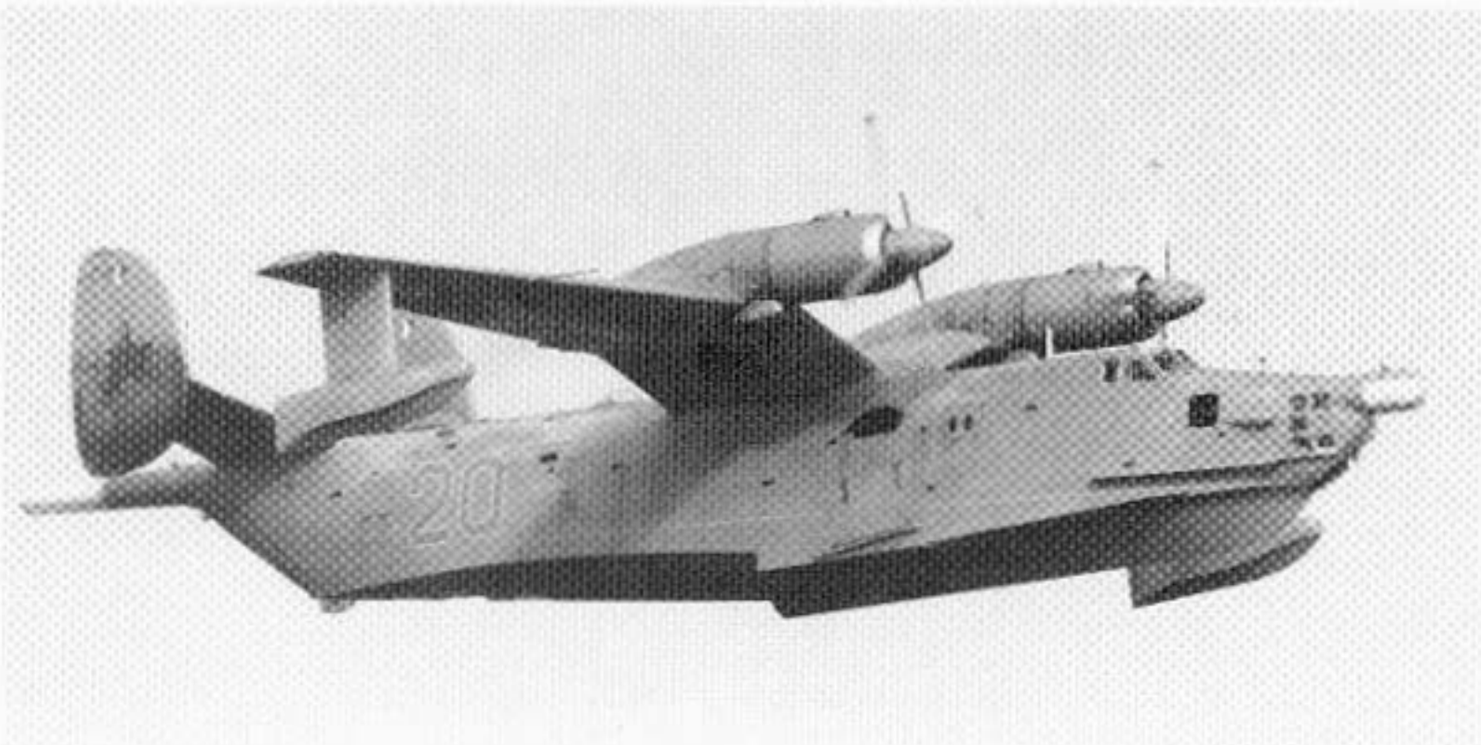
Appendix C. SOVIET MARITIME AIRCRAFT DESCRIPTIONS

This appendix provides basic descriptive data and photographs of some of the more significant Soviet naval aircraft and other aircraft with a major maritime mission. Aviation plays an extremely important role for the Soviets in the oceanic theaters of military action (TVDs) as well as in the contiguous seas that are part of continental TVDs. It has become an increasingly important adjunct to the expanding Soviet naval structure. The Navy's growing carrier-based air capability attests to the relative high priority of Soviet Naval Aviation.

Described are the major aircraft types that have been assigned maritime missions, including of Morskaya Aviatsiya (MA-Maritime Aviation or Soviet Naval Aviation), Vozdushnyye armii Verkhovnogo Glavnokomandovaniya (VAVGK-Air Armies of the Supreme High Command), Aviatsiya Protivo Vozdushnaya Oborony (APVO-Aviation of the Air Defense Forces), and Voyenno Vozdushnyye Sily (VVS-Air Forces).

Aircraft are arranged alphabetically by NATO code name. The dimensions, characteristics, and general information contained in the appendix are approximate. All aircraft names given in this appendix are NATO code names.

One syllable names denote propeller driven aircraft and two syllables are used for jet aircraft. Names for bomber aircraft begin with "B"; fighter names begin with "F"; transport names start with "C"; maritime reconnaissance and other miscellaneous aircraft types have names that start with "M"; and all helicopter names begin with "H". The Soviets' own designation scheme uses letters derived from the bureau at which the aircraft was designed. Thus, all aircraft designed by the Yakovlev Design Bureau have Soviet designations in the Yak numerical sequence such as the Yak-38 FORGER and the Yak-42 CLOBBER. The designations used herein are those assigned by the Soviet military unless otherwise noted as being design bureau designations. For example, BEAR A/B/C/D/E/G aircraft hold the military designation Tu-20, but their Tupolev Design Bureau designation of Tu-95 is more commonly used.



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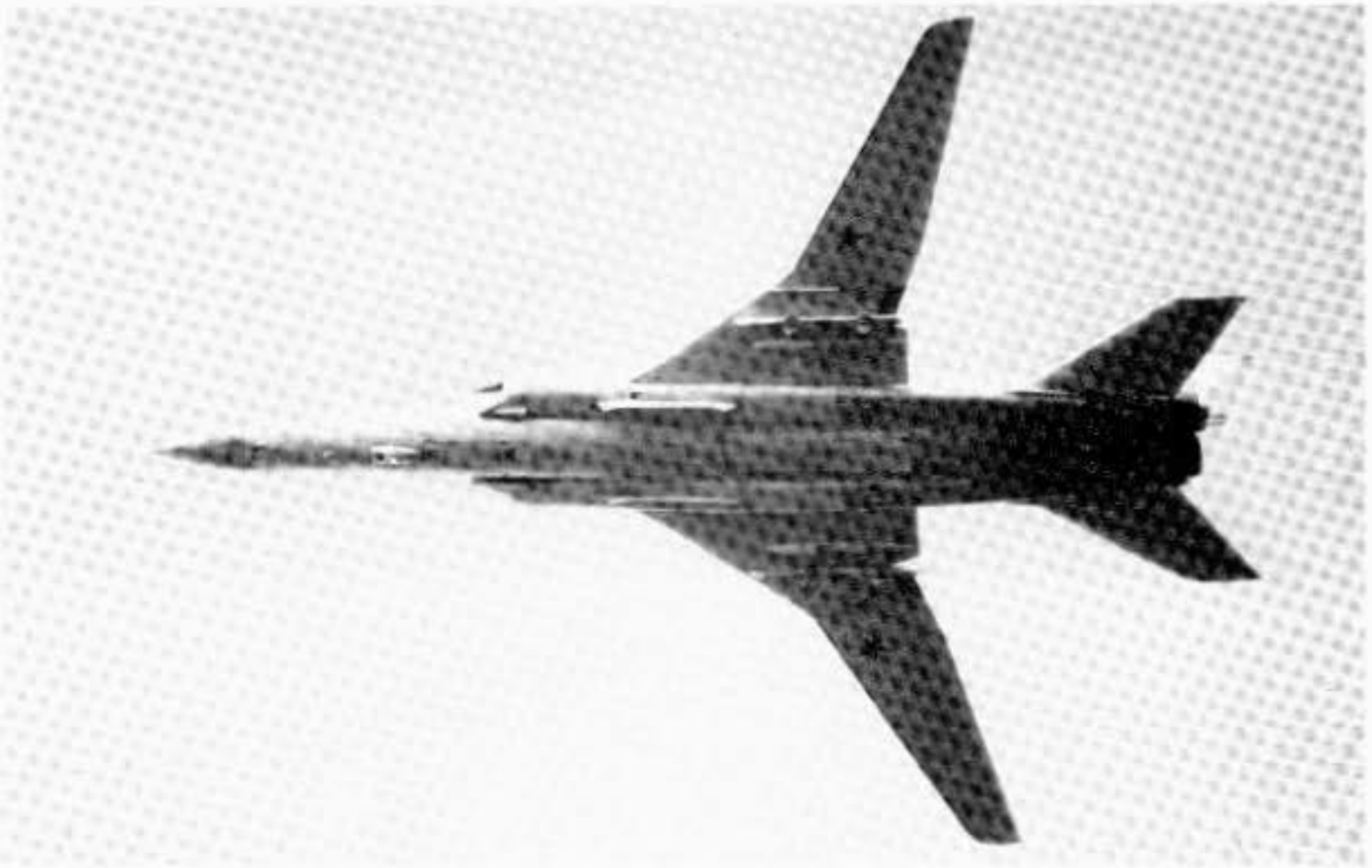

Tupolev Tu-22M BACKFIRE Strike Aircraft

Aircraft Type:	Medium-Range Supersonic Strike/Bomber
Branch of Service:	MA, VAVGK
Initial Operational Capability (IOC):	1974 (In production)
Length:	40 meters (130 ft)
Wingspan:	swept, 23.5 meters (77 feet) unswept 34.5 meters (113 feet)
Gross Weight:	130,000 kg (286,600 lbs)
Powerplant:	2 afterburning turbofans
Maximum Speed:	Mach 2.0+
Unrefueled Combat Radius:	4000 km (2150 nm)

About 125 BACKFIRE Bs and Cs are assigned to Maritime Aviation (MA) regiments in all four fleets. Over 160 BACKFIREs are assigned to air armies of the Supreme High Command (VAVGK) and may also be given maritime strike missions. Carrying one or two AS-4 KITCHEN antiship missiles, BACKFIREs can stand off up to 200 nautical miles from their targets while launching strikes. MA BACKFIREs have also been observed with shackles for mines and bombs, permitting them to conduct offensive minelaying and bombing strikes into defended areas. BACKFIREs are still being added to the Soviet naval inventory.

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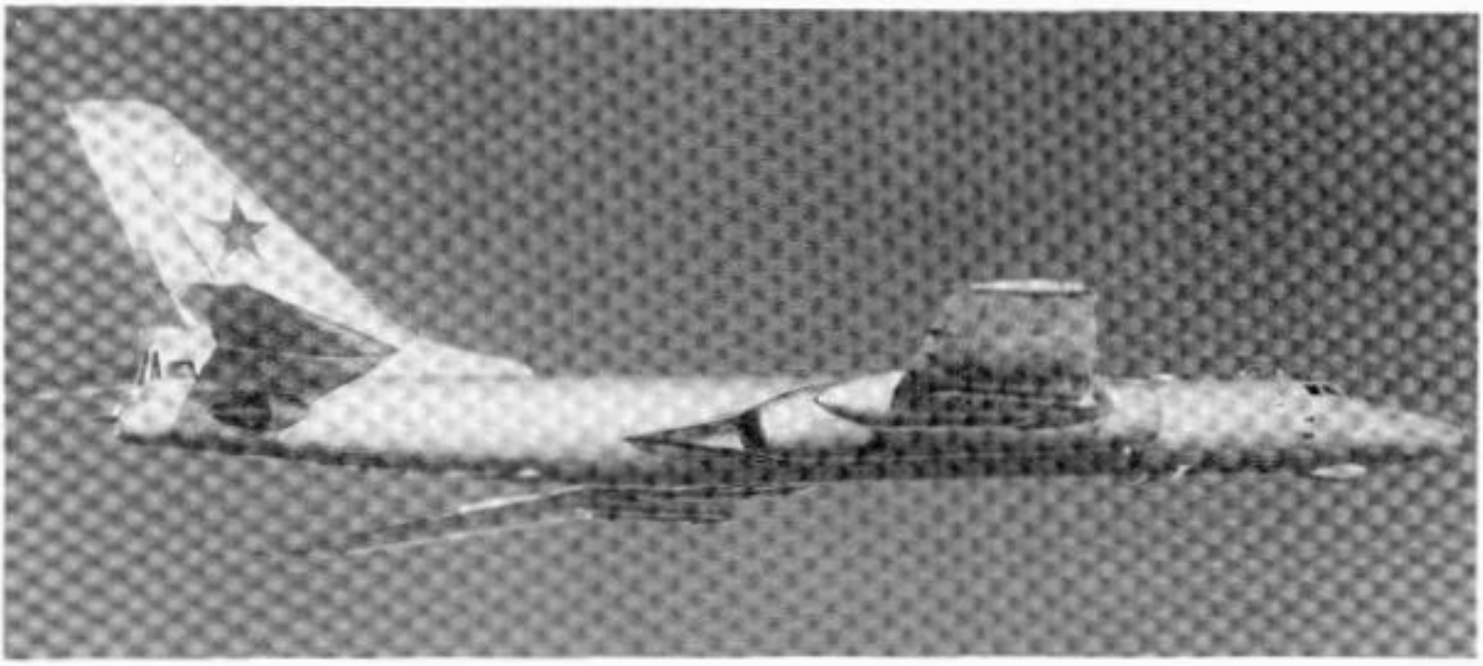

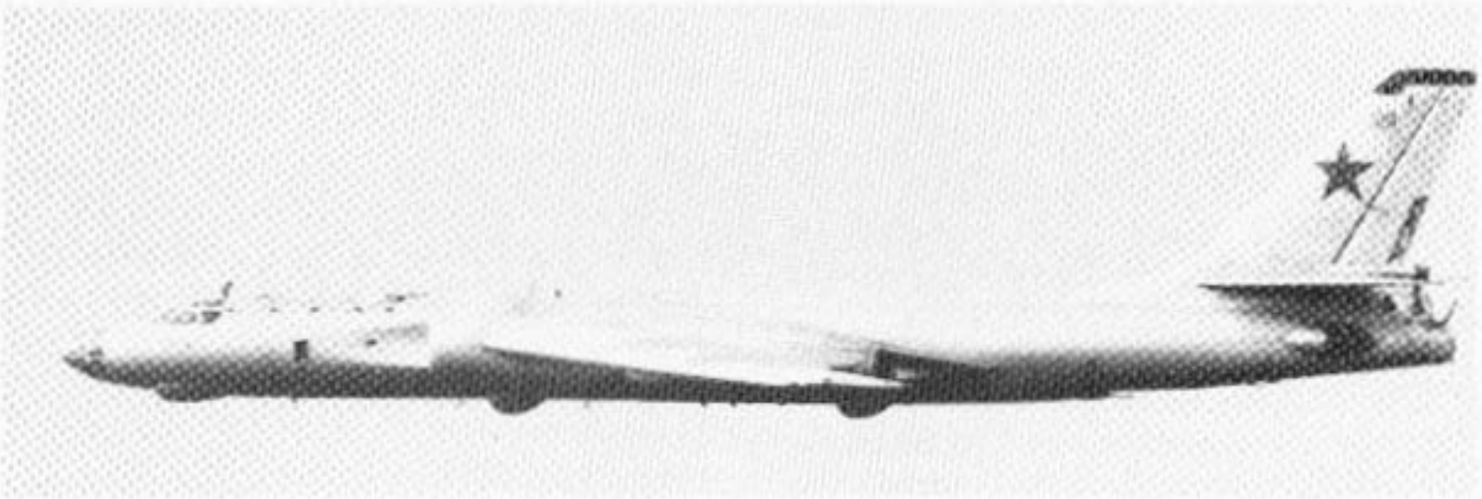

Tupolev Tu-16 BADGER Strike/Reconnaissance/Electronic Warfare Aircraft

Aircraft Type:	Medium-Range Subsonic Strike/Bomber
Branch of Service:	MA, VAVGK
IOC:	1953
Length:	36.5 meters (120) feet
Wingspan:	33 meters (110 feet)
Gross Weight:	75,000 kg (165,500 lbs)
Powerplant:	2 non-afterburning turbojets
Maximum Speed:	535 kts
Unrefueled Combat Radius:	3100 km (1700 nm)

About 150 BADGER bombers are assigned to all four Soviet fleets, with the majority of the aircraft concentrated in the Northern and Pacific Ocean fleets. Similar numbers are assigned to the VAVGK and could also be used in a maritime role. MA BADGER As are free-fall bombers and refueling aircraft used for minelaying, bombing attacks on land targets, and refueling other BADGERs. BADGER Cs carry either one AS-2 or two AS-6 antiship missiles (ASMs), while BADGER Gs carry two of either the AS-5 or AS-6 ASMs. BADGER Hs, Js, and some Cs are electronic surveillance (ESM) and countermeasures (ECM) aircraft for strike and reconnaissance support. Seven BADGERs have been transferred to Egypt and five to Iraq. China has built its own version of BADGER, B-6, since 1968, and has exported a missile-launching variant to Iraq.

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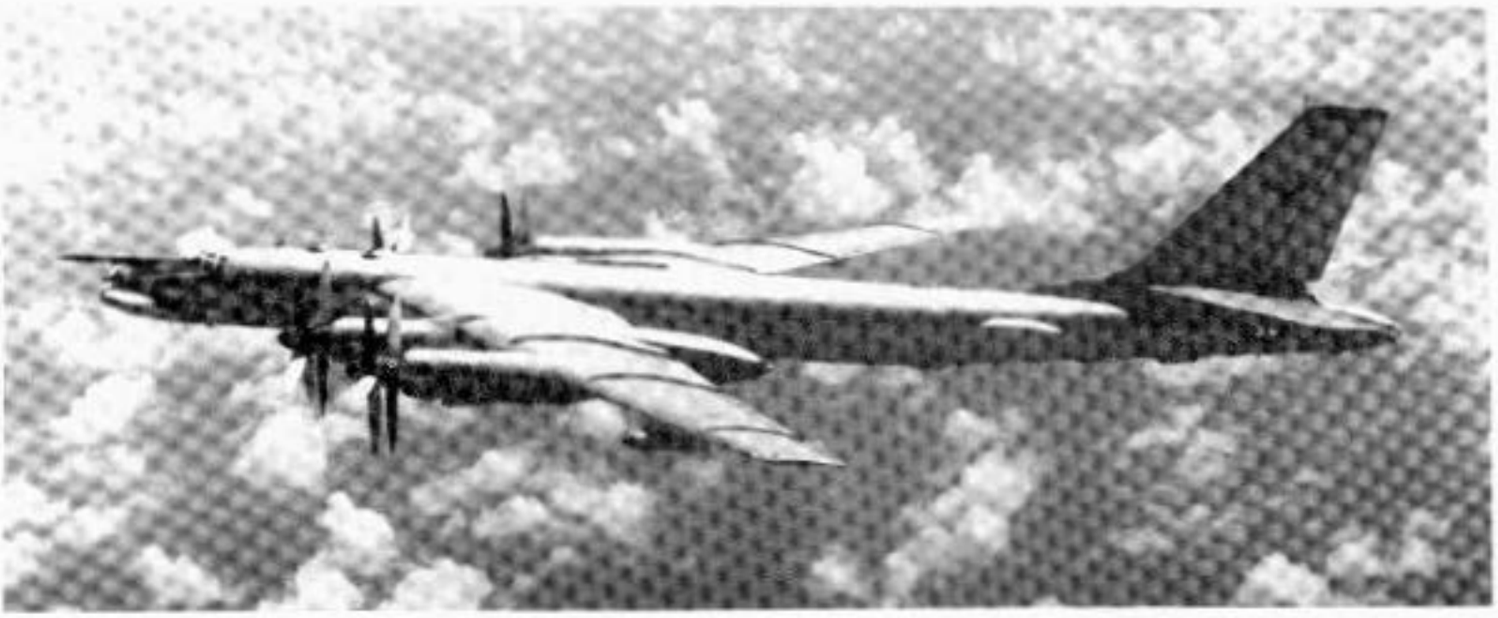

Tupolev Tu-95 BEAR Strike Aircraft

Aircraft Type:	Long-Range Subsonic Strike/Bomber
Branch of Service:	VAVGK
IOC:	1955 BEAR A
	1984 BEAR H (in production)
Length:	45 meters (147 feet)
Wingspan:	50 meters (165 feet)
Gross Weight:	162,000 kg (356,000 lbs)
Powerplant:	4 turboprop (w/contrarotating propellers)
Maximum Speed:	450 kts
Unrefueled Combat Radius:	8300 km (4500 nm)

Over 60 BEAR Bs and Gs are assigned to the air armies of the Supreme High Command. One of the principal missions of these air armies is maritime strike. BEAR Bs carry the large nuclear-armed AS-3 KANGAROO missile for antiship strikes, while the BEAR G, an upgraded version of the earlier BEARs, carries two nuclear or conventional AS-4 KITCHEN ASMs. Over 45 of the earlier BEARs have been upgraded to the BEAR G standard. The B and G variants of the BEAR all have a Tupolev design bureau designation of Tu-95. A fourth strike variant, the BEAR H, is a new construction aircraft based on the Tu-142 BEAR F (see below). Although thus far BEAR H, with its principal armament of AS-15 long-range land attack cruise missiles, has not been associated with a naval role, such a mission is within its capabilities.

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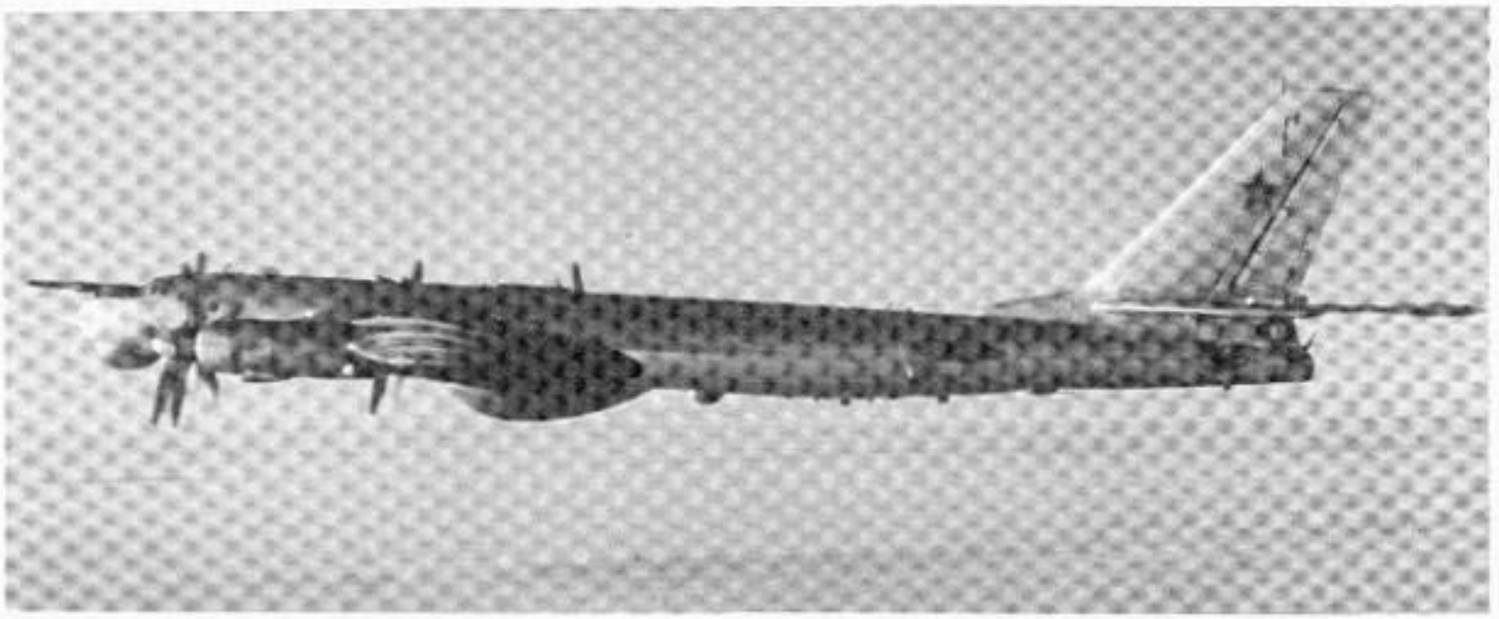

Tupolev Tu-95/Tu-142 BEAR Support Aircraft

Aircraft Type:	Long-Range Reconnaissance Maritime Patrol and Communications Aircraft
Branch of Service:	MA
IOC:	1965 BEAR D 1970 BEAR F 1984 BEAR J (in production)
Length:	49.5 meters (162 feet)
Wingspan:	51 meters (167 feet)
Gross Weight:	188,000 kg (415,000 lbs)
Powerplant:	4 turboprop (w/contrarotating propellers)
Maximum Speed:	450 kts
Unrefueled Combat Radius:	6000 km (3400 nm)

Maritime Aviation operates three variants of the BEAR in specialized roles: the BEAR D maritime surveillance and reconnaissance aircraft, the BEAR F antisubmarine patrol aircraft, and the BEAR J strategic communications aircraft. Fewer than 50 BEAR Ds (Tu-95) remain active in the Northern and Pacific Ocean Fleets. Carrying the bulbous "BIG BULGE" radar on its underbelly. The BEAR D provides locating, targeting and mid-course correction data for antiship missile launch platforms.

About 55 BEAR F (Tu-142) maritime patrol aircraft are subordinate to the Northern and Pacific Ocean Fleets. With antisubmarine warfare (ASW) as their primary mission, BEAR Fs are equipped with a variety of sonobuoys, torpedoes, and depth bombs. Both BEAR Ds and Fs have deployed outside the Soviet Union to Cuba, Angola, and Cam Ranh Bay, Vietnam.

BEAR J communications aircraft are assigned to the Northern and Pacific Ocean Fleets to relay communications to the Soviet submarine fleet. Operating in a manner similar to the US Navy's EC-130Qs, BEAR Js relay very low frequency (VLF) traffic to submerged ballistic missile submarines to help ensure against a breakdown in strategic communications.

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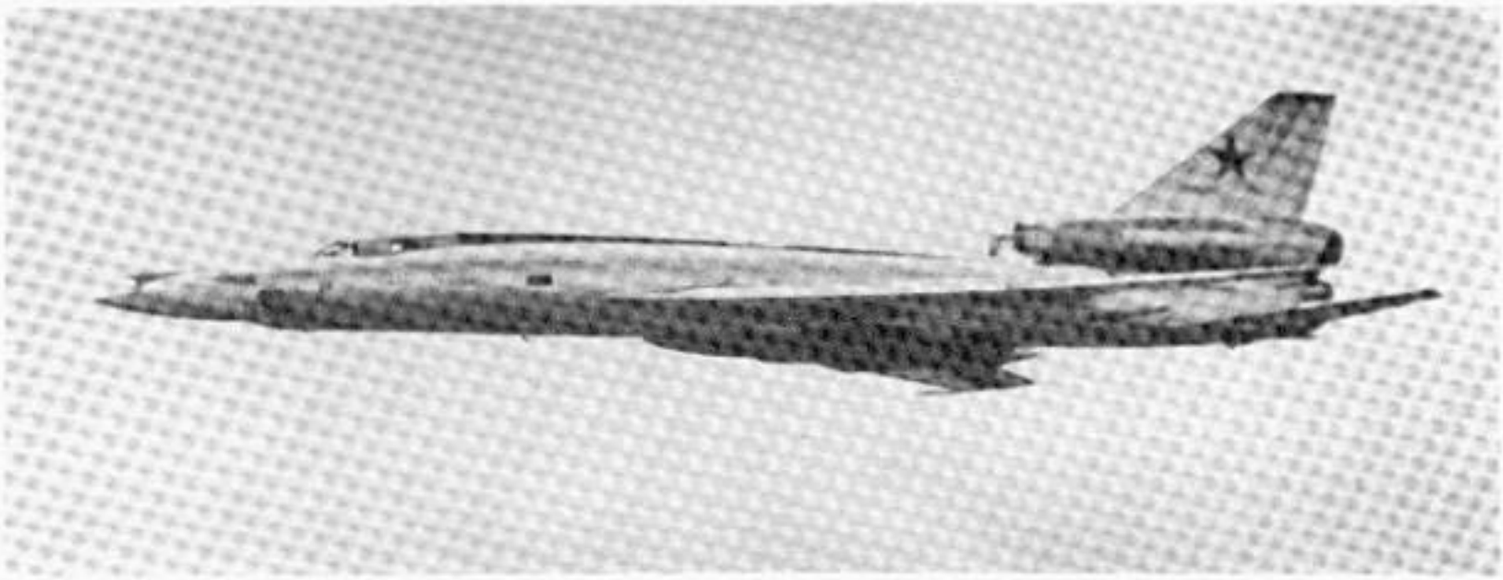

Tupolev Tu-22 BLINDER Strike/Reconnaissance Aircraft

Aircraft Type:	Medium-Range Supersonic Strike Bomber
Branch of Service:	MA, VAVGK
IOC:	1960
Length:	40 meters (133 feet)
Wingspan:	24 meters (78 feet)
Gross weight:	84,000 kg (185,000 lbs)
Powerplant:	2 afterburning turbojets
Maximum Speed:	Mach 1.4
Unrefueled Combat Radius:	2900 km (1500 nm)

The Soviet Navy has small numbers remaining of BLINDER A bombers and BLINDER C reconnaissance aircraft assigned to the Baltic and Black Sea Fleets. The BLINDER B, equipped with a single AS-4 KITCHEN antiship missile, is flown by the VAVGK and often assigned to maritime strike missions. Capable of supersonic dash, the BLINDER A was originally assigned to the Soviet Navy as a combination gravity/torpedo bomber, but there is no evidence that it ever exercised the latter role. BLINDERs are also flown by the air force of Libya.

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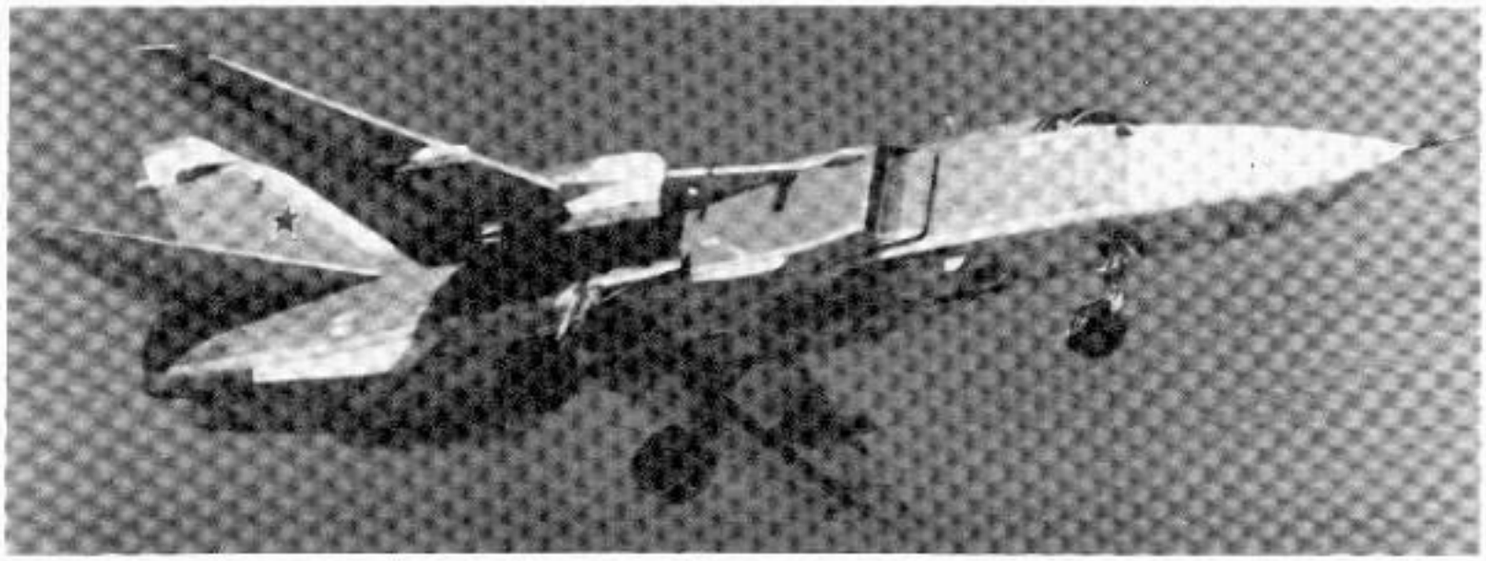

Sukhoi Su-24 FENCER Strike/Reconnaissance Aircraft

Aircraft Type:	Medium-Range Supersonic Strike Fighter
Branch of Service:	VAVGK, VVS, MA
IOC:	1972 (in production)
Length:	21 meters (69 ft)
Wingspan:	swept 10.5 meters (34.5 ft)
	unswept 17.5 meters (57.5 ft)
Gross Weight:	41,000 kg (90,000 lbs)
Powerplant:	2 afterburning turbojets
Maximum Speed:	Mach 2+ at altitude
	Mach 1.2 at sea level
Unrefueled Combat Radius:	1300 km (700 nm)

Over 700 FENCERs of all types have been built for the Soviet air forces and are currently assigned principally to the air armies of the Supreme High Command (VAVGK). The Soviet Navy has received small numbers of the reconnaissance variant, FENCER E. Comparable in mission and performance to the USAF F-111 strike bomber, the Su-24 strike variants, FENCER A, B, C, and D (some of which have been resubordinated to MA) are all-weather, variable geometry, supersonic strike fighters that employ terrain-avoidance radar for low-level strikes against a variety of targets, including maritime. Armament includes AS-7, AS-10, and AS-14 tactical air-to-surface missiles (TASMs) and a single 30mm cannon. FENCERS are based throughout the USSR and pose a significant threat to Allied naval forces operating in or near coastal waters.

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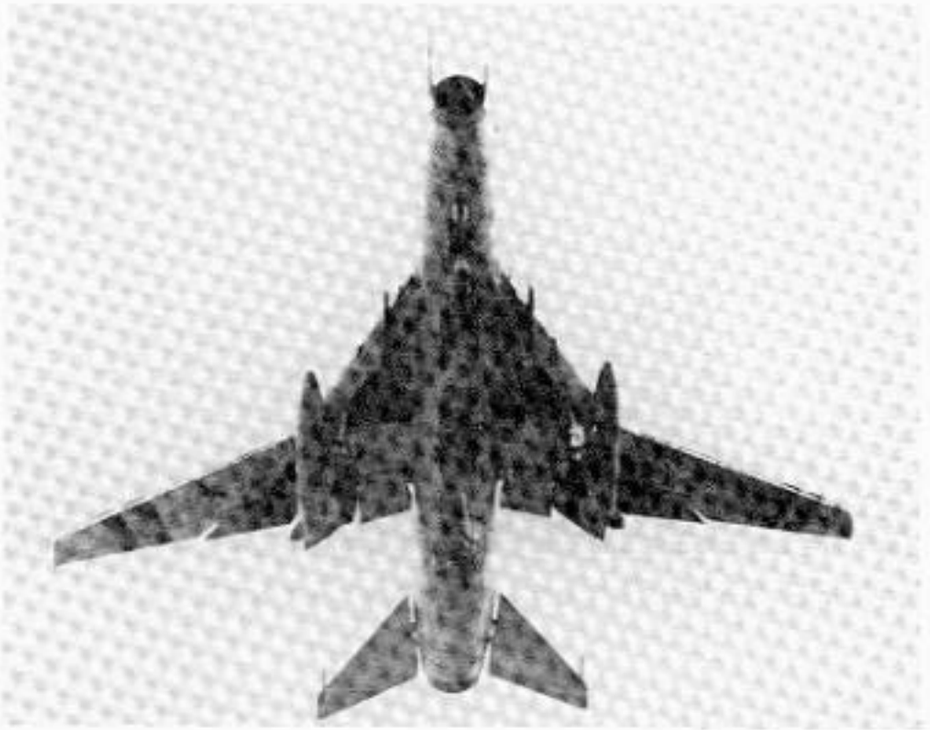

Sukhoi Su-17 FITTER Fighter/Bomber

Aircraft Type:	Short-Range Supersonic Fighter/Bomber
Branch of Service:	MA, VVS
IOC:	1971
Length:	18.5 meters (61 ft)
Wingspan:	swept 10 meters (33 ft) unswept 13.5 meters (44 ft)
Gross Weight:	17,750 kg (39,100 lbs)
Powerplant:	1 afterburning turbojet
Maximum Speed:	Mach 1.05 at sea level
Unrefueled Combat Radius:	550 km (370 nm)

Over 1,000 Su-17 variable geometry fighter/bombers have been built and assigned to various Soviet aviation units, including Maritime Aviation. Approximately 95 FITTER Cs remain in naval service, assigned to the Baltic and Pacific Ocean fleets for air support of Soviet Naval Infantry units and coastal antishipping strike. Armament includes a wide variety of tactical air-to-surface missiles, unguided weapons, and two internal 30mm cannons. Export versions of FITTER serve(d) with the air forces of Algeria, Angola, Czechoslovakia, Egypt, Iraq, Libya, Peru, Poland, Syria, Vietnam, and both North and South Yemen.

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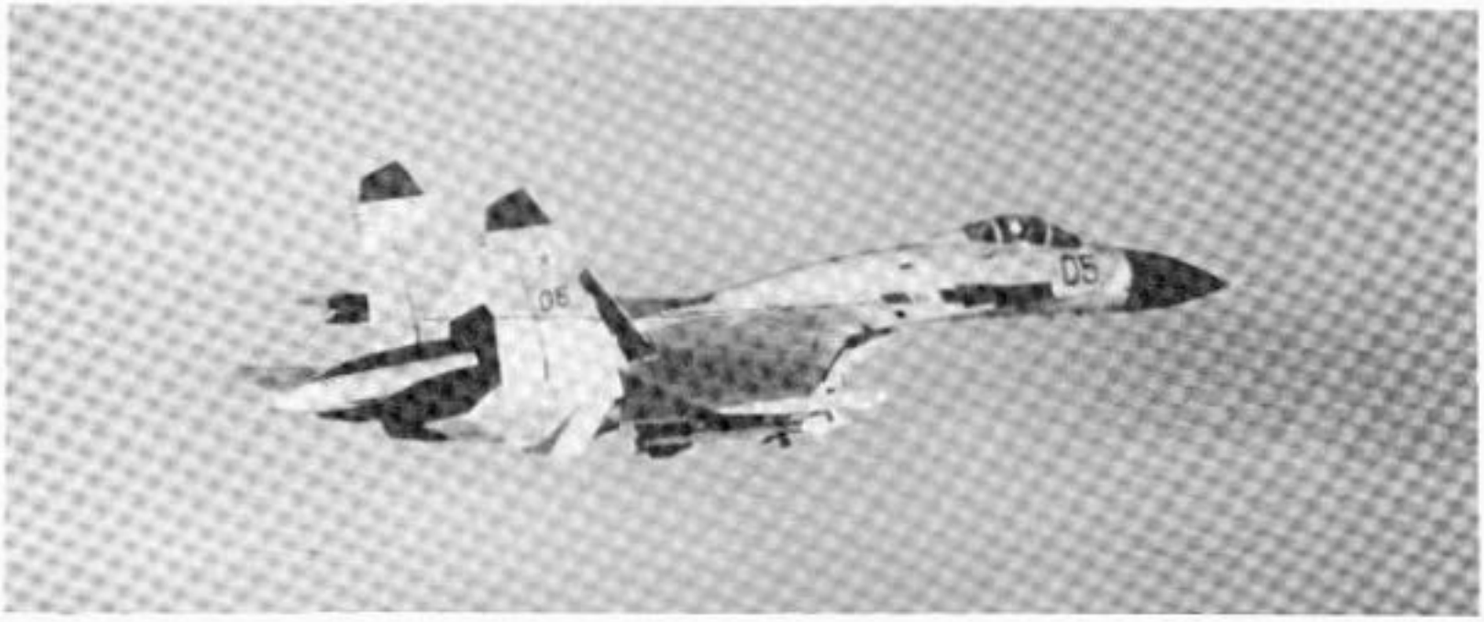

Sukhoi Su-27 FLANKER Fighter/Interceptor

Aircraft Type:	Long-Range Supersonic All-Weather Fighter/Interceptor
Branch of Service:	MA, APVO, VVS
IOC:	1986 (in production)
Length:	21.5 meters (70 ft)
Wingspan:	14.5 meters (48 ft)
Gross Weight:	approx 25,000 kg (55,000 lbs)
Powerplant:	2 afterburning turbofans
Maximum Speed:	Mach 2.0+
Unrefueled Combat Radius:	1500+ km (800+ nm)

The most recent addition to the Soviet air defense forces and tactical air forces, the Su-27 all weather fighter, is similar in many respects to the US Air Force's F-15 Eagle. Entering operational service in 1986, FLANKER Bs were first deployed to Aviation of the Air Defense (APVO) bases in the Kola Peninsula and have conducted numerous interceptions of NATO patrol aircraft over the Barents Sea. The FLANKER B is estimated to have an unrefueled combat radius in excess of 800 nautical miles (nm), giving it the capability to escort maritime strike bombers significant distances from base. A variant of the FLANKER is in service as a conventional take-off and landing (CTOL) aircraft for operation from the KUZNETSOV and UL'YANOVSK classes of aircraft carriers.

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Mikoyan MiG-23 FLOGGER Fighter/Interceptor

Aircraft Type:	Medium-Range Supersonic Fighter/Interceptor
Branch of Service:	VVS, APVO
IOC:	1972
Length:	16 meters (52 ft)
Wingspan:	swept 8 meters (26 ft) unswept 14 meters (46 ft)
Gross Weight:	18,000 kg (40,000 lbs)
Powerplant:	1 afterburning turbojet
Maximum Speed:	Mach 2.0+
Unrefueled Combat Radius:	1100 km (600 nm)

FLOGGER Bs, Gs, and Ks are the most numerous interceptors in the Soviet air forces. Over 400 of these types serve with APVO and an additional 1,500 are assigned to the tactical air forces. Standard armament consists of a twin 23 mm cannon in a ventral pod, and AA-7 and AA-8 air-to-air missiles on under-fuselage and underwing pylons. Export versions of FLOGGER interceptors are in service with the air forces of Algeria, Bulgaria, Cuba, Ethiopia, Hungary, Iraq, North Korea, Libya, Poland, Romania, Syria, and Vietnam.

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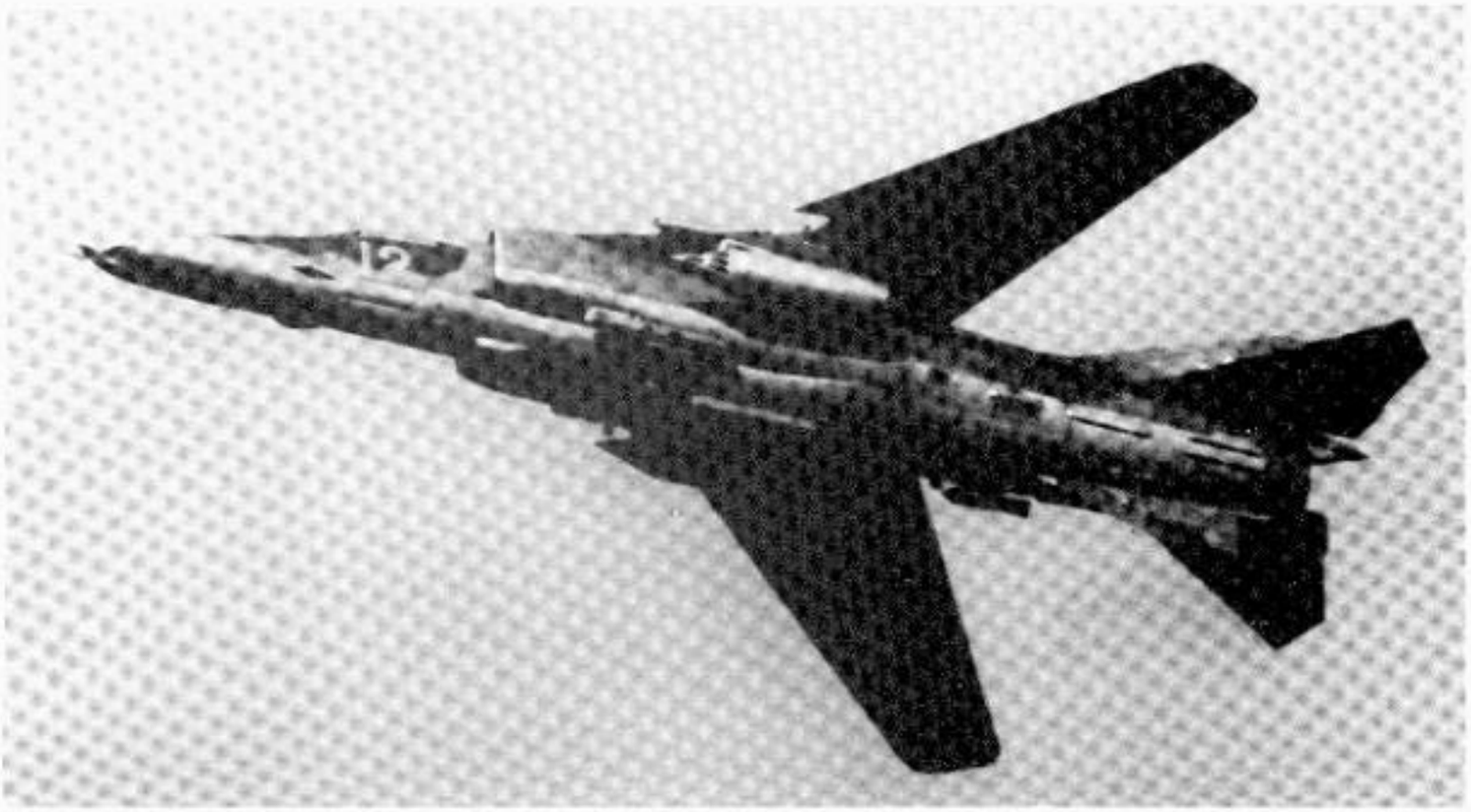

Mikoyan MiG-27 FLOGGER Fighter/Bomber

Aircraft Type:	Medium-Range Supersonic Fighter/Bomber
Branch of Service:	VVS
IOC:	1971 (in production)
Length:	16 meters (52 ft)
Wingspan:	swept 8 meters (26 ft) unswept 14 meters (46 ft)
Gross Weight:	20,000 kg (44,000 lbs)
Powerplant:	1 afterburning turbojet
Maximum Speed:	Mach 1.1 at sea level
Unrefueled Combat Radius:	800 km (450 nm)

Though derived from the MiG-23 FLOGGER fighter/interceptor, the MiG-27 FLOGGER D and J are optimized for ground attack and have been observed practicing maritime strikes. External differences between the two types of Floggers are principally the nose contour and engine inlet geometry. MiG-27s possess a sharply tapered nose providing better over-the-nose visibility; this change was made possible by the absence of the MiG-23's air intercept radar and the substitution of laser rangefinder and other electro-optical sensors. Principal armament of both FLOGGER D and J includes AS-7, AS-10, AS-12, and AS-14 TASMs, while the FLOGGER D has a single internal 30mm cannon and the J version cannon pods that mount on weapon pylons. Approximately 700 FLOGGER D/Js serve in the Soviet air forces. India also produces a variant of the FLOGGER D under license.

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Yakolev Yak-38 FORGER Fighter/Bomber

Aircraft Type:	Short-Range Subsonic Shipborne VTOL Fighter
Branch of Service:	MA
IOC:	1976
Length:	15.5 meters (51 feet)
Wingspan:	7 meters (23 feet)
Gross Weight:	11,500 kg (25,000 lbs)
Powerplant:	1 non-afterburning turbojet lift/cruise; 2 lift jets
Maximum speed:	540 kts
Unrefueled Combat Radius:	375 km (200 nm)

First observed in the West as the carrier KIEV passed through the Turkish Straits in 1976 on her initial cruise, FORGER is the Soviet Navy's first shipborne fighter. Employing two jet engines for lift and one for lift and cruise, the Yak-38 is a true vertical takeoff and landing (VTOL) aircraft. Though some have been observed in rolling takeoffs from a carrier deck, this maneuver yields no aerodynamic gains for FORGER and thus cannot be considered a short takeoff and landing (STOL) capability like that possessed by the AV-8B Harrier. Underwing pylons permit a variety of armament to be carried, including 23mm gun pods, AS-7 TASMs, AA-8 air-to-air missiles (AAMs), bombs and unguided rockets. FORGER A is the single seat version, while a two seat trainer is designated FORGER B. Each of the four carriers of the KIEV class operates approximately twelve FORGERs as part of a mixed FORGER/helicopter air component, and the aircraft can also operate from KUZNETSOV class carriers.

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Sukhoi Su-25 FROGFOOT Ground Attack/Close Air Support Fighter

Aircraft Type:	Ground Attack Fighter
Branch of Service:	MA, VVS
IOC:	1981
Length:	15.4 meters (50 feet)
Wingspan:	14.3 meters (47 feet)
Gross Weight:	16,000 kg (35,000 lbs)
Power Plant:	2 non-afterburning turbojets
Maximum Speed:	540 kts
Unrefueled Combat Radius:	550 km (300 nm)

The Su-25 FROGFOOT is a single seat, twin engine, subsonic close air support aircraft designed by the Sukhoi Design Bureau. It can carry a variety of weapons including bombs, unguided rockets, TASMs and guns. At least 45 have been transferred to SNA. A specially configured, "navalized" two-seat trainer version, designated the Su-25UT made arrested landings and ramp-assisted takeoffs during trials with the aircraft carrier KUZNETSOV in November 1989.

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Mikoyan MiG-29 FULCRUM Fighter

Aircraft Type:	Fighter
Branch of Service:	MA, VVS
IOC:	1984
Length:	17 meters (57 feet)
Wingspan:	11 meters (37 feet)
Gross Weight:	17,000 kg (37,400 lbs)
Power Plant:	2 afterburning turbojets
Maximum Speed:	Mach 2.0+
Unrefueled Combat Radius:	710 km (380 nm)

The FULCRUM is a fourth generation, look-down/shoot-down capable high performance fighter. It can carry a variety of air-to-air missiles and has internal guns. It is also believed capable of carrying air-to-ground ordnance. A MiG-29 successfully participated in landing/takeoff trials aboard the carrier KUZNETSOV in November 1989. FULCRUM has been exported to Cuba, North Korea, Syria, Iran, Iraq, and India.

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Mil/Mi-14 HAZE Antisubmarine/Minesweeping Helicopter

Aircraft Type:	Shore-Based Antisubmarine/Mine Countermeasures Helicopter
Branch of Service:	MA
IOC:	1974 (in production)
Fuselage Length:	18 meters (60 ft)
Main Rotor Diameter:	21.5 meters (70 ft)
Gross Weight:	13,000 kg (28,500 lbs)
Powerplant:	2 turboshafts
Maximum Speed:	124 kts
Unrefueled Combat Radius:	450 km (250 nm)

Developed from the Mi-8 HIP transport helicopter, the Mi-14 HAZE is a twin-turbine, amphibious helicopter that has entered service with the Soviet Navy in three versions: the HAZE A antisubmarine variant, the HAZE B mine countermeasures helicopter, and an as-yet undesignated search and rescue variant. All versions are based ashore. HAZE A is equipped with dipping sonar, sonobuoys, a towed magnetic anomaly detection (MAD) system, and a bomb bay for torpedoes and depth charges. About 95 HAZE As and two dozen HAZE Bs are spread through the four Soviet fleets.

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Kamov Ka-27 HELIX ASW/Transport/SAR Helicopter

Aircraft Type:	Shipborne ASW/Transport/SAR Helicopter
Branch of Service:	MA
IOC:	1980
Fuselage Length:	11 meters (37 ft)
Main Rotor Diameter:	16 meters (52 ft)
Gross Weight:	11,000 kg (24,000 lbs)
Powerplant:	2 turboshafts
Maximum Speed:	135 kts
Unrefueled Combat Radius:	375 km (200 nm)

HELIX is the successor to the long-lived Ka-25 HORMONE shipborne helicopter series. Four variants of HELIX have been identified to date: the HELIX A antisubmarine helicopter, the HELIX B assault transport helicopter, the Ka-32 HELIX C civil variant, and the HELIX D search and rescue (SAR) helicopter. All are characterized by the typically Kamov contrarotating (coaxial) main rotors and the resulting absence of a tail rotor. HELIX A is equipped with radar, sonobuoys, dipping sonar and a bomb bay for torpedoes and depth bombs. HELIX B has outriggers for externally carried ordnance. HELIX has been exported to India, Yugoslavia, and other Soviet clients.

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Kamov Ka-25 HORMONE Antisubmarine/Targeting Helicopter

Aircraft Type:	Shipborne ASW/Targeting/SAR Helicopter
Branch of Service:	MA
IOC:	1967
Fuselage Length:	10 meters (32 ft)
Main Rotor Diameter:	16 meters (52 ft)
Gross Weight:	7,500 kg (16,500 lbs)
Powerplant:	2 turboshafts
Maximum Speed:	124 kts
Unrefueled Combat Radius:	175 km (100 nm)

The standard Soviet shipborne helicopter since the late 1960s, HORMONEs are gradually being replaced by HELIXs in the antisubmarine, troop carrying, and search and rescue roles. Three naval variants have been identified: HORMONE A with an ASW mission, HORMONE B with an over-the-horizon targeting mission, and HORMONE C, the search and rescue/utility version. HORMONE A is equipped with dipping sonar, sonobuoys, search radar and a weapons bay for torpedoes and depth bombs. HORMONE B carries a powerful radar and data link equipment.

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Beriev Be-12 MAIL Maritime Patrol Aircraft

Aircraft Type:	Maritime Patrol Amphibian
Branch of Service:	MA
IOC:	1966
Length:	30 meters (99 ft)
Wingspan:	29.5 meters (97 ft)
Gross Weight:	31,000 kg (68,500 lbs)
Powerplant:	2 turboprops
Maximum Speed:	330 kts
Unrefueled Combat Radius:	3700 km (2000 nm)

Approximately 90 MAIL amphibians serve in all four Soviet fleets for maritime patrol and antisubmarine duties. Equipped with magnetic anomaly detection (MAD) gear and sonobuoys as primary sensors, MAILs comprise the Soviets' principal coastal airborne ASW capability out to an effective radius of approximately 600 nautical miles. Patrols are usually conducted at approximately 170 knots. A bomb bay can hold torpedoes, depth bombs, and mines, while additional stores can be carried on four wing pylons.

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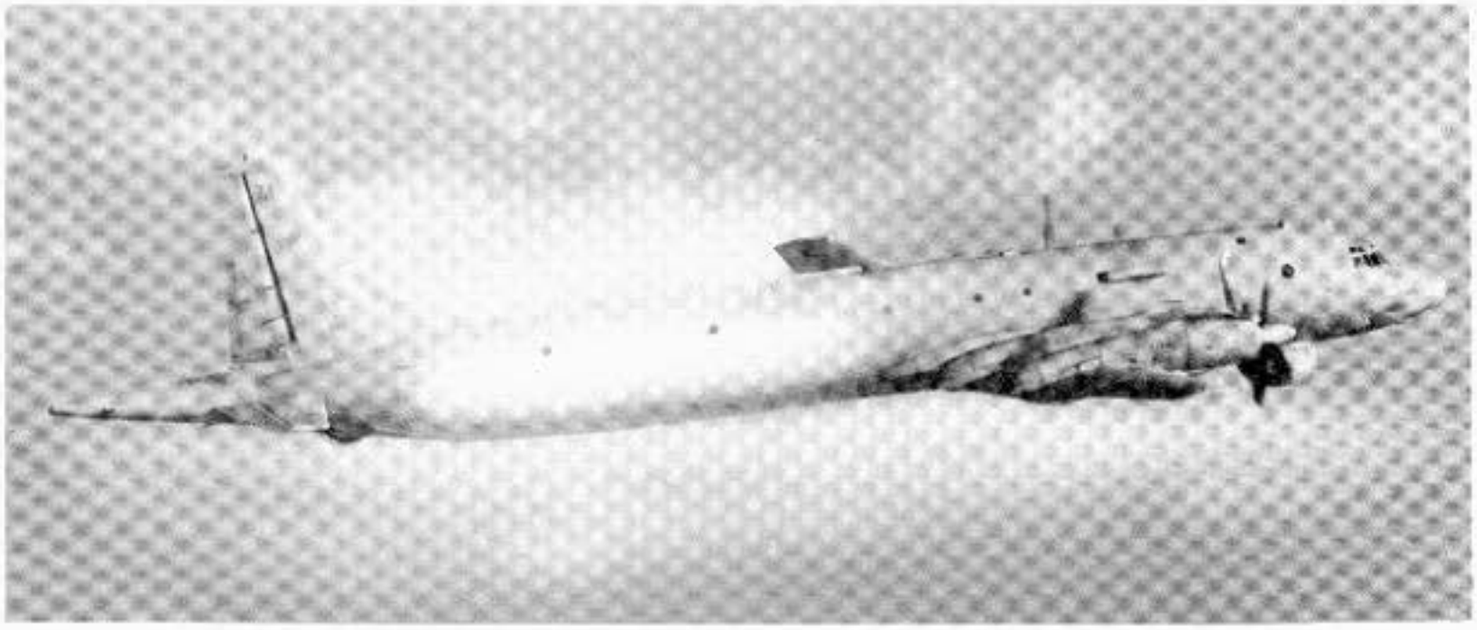

Il'yushin Il-38 MAY Maritime Patrol Aircraft

Aircraft Type:	Medium-Range Maritime Patrol Aircraft
Branch of Service:	MA
IOC:	1968
Length:	39.5 meters (130 ft)
Wingspan:	37.5 meters (123 ft)
Gross Weight:	63,500 kg (141,000 lbs)
Powerplant:	4 turboprops
Maximum Speed:	390 kts
Unrefueled Combat Radius:	3300 km (1800 nm)

Adapted from the Il-18 COOT transport, the IL-38 MAY is a medium-range maritime patrol aircraft that generally operates between the long-range operating areas (opareas) of the BEAR F and the coastal opareas of the MAIL. The MAY has a patrol speed of 220 knots. Sensors include fixed MAD gear, sonobuoys and radar, while two internal weapons bays carry torpedoes, depth bombs and/or mines. About 45 MAYs remain in service with the Northern, Baltic and Pacific Ocean Fleets. MAYs routinely deployed to Libya and Syria in the 1980s.

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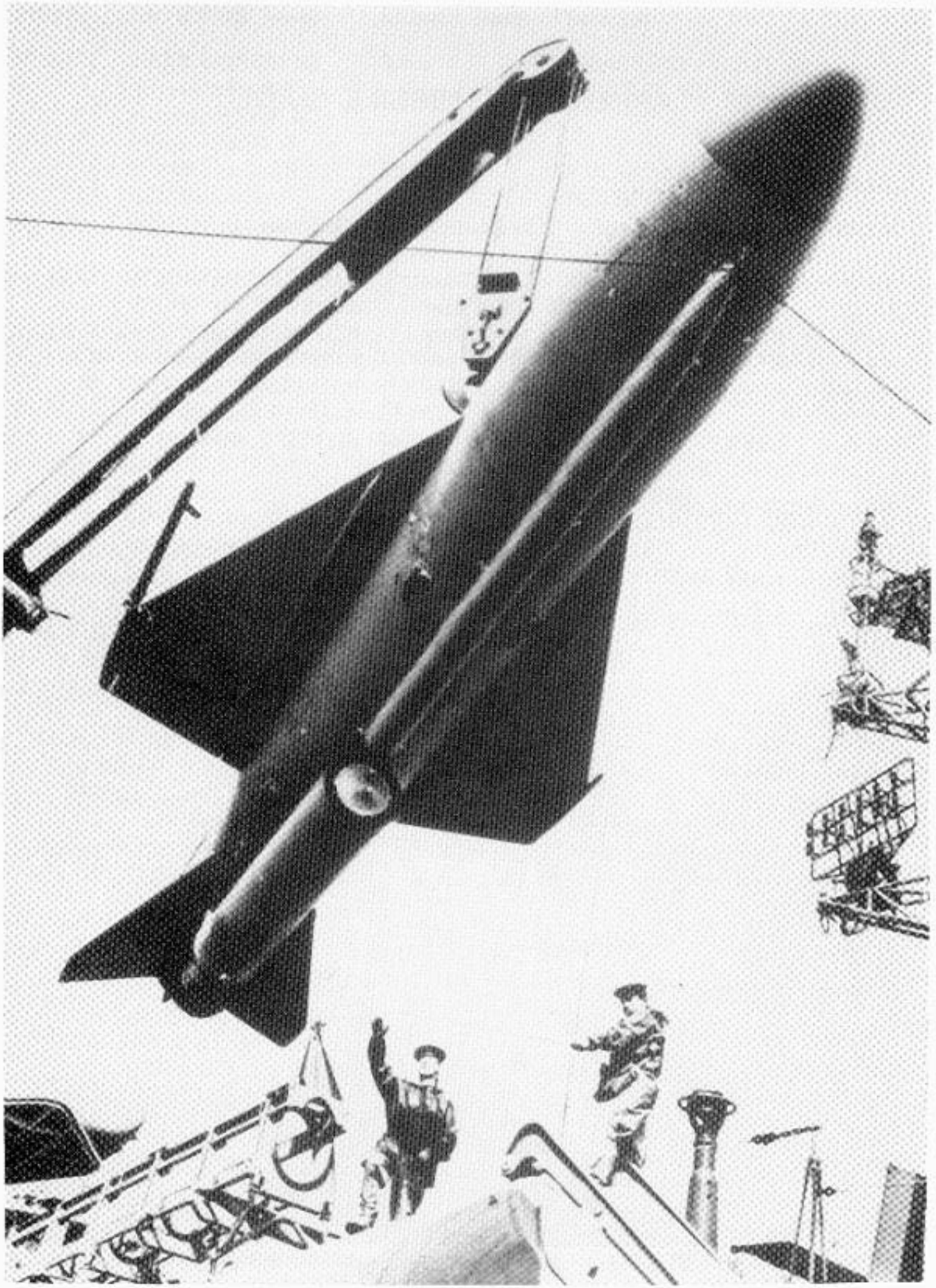

One of the earliest antiship missiles, the SS-N-2 STYX, is seen here being loaded into a missile tube.

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APPENDIX D. MISSILE GUIDE

Air-to-Surface Missiles

Missile	NATO Code Name	Estimate Range	Platforms
AS-2	KIPPER	150-170nm	BADGER C/ BADGER C MOD
AS-3	KANGAROO	200-300nm	BEAR B/C
AS-4	KITCHEN	150-250nm	BLINDER B, BACKFIRE B, BEAR G
AS-5	KELT	80nm	BADGER C MOD, BADER G MOD
AS-6	KINGFISH	150-250nm	BADGER G, BADGER G MOD, BADGER C MOD
AS-7	KERRY	5nm	FITTER C, FORGER A

Surface-to-Air Missiles

SA-N-1	GOA	12nm	KRESTA I, KYNDA, KASHIN, KOTLIN
SA-N-3	GOBLET	22nm	KIEV, MOSKVA, KARA, KRESTA II
SA-N-4	GECKO	6nm	KIEV, KARA, SIROV, SLAVA, SVERDLOV, KONI, GRISHA I/III, KRIVAK I/II, NANUCHKA, SARANCHA, IVAN ROGOV, BEREZINA
SA-N-5	GRAIL	3nm	Numerous Platforms
SA-N-6	GRUMBLE	Long-range	KIROV, SLAVA, AZOV (KARA CLASS)
SA-N-7	GADFLY	Short-to-Medium Range	SOVREMENNYY, PROVORNYY (KASHIN CLASS)
SA-N-8	GREMLIN	Short-Range	Numerous Platforms
SA-N-9	None assigned	Short-Range	UDALOY, later KIROV and KIEV units
SA-19	None assigned	Short-Range	KALININ (KIROV CLASS)

Surface/Sub-surface to Surface/Sub-surface Missiles

SS-N-2	STYX (SSM)	25nm	OSA I/II MATKA
SS-N-2C	STYX (improved) (SSM)	50nm	OSA II, MOD KASHIN, MOD KILDIN, MATKA, TARANTUL I/II
SS-N-3b	SEPAL (SSM)	250nm	KRESTA I, KYNDA
SS-N-3c	SHADDOCK (SSM)	200-350nm	ECHO II, JULIETT
SS-N-6	SERB (SLBM)	1600nm	YANKEE I
SS-N-7	STARBRIGHT (SSM)	30nm	CHARLIE I
SS-N-8	SAWFLY (SLBM)	4200-4900nm	DELTA I/II
SS-N-9	SIREN (SSM)	60nm	NANUCHKA I/III SARANCHA, CHARLIE II
SS-N-12	SANDBOX (SSM)	300nm	KIEV, ECHO II, SLAVA

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Missile	NATO Code Name	Estimate Range	Platforms
SS-N-14	SILEX (ASW/SSM) (Rocket-delivered homing torpedo; also anti-ship SSM)	30nm	KARA, KIROV (UNIT 1) KRESTA II, KRIVAK I/II, UDALOY
SS-N-15	STARFISH (ASW/ ASUW) (Rocket-delivered nuclear depth bomb)	25nm	AKULA, ALFA, SIERRA, VICTOR I/II/III
SS-N-16	STALLION (ASW) (Rocket-delivered homing torpedo)	50nm	AKULA, SIERRA, TYPHOON, VICTOR II/III
SS-N-17	SNIPE (SLBM)	2100nm	YANKEE II
SS-N-18	STINGRAY (SLBM)	3500-4300nm	DELTA III
SS-N-19	SHIPWRECK (SSM)	300nm	KIROV, OSCAR
SS-N-20	STURGEON (SLBM)	4600nm	TYPHOON
SS-N-21	SAMPSON (SLCM)	1600nm	VICTOR III, AKULA, SIERRA, YANKEE SSN
SS-N-22	SUNBURN (SSM)	50nm	SOVREMENNYY, TARANTUL III
SS-N-23	SKIFF (SLBM)	4900cnm	DELTA IV
SS-NX-24	SCORPION (SSM)	1600nm	YANKEE SSGN, future SSGNs

All SLBMs have nuclear warheads; all air-to-surface weapons can be nuclear-armed. Most surface-to-surface missiles can be nuclear-armed.

An SA-N-1 GOA surface-to-air missile being launched from a KASHIN class guided-missile destroyer.

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GLOSSARY

AAW	Antiair warfare
ALCM	Air launched cruise missile
AS-(number)	US designation for Soviet air-to-surface missle
ASUW	Antisurface warfare
ASW	Antisubmarine warfare
AWOL	Absent without leave
C2	Command and control
C3	Command, control and communications
CinC	Commander-in-Chief
CTOL	Conventional take-off and landing (aircraft)
CONUS	Continental United States (excluding Alaska)
CPSU	Communist Party of the Soviet Union
ELINT	Elecronic intelligence
FADM	Fleet Admiral
GIUK	Greenland, Iceland and United Kingdom (Gap)
GLCM	Ground launched cruise missile
GLONASS	Soviet space based ship tracking system
ICBM	Intercontinental ballistic missile
INF	Intermediate Nuclear Forces (arms control agreement)
IOC	Initial operational capability
IRBM	Intermediate range ballistic missile
KGB	(Soviet) Committee on State Security
km	Kilometer
MAD	(Policy of) Mutually Assured Destruction
MIRV	Multiple independently targeted re-entry vehicles
mm	Millimeter
MRV	Multiple re-entry vehicles
NATO	North Atlantic Treaty Organization
nm	Nautical mile(s) (equals 6,079.115 ft.)
NSWP	Non-Soviet Warsaw Pact
POL	Petroleum, oil and lubricants
R&D	Research and development
RO/RO	Roll-on/roll off
RO/FLO	Roll-on/float-off
SALT	Strategic Arms Limitation Treaty
SA-N-(number)	US designation for Soviet naval surface-to-air missile
SAM	Surface-to-air missile
SLBM	submarine lauched ballistic missile
SLCM	Sea launched cruise missile
SLOC	Sea line of communication
SNA	Soviet Naval Aviation
SNI	Soviet Naval Infantry
SSM	Surface-to-surface missile
SS-N-(number)	US designation for Soviet naval surface-to-surface and submarine-to surface missiles
TSO	Theater Strategic Operations
VLF	Very low frequency
V/STOL	Vertical and short take-off and landing (aircraft)
VTOL	Vertical take-off and landing (aircraft)
WIG	Wing-in-ground effect (aircraft)

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