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Armed Forces

NATIONAL INTELLIGENCE SURVEY

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NATIONAL INTELLIGENCE SURVEY PUBLICATIONS

The basic unit of the NIS is the *General Survey*, which is now published in a bound-by-chapter format so that topics of greater perishability can be updated on an individual basis. These chapters—Country Profile, The Society, Government and Politics, The Economy, Military Geography, Transportation and Telecommunications, Armed Forces, Science, and Intelligence and Security, provide the primary NIS coverage. Some chapters, particularly Science and Intelligence and Security, that are not pertinent to all countries, are produced selectively. For small countries requiring only minimal NIS treatment, the *General Survey* coverage may be bound into one volume.

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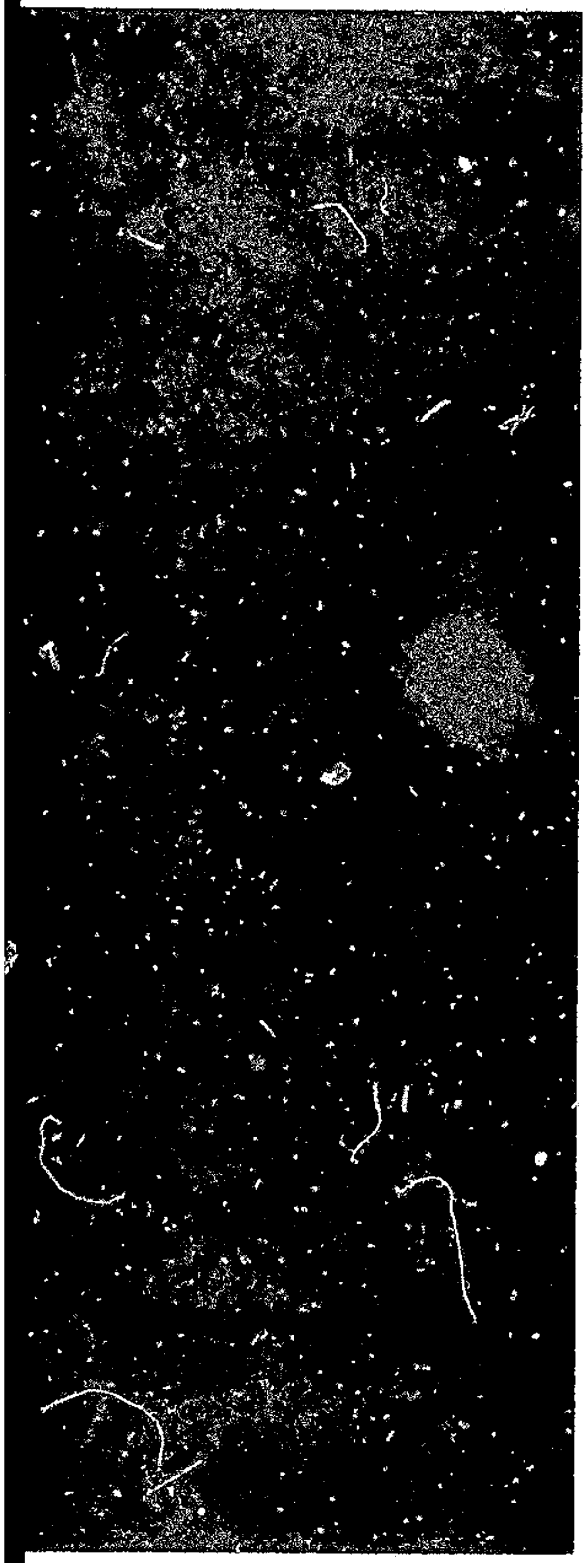

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This chapter supersedes the armed forces coverage in the General Survey dated March 1971.

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Armed Forces

A. Defense establishment (S)

The Soviet Armed Forces, as presently constituted, consist of ground, naval, air, air defense, and rocket forces. The main purpose of each of these is to develop combat forces along functional lines for coordinated operations; all five components are highly interdependent.

The personnel strength of the armed forces is estimated at about 3.8 million men. Personnel assigned to the ground forces represent about two-thirds of the total military manpower—approximately 2 million, including about 345,000 assigned to ground elements of the strategic defense forces. Of this total, about 1,600,000 constitute the general-purpose ground forces. Approximately 400,000 personnel are assigned to ground forces command and general support. The remainder of the military personnel are believed assigned as follows: navy, 470,000 (including 394,000 in general-purpose naval forces, 12,000 in strategic attack forces, and 64,000 in navy command and general support); air forces, 575,000 (including 287,000 in general-purpose air forces, 130,000 in strategic defense forces, 57,000 in strategic attack forces, and 101,000 in air forces command and general support); strategic rocket forces, 375,500 (including 300,500 in strategic attack forces and 75,000 in rocket forces command and general support). In addition, the border and internal troops of the security forces have a personnel strength of about 250,000.

The main units of the general-purpose ground forces include 21 armies, 12 corps, 169 line divisions (motorized rifle, tank, and airborne), and 17 artillery divisions. Major naval surface combatants total over 210, and submarines number about 340. In addition, there are over 2,000 other surface combatants and auxiliaries. There are over 1,000 combat and reconnaissance aircraft in naval aviation. The long-range air force has approximately 875 bombers and tankers, and tactical aviation comprises some 4,600 fighters and light bombers. About 2,700 fighters are assigned to the air defense forces. An estimated operational inventory of approximately 1,500 intercontinental ballistic missile launchers (over 1,600 missiles) and more than 500 intermediate- and medium-range missile launchers (over 1,000 missiles) are in the hands of the strategic rocket forces.

In addition to the strength of its own armed forces, the Soviet leadership regards the military capabilities of other Warsaw Pact states as an important element in the strategic position of the U.S.S.R. Other Warsaw Pact forces help maintain Soviet hegemony in these countries; increase Soviet war potential; and, with groups of Soviet forces in the area, provide a forward line of defense against NATO forces. Since the mid-1950's the Soviet Union has increased the other Warsaw Pact countries' capabilities for independent military action by providing them with modern equipment and giving them greater control over their own forces than they enjoyed in the past. The Warsaw Pact organization, however, is the structure for organizational and command control of these forces; in wartime the Soviet high command would exercise ultimate control.

1. Military history

The Soviet Armed Forces date officially from 1918. After the civil war, in which the Soviet regime defended itself against internal and foreign

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opposition, development of the armed forces was influenced by two major factors. The first was a series of reforms, including the establishment of military schools and academies, reorganization of the military establishment along territorial lines, and the assignment of more responsibility to tactical commanders. These reforms, which laid the groundwork for a moder n military establishment, were carried out by Mikhail V. Frunze, Trotsky's successor as People's Commissar of Defense. The second factor was rapid industrialization of the U.S.S.R., which began in the early 1930's and enabled the Soviet Union to reequip its forces with modern weapons and materiel.

The modernized armed forces faced their first test in Manchuria with the successful frontier engagements against the Japanese in 1938 and 1939. In the attack on Finland in late 1939, poorly trained Soviet troops suffered a series of humiliating defeats. Early in 1940, however, Finnish resistance was crushed by Soviet units well trained in winter warfare.

World War II represents to the U.S.S.R. its greatest military triumph. Despite initial defeats which caused severe losses in men and materiel, its forces held against the German offensive in 1941 and launched a counteroffensive in the winter of 1942. The Nazis were gradually repulsed, and in January 1945 the U.S.S.R. unleashed the final offensive which opened the way to Berlin.

Since the end of World War II, the U.S.S.R. has made a sustained effort to modernize its armed forces. The ground forces, though reduced in number, have been reequipped on a scale exceeding that of any other land force in the world, with a wide variety of modern weapons and equipment ranging from small arms to tanks and guided missiles. Notable advances have been made in mechanization, communications, and the development of amphibious equipment. Reorganization and development have resulted in a marked increase in the mobility and firepower of the ground forces.

In the 1945-54 period the U.S.S.R. also devoted considerable effort to a quantitative rebuilding of its naval forces, both surface ships and submarines. During this period, units such as the SKORYY class destroyer, RIGA class destroyer escort, and WHISKEY class submarine were built in large numbers. The navy that resulted, though second only to the U.S. Navy in size, was still largely equipped with World War II-type ships which neither supported the U.S.S.R.'s aspirations to status as a great seapower nor met their defense needs. In the 1956-65 period the Soviets began to apply modern technology to ship and submarine design to produce fewer, but qualitatively improved, naval units. This emphasis on quality and modern technology produced ballistic-missile-equipped submarines, cruise-missile-equipped surface ships and submarines, surface-to-air-missile configured surface combatants, nuclear power for submarines, and an advanced gas turbine propulsion plant for surface ships. The late 1960's introduced to the operational inventory even more advanced naval weapon systems and units for the qualitative upgrading of the force. New technology in shipbuilding permitted the U.S.S.R. to produce ships at a rapid pace while adding new electronics and weaponry. In the 1966-73 period six new classes of major surface combatants, five new classes of submarines, and three one-of-a-kind submarine units were constructed. The Soviets have continued to produce advanced-design submarines and missile-equipped oceangoing surface ships and have begun construction of their first aircraft carrier which is expected to carry vertical or short-take-off and landing aircraft and helicopters.

Competent strategic bomber, tactical air, and defensive air forces have been trained. Among the most significant developments in the air forces since 1960 have been the introduction of new equipment, including a new medium bomber, a new light bomber, air warning and control aircraft, and new fighters and transports; more widespread use of air-to-surface missiles; and additional in-flight refueling capabilities for heavy bombers.

The Strategic Defense Forces (PVO *Strany*) occupy a position of equal status with the ground, naval, air, and strategic rocket components. This organization is made up of Radio Technical Troops (aircraft control and warning radar), Surface-to-Air Missile Troops (SAM sites), Aviation of Air Defense (fighter aircraft), and possibly the Antiballistic Missile Troops (ABM sites). This overall organization is continually undergoing transition. Significantly improved capability has resulted from rapid deployment of surface-to-air missiles (SAM) and the introduction of improved electronic devices and armament in both interceptors and ground equipment.

The Strategic Rocket Troops, established in 1960 and placed on an equal organizational level with the other force components, constitute the main strategic force of the U.S.S.R. The development of strategic surface-to-surface missiles (SSM) and their introduction into operational inventories provide the Soviets with an intercontinental strike capability which can be employed with minimum warning. Within the next few years strategic missiles probably will account for an increasing portion of Soviet nuclear offensive capability.

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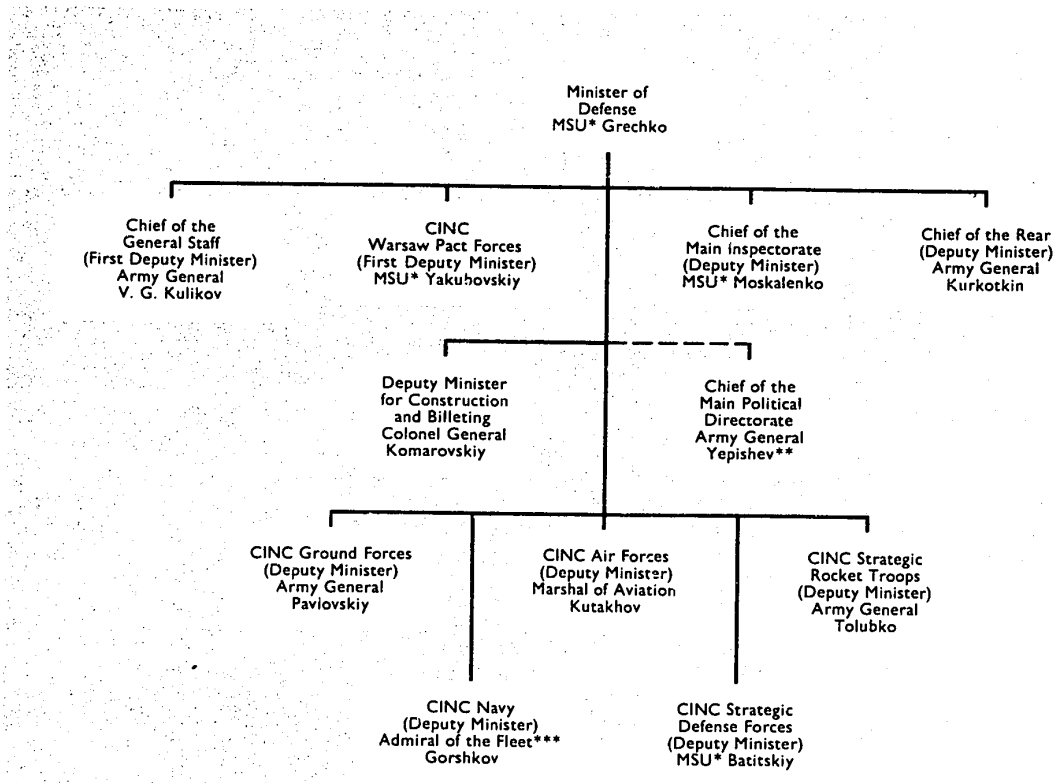
2. Command structure

The Soviet Armed Forces are controlled by the Ministry of Defense, headed by a minister who is normally a military officer on active duty. The Minister of Defense is a member of the Council of Ministers within the Soviet Government and is responsible to the Central Committee of the Communist Party of the Soviet Union. The minister advises the Council of Ministers and the Party Central Committee on the requirements and capabilities of the armed forces and is responsible for implementing decisions of the political leaders. Operational command and overall administrative control of the armed forces are exercised by the Minister of Defense through the high command (Figure 1).

The Supreme Military Council, formed by Khrushchev and interposed between the Party Central Committee and the Ministry of Defense, was composed of key party and military personnel and it probably still exists. This council, in the past, was presided over by the civilian Supreme High Commander of the Soviet Armed Forces, usually the General Secretary of the Communist Party. It served as



MARSHAL OF THE SOVIET UNION

***The exact relationship between General Yepishev and the Minister of Defense; and the Political Directorate and other elements of the high command is not completely clear. In some matters Yepishev is probably subordinate to Marshal Grechko. In many political matters he undoubtedly reports directly to the Party Central Committee.*

****ADMIRAL OF THE FLEET OF THE SOVIET UNION*

Note: There is a third First Deputy Minister (Army General Sokolov) whose functions are unknown. Since Army General Penkovskiy's death no incumbent has been identified with the position of Deputy Minister for Combat Training. Whether the position still exists is uncertain.

FIGURE 1. Armed forces high command (S)

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the highest organ for national defense policy and planning. Other military councils exist at major echelons of the military establishment from army or equivalent level up through the headquarters of the force components. These councils serve as advisory organs to the commander at each echelon.

The Soviet high command consists of the Minister of Defense and his deputies. At the present time there are three first deputy ministers, nine deputy ministers, and a political directorate. The political chief is not ranked as a deputy minister, possibly because he is also an official in the party secretariat, where he is subordinate to the General Secretary of the Communist Party.

There are several joint agencies of an administrative or technical nature within the Ministry of Defense which directly support the high command. Some of these agencies, such as the Main Personnel Directorate, are directly subordinate to the Minister of Defense; others, such as the Main Missile and Artillery Directorate, the Main Tank Directorate, the Central Motor Vehicle-Tractor Directorate, and the Central Finance Directorate, are subordinate to the various deputy ministers comprising the high command. The major elements of the Soviet high command and the major operational commands are shown in Figure 1.

The Soviet Armed Forces are divided into five force components—ground, navy, air, air defense, and rocket forces. Each is headed by a deputy minister of defense who is also commander in chief and the administrative head of his component. Operational control is the prerogative of the Minister of Defense, though he has apparently delegated varying degrees of operational control to force commanders.

a. Joint agencies

The General Staff of the Soviet Armed Forces, headed by a Marshal of the Soviet Union, plans the coordinated development and employment of ground, naval, air, air defense, and rocket forces and issues directives to the major operational commands in the name of the Minister of Defense. The general staff formulates the military program in peacetime and directly supervises its implementation in time of war. It is closely involved in the direction of combat operations in all theaters. The general staff includes directorates for operations, intelligence, signal communications, organization and mobilization, military transportation, military topography, cryptography, military history, and others.

The Warsaw Pact, promulgated in 1955, establishes a combined command for Soviet and certain Eastern European Communist forces. The headquarters is in Moscow, and the Chief of the Warsaw Pact Forces is a Marshal of the Soviet Union.

The Chief of the Main Inspectorate, with a staff of senior officers, is responsible for evaluating the state of preparedness and the combat efficiency of the armed forces. The inspectors make periodic visits to the major operational commands and present critiques on the state of combat readiness and other matters to the commanders concerned and to the appropriate agencies within the Ministry of Defense.

The Chief of the Rear is responsible for all logistic functions common to the armed forces and participates in the logistical aspects of high-level planning. He has control of service and supply functions common to all the services, including budget, pay, accounting, food, clothing, other quartermaster equipment, fuel and lubricants, medical and veterinary services, military transportation, and the direction of the activities of the Central Motor Vehicle-Tractor Directorate. These functions include research and development, procurement, storage, issue, and maintenance of common-use items. The Chief of the Rear also coordinates the various specialized procurement agencies (such as those for aviation, engineer, naval, ordnance, and signal equipment) which are either directly under the Minister of Defense or under the force components.

The Deputy Minister of Defense for Construction and Billeting coordinates the activities of specialized construction and quartering agencies at all echelons of the military establishment. Through his subordinate directorates he allocates materials, equipment, and personnel for construction activities and exercises policy control over the acquisition, provision, assignment, and repair of military housing as well as service and cultural facilities. He also coordinates the activities of military and nonmilitary construction agencies and authorizes the use of military construction troops for nonmilitary projects when necessary. The principal directorates within the Ministry of Defense directly subordinate to the Deputy Minister for Construction and Billeting are the Main Military Construction Directorate, the Billeting and Maintenance Directorate, and the Technical Directorate for Capital Construction.

The Chief of the Main Directorate of Military Training Establishments supervises and coordinates the overall military school systems, although specific control of service schools and academies (other than the Higher Military Academy of the General Staff) and their curriculums rests with the various force components and troop branches.

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The Main Political Directorate of the Soviet Army and Navy is the principal instrument used by the Central Committee of the Communist Party to maintain political control over the armed forces, including rigid adherence to party policies and directives. The political apparatus is an integral part of all headquarters above company level throughout the military forces. It trains, administers, and directs the activities of the political officers responsible for political indoctrination of all personnel, morale-building programs, surveillance of political reliability, and the disciplinary and administrative control of members of the Communist Party and the Communist Youth League (Komsomol).

Other joint agencies within the Ministry of Defense which support the high command include the Main Personnel Directorate, the Headquarters for Civil Defense, the Office of the Main Military Procurator, and the Military Publishing House. Another organization closely allied with the armed forces but not actually a part of the Ministry of Defense is the Voluntary Society for Cooperation with the Army, Aviation, and the Fleet (DOSAAF). Headed by the chairman of the Central Committee for DOSAAF, this nationwide organization provides specialist training of a military nature to young men of draft and predraft age. DOSAAF also assists in the civil defense training program.

There are three principal ordnance-type agencies which are not directly subordinate to the high command. These are the Main Missile and Artillery Directorate subordinate to the Commander of Missile and Artillery Troops of the Ground Forces, the Main Tank Directorate subordinate to the Chief of Tank Troops, and the Central Motor Vehicle-Tractor Directorate subordinate to the Chief of the Rear of the Soviet Armed Forces. These three agencies supervise research and development, determine design specifications of materiel, place orders with factories, accept items as they are produced, operate central depots, allocate and issue material to major operational commands, and control maintenance. For example, the Main Missile and Artillery Directorate deals with all types of weapons, including such varied items as aircraft armament, naval guns, small arms, and tactical missiles.

b. Force components

The commanders in chief of ground, naval, air, air defense, and rocket forces are generally concerned with organization, doctrine, manning, training, administration, and logistic requirements for their respective arms. Each commander in chief has a main staff, corresponding to the General Staff of the Soviet Armed Forces, and counterparts of the various directorates of the Ministry of Defense to formulate policies and adapt instructions from above to their respective arms. Their participation in the operational command of troops is limited by varying degrees of command authority retained by the Minister of Defense. The minister has delegated operational control to the Commander in Chief of Strategic Defense Forces and probably, in large measure, to the Commander in Chief of the Strategic Rocket Troops because of the quick reaction time required of their missions. The Commander in Chief of the Navy has a degree of operational control over naval forces because of the specialized nature of such operations. The Commander in Chief of the Soviet Air Forces, as a deputy minister, probably advises and assists the Minister of Defense in the operational control of the several air forces, and for air matters he possibly is in the line of control to commanders of the military districts and groups of forces. The position of commander in chief and the headquarters and main staff of the ground forces, abolished in 1964, were reestablished late in 1967. Whether the Commander in Chief of the Ground Forces exercises operational control in any degree is not known.

According to Soviet military concepts, all five force components would be employed in a coordinated effort in wartime. Operationally, forces prepared for combat by functional components of the Soviet Armed Forces are organized into major commands which are controlled directly by the Minister of Defense. Administratively, the force components depend heavily for funding, logistic, and personnel support on high command agencies such as the Main Personnel Directorate, the Chief of the Rear, the various main directorates for armament, and the numerous other administrative and technical agencies directed by the Minister of Defense.

c. Operational commands

The principal operational commands outside the high command are military districts and groups of forces, naval fleets and flotillas, long-range aviation, military transport aviation, air defense districts, and strategic rocket forces.

The majority of land-based forces are organized into military districts and groups of forces, whose command apparatus can have a relatively flexible span of control, including operations of major line units, combat and service support units, and tactical air elements. Similarly, in the major naval commands the fleet headquarters for command of forces afloat

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also controls a supporting shore establishment, encompassing coastal defense forces and land-based fleet air forces. The remaining operational commands have more specialized missions as indicated by their designations.

The Commander in Chief of Strategic Defense Forces serves as a channel of operational control. Similarly, the Commander of Long Range Aviation in Moscow, although administratively subordinate to the Commander in Chief of the Soviet Air Forces, is believed to serve as an operational channel between the ministry and the long-range air armies. Essentially this is also true for the Commander of Military Transport Aviation. The same type of channel, furnished by the Commander in Chief of the Strategic Rocket Troops, may link the ministry with strategic rocket units in the field. Airborne units are believed to comprise a separate operational command only so long as they are held as a reserve of the high command. When assigned to military districts or groups of forces, operational control of airborne units passes to the commander of the force to which they are assigned.

d. Militarized security forces

In addition to its regular land, sea, and air forces, the Soviet Union has approximately 250,000 militarized security personnel (frontier troops and interior troops) who are organized into military units to guard the borders, maintain domestic security, and guard important establishments, persons, and shipments. Some 175,000 Soviet Frontier Troops of the Committee for State Security (KGB) are responsible for securing the land and sea frontiers of the U.S.S.R. The Main Directorate of Frontier Troops of the KGB, in Moscow, exercises general supervision and control over the frontier districts. Also under KGB control are special signal troops who are responsible for the installation, maintenance, and security of communication facilities (telephone and telegraph) between Moscow and high-level military headquarters, such as military district and group of forces headquarters.

The Soviet Interior Troops, consisting of internal security forces and convoy troops, and numbering 75,000, are subordinate to the ministries for maintenance of public order of the constituent republics in which they are located. Internal security troops are combat-type units responsible for suppressing dissident and subversive elements, quelling revolts and strikes, and controlling the civil populace in the event of disaster. Convoy troops are responsible for guarding deportees and prisoners en route between prisons and labor camps, and for the security of shipments of strategic materials.

B. Joint activities

1. Military manpower (S)

There were approximately 63,088,000 males between the ages of 15 and 49 as of 1 January 1973. Of these, about 80% were considered fit for military service; their distribution by age groups was as follows:

Age	Total number of males	Maximum number fit for military service
15-19	12,086,000	11,360,000
20-24	10,702,000	9,460,000
25-29	6,349,000	5,160,000
30-34	9,285,000	7,365,000
35-39	8,746,000	6,640,000
40-44	8,850,000	5,910,000
45-49	7,070,000	4,285,000
Total, 15-49	63,088,000	50,180,000

The average number of males who will reach military registration age (17) annually, 1973 through 1977, is about 2,523,000. The annual draft contingent is about 1 million and is expected to remain constant for the near future. The manpower pool is sufficient to meet the demands of the armed forces and is adequate to support essential defense industries in an all-out war effort. Particularly notable is the fact that even in time of peace the economy relies heavily on work performed by women in sections of the economy in which female labor is not typically employed in most other countries.

The quality of military manpower, particularly of the Russian element, is generally good. The educational levels have been substantially raised, particularly in the technical fields. The high quality of training in military service also tends to increase technical proficiency. Typical of most military personnel is their willingness and ability to endure hardships. The armed forces are loyal to the regime, and morale is considered to be high, especially in certain elite groups such as paratroopers, pilots, strategic rocket troopers, and submariners.

Conditions of service are generally good. Beginning with World War II, the pay and privileges of officers have placed them in the same category as engineers, party dignitaries, and other favorites of the state. To a lesser extent, the enlisted personnel on extended service also enjoy a higher prestige and status in the armed forces than they might attain in civilian life. Individuals may improve their professional knowledge

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and skills, but advancement is largely contingent upon active participation in party programs. It is estimated that 82% of armed forces personnel are party or Komsomol members.

The military personnel procurement system is based on the Universal Military Service Law of 1967, which provides for mandatory conscription of enlisted personnel for the military establishment. Under this law a new conscript class (age group) is called up for service each year in equal semiannual increments (during May and June and during November and December) as an older class is released. Enlisted conscripts complete terms of 2 years in the ground and air forces as do naval air and shore-based personnel. Naval personnel aboard ships serve for 3 years. Inductees with a higher education are required to serve only 1 year regardless of branch of the armed forces; this applies also to frontier and security troops. Professional enlisted men are procured on a voluntary basis. The broad category of extended-service personnel was replaced in 1972 by the institution of *michman/praporshchik*. However, personnel presently serving on extended-service tours are permitted to serve out their terms if they elect not to apply for the new ranks. The creation of the new ranks has not satisfied the requirements for quality career personnel. The initial term of service for *michman/praporshchik* is 5 years. It can be extended for periods of 3 or 5 years until the mandatory retirement age of 50.

Officers enter active commissioned service in several ways. Most are obtained through graduation from one of the various officer candidate schools maintained by each arm or service. Officers are also obtained for active duty service by callup from the reserve. Reserve commissions can be acquired either directly from civilian life, through participation in an ROTC-type program in institutions of high education, or, in the case of enlisted personnel with a high education, by passing the prescribed examination upon completion of their mandatory tours of active duty. It is also possible to be commissioned directly from civilian life and placed immediately on active duty. Three distinct groups enter OCS: graduates of Suvorov or Nakhimov cadet schools, young men who apply directly from civilian status, and noncommissioned officers on active duty who seek careers as officers. Officers serve at the convenience of the government rather than for specified periods. Officers can be called up from the reserves on a voluntary basis or by conscription for 2- to 3-year periods in the case of officers under 30 years of age. Of approximately 3.8 million officers and enlisted men in the armed forces, approximately 75% are enlisted conscripts, 10% are extended-service personnel, and 15% are officers.

The standards of physical fitness for service in peacetime are revised frequently depending on the number of men required for a given year as compared with the number available and the physical conditions of the men in the recruitment age group. Potential conscripts can receive permanent exemptions or temporary deferments from military service. Between 5% and 10% of a given class is usually determined to be physically unfit for peacetime military service. Exemptions are given to those having family hardship cases, and deferments are granted to those attending institutions of higher learning.

The Soviet Union, through the application of its Universal Military Service Law, has developed an effective reserve system. The law provides for two categories of reservists. Category I consists of all men who have served at least 1 year of active duty in the armed forces. Category II reservists are those who have served less than 1 year or who for various reasons were not called up for active duty. Reservists (ages 18 to 50) are estimated to number about 20 million—10 million each in Category I and Category II. Postservice training requirements are established by the Universal Military Service Law for both officer and enlisted Category I and Category II reservists. The frequency of callup for training and the duration of training periods vary according to age group within each category.

The *voyenkomat* or military commissariat system, existing at republic, *oblast*, and *rayon* administrative levels throughout the U.S.S.R., is an effective instrument for mobilization of manpower. The district military commissariat, at the base of the mobilization apparatus, makes mobilization assignments in accordance with specialist qualifications. The district military commissariat would be informed of general mobilization probably within 2 or 3 hours following the decision to mobilize. Couriers would be sent out immediately to notify reserve personnel being called up in the first stage of mobilization. Insofar as possible, reservists are assigned to units located near their homes. About 1.75 million reservists would be required to bring the existing ground forces up to wartime strength. This could be accomplished within a very short time using only Category I reservists who have completed active duty tours within the past 5 years. By utilizing all remaining Category I as well as Category II reservists, several hundred additional divisions could be formed. However, the time required to equip these divisions would depend entirely on production capacity since there is no evidence of

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mobilization equipment stocks currently available to supply more than the existing units of the ground forces. It is believed that in time of war the Soviet merchant fleet would be subordinate to the navy. Many merchant marine crewmen are believed to have assignments as naval reservists, and most merchant marine officers hold commissions in the naval reserve. The manpower in the Soviet fishing and river fleets also would provide the navy with a reservoir of experienced seamen to draw upon in wartime.

2. Strength trends (S)

Trends in the number of men under arms are shown in Figure 2. Included are estimated levels of uniformed personnel during each of several significant years since 1945 in the ground, naval, air, and rocket forces, the regular military establishment as a whole, and the militarized security forces represented by frontier and interior troops of various state security agencies.

Motivated by political, economic, and strategic considerations, Khrushchev in early 1960 announced his plan to reduce total military manpower. By early 1961 the Soviet forces had been reduced to approximately 3.2 million. Here reductions stopped temporarily; actually the impulse of the Berlin crisis, followed the next year by the Cuban confrontation, caused temporary increases. The downward trend was resumed in late 1962. During the next 3 years the air defense forces and strategic missile forces were expanded, while decreases took place in the theater field forces.

3. Training (S)

The generally high quality of the military forces results in large measure from the coordinated training of all components. Ground, naval, and air elements are provided with good training facilities and are almost continually engaged in individual training and unit field exercises, culminating in frequent joint activity. Most common are ground-air and sea-air exercises, with cooperation among all three types of forces limited generally to air defense and occasional amphibious exercises.

Under the Universal Military Service Law all youths must receive introductory military training prior to callup for active service. This training is to be conducted at general-education schools beginning in

FIGURE 2. Personnel strengths of the armed forces (S)
(Thousands)

DATE	GROUND FORCES	NAVAL FORCES	AIR FORCES	STRATEGIC ROCKET TROOPS	ESTIMATED TOTALS	SECURITY FORCES
World War II peak (May 1945)*	10,000	600	1,000	.....	11,600	700
January 1946	5,000	695	705	.....	6,400	600
January 1947	2,800	695	555	.....	4,050	500
January 1948	2,600	695	505	.....	3,800	400
January 1950	2,650	695	555	.....	3,900	400
January 1951	3,400	695	605	.....	4,700	400
January 1953	3,400	745	655	.....	4,800	400
January 1955	3,000	795	705	.....	4,500	*na*
January 1958	2,700	660	640	.....	4,000	300
January 1960	2,500	560	590	.....	3,650	250
January 1961	2,200	480	535	.....	3,215	250
January 1963	2,000	505	540	185	3,230	225
January 1965	1,700	450	510	200	2,860	225
January 1967	1,950	455	500	230	3,135	225
January 1968	2,035	465	500	325	3,325	225
January 1969	2,200	470	477	336	3,483	225
January 1970	1,149	470	510	339	3,468	225
July 1970	2,139	470	510	375	3,494	250
July 1971	2,245	470	510	375	3,600	250
July 1972	2,245	470	555	375	3,645	250
June 1973	2,330	470	573	375	3,748	250

na Data not available.
*For this year only, naval air personnel included in air forces strength.

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the ninth grade, in specialized secondary educational institutions, and in technical vocational schools. Instructors are to be military personnel. Young boys not in school are to receive introductory military training at training centers set up at factories, institutions, and organizations, and on collective farms.

For training of specialists and reservists, the Soviet Union relies heavily on the joint semimilitary organization DOSAAF. DOSAAF activities, strongly supplemented by propaganda, promote popular support for the armed forces, especially through the various programs conducted for youth. The curriculums include extensive studies in military science as well as training in marksmanship, vehicle driving and maintenance, communication techniques, and many other areas, which help to produce a large reservoir of trained and semitrained personnel available to the armed forces. The clubs of DOSAAF also provide annual proficiency tests for reservists.

The armed forces conduct well-organized and effective officer training programs through a wide network of branch and higher level schools, where personnel are thoroughly educated in political and military subjects. Although centrally coordinated, the majority of military schools are organized and administered by the individual branches, with relatively few institutions devoted to the training of all arms and services. A notable exception to this division in military education is the Higher Military Academy of the General Staff of the Armed Forces of the U.S.S.R. (formerly known as the Voroshilov Higher Military Academy). This is the highest level military institution, and it is attended by high-ranking officers of all branches of the armed forces. Interarm cooperation is taught at the other military educational establishments, but as a subsidiary aspect of branch training.

Officers of some foreign military forces are trained in Soviet military schools. The majority of such personnel represent Communist states, particularly those of Eastern Europe, with some Middle East Arab and nonaligned states represented.

Inasmuch as Tactical Aviation—a component of the Soviet Air Forces—is assigned to military districts and groups of forces, field training for land warfare includes extensive activity featuring joint ground-air operations. Ground forces offensive and defensive missions in all large-scale exercises and maneuvers are supported by fighter and bomber aircraft of tactical air armies. Moreover, as evidenced by observation of the Soviet forces in East Germany, the yearly training cycles of both tactical air and ground forces closely coincide. This correlation of training programs also prevails within the U.S.S.R., and at times other components of the air forces are employed to support tactical components.

Joint training is considered at least as important in the navy as in the ground forces. The naval fleets each have organic fleet air forces of land-based bomber, mine-torpedo, reconnaissance, and transport aircraft, as well as helicopters. Cooperation is regularly practiced between this shore-based naval aviation and the surface and submarine units afloat.

The operational training of airborne and air defense forces always involves closely coordinated activity. In both cases, surface and air elements are organized with the aim of insuring and increasing the efficiency of joint operations. Airborne elements conduct field training with their assigned transport aviation, including fixed- and rotary-wing units. Air defense forces, in concert with elements of the ground and tactical air armies in the field, regularly engage in practice alerts in which surface-to-air missile units, and fighter aircraft act together in defense against simulated enemy attack. Naval surface units also cooperate with air defense forces, conducting early warning and intercept operations over water, ports, and naval shore installations.

Despite its limited and unsatisfactory war experience in amphibious operations, the U.S.S.R. is showing renewed interest in this form of offensive action in training programs, particularly since the reactivation of the naval infantry in all four fleets. Evidence suggests there are only small numbers of exercises and maneuvers to train ground, naval, and air components in joint amphibious assaults. However, the amphibious training program apparently is current and well developed, including, for example, simulated atomic play.

4. Military budget (S)

a. Economic support

The strength of the economy is a key element of Soviet military power, with the defense establishment enjoying a high priority in the allocation of resources. The U.S.S.R., with the world's second largest industrial base, is virtually self-sufficient in food, industrial raw materials, and fuels. There is relatively little dependence on foreign trade. Economic growth of about 5% to 6% annually enables the U.S.S.R. to increase its military programs at a similar rate.

The ground forces materiel industry produces large quantities of weapons and equipment for Soviet forces as well as the bulk of materiel for other Warsaw Pact

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countries. Of the complexes producing ground forces weapons, some 16 sizable plants are at least partially engaged in producing armored personnel carriers, armored tracked prime movers, artillery, infantry weapons, and tanks. Of these plants, three are final assembly plants for tanks, four for armored personnel carriers, and nine for the manufacture of artillery and infantry weapons. Ammunition production facilities are extensive: 37 final assemblers are supported by numerous plants making components, explosives, and propellants. About 50 plants in the large electronic/telecommunication industry produce the bulk of military wire, radio, radar, and other electronic equipment. Military output, ranging from simple components to highly complex devices, accounts for nearly 75% of total domestic electronics production. The motor vehicle industry has nine major plants producing vehicles used by the military. Other segments of industry provide the chemical, engineer, medical, and quartermaster equipment and supplies required by the armed forces. Most of these plants are dual-purpose facilities, manufacturing both military items and consumer goods, and constitute a large industrial mobilization base. In case of war, the U.S.S.R. would be capable of meeting its own requirements for ground forces weapons and equipment and, in addition, could supply substantial quantities of materiel to other members of the Warsaw Pact.

All ships added to the naval inventory in recent years have been built in Soviet shipyards, except for a few classes of amphibious and auxiliary ships of East European origin. Naval shipbuilding is performed both in yards specializing in naval construction and in yards building both naval and merchant ships. Current construction programs include nuclear and conventionally powered submarines, an aircraft carrier, guided missile cruisers and destroyers, escorts, submarine chasers, mine warfare craft, amphibious craft, and auxiliaries. New construction programs are being augmented by submarine and surface ship conversion programs. A number of naval repair yards are available, though hard pressed, to support the expanding Soviet fleet. In the event of mobilization, there is sufficient shipyard capability to satisfy increased demands on the ship construction and repair industry.

The aircraft industry, second in size only to that of the United States, is capable of producing aircraft of all types and complexities. It is a high-priority industry which claims a large investment in production and research facilities and employs a significant share of the country's engineering and technical personnel. The industry not only fulfills domestic military and civilian requirements for aircraft but also provides military and transport aircraft for sale abroad. Most airframe and engine plants have some capacity for the manufacture of consumer goods, production of which helps provide stable employment for labor in an industry noted for wide fluctuations in output. The facilities are believed to be sufficiently balanced so that engines and components would be available to support a maximum production effort in the airframe plants. In general, the industry makes use of a fairly narrow range of off-the-shelf engine types to power its military and civil aircraft. The industry is striving for and attaining improved quality in the aircraft being produced. Soviet production of aircraft since World War II has been characterized by a decline in numbers and a substantial increase in airframe weight. The newer aircraft have improved capabilities, greater efficiency, and longer service life. As a matter of policy, the U.S.S.R. satisfies many of its light aircraft needs by imports from other Warsaw Pact countries.

The U.S.S.R. produces space launch vehicles and surface-to-surface, air-to-surface, and air-to-air missiles of great sophistication and in sufficient quantity to satisfy both domestic and export requirements.

b. Military budget

The military budget is prepared annually by the Minister of Defense in coordination with the Chairman of the State Planning Committee and the Chairman of the Military Industrial Committee. As a portion of the state budget, the military's planned expenditure is reviewed by the Council of Ministers. This organization then presents the state budget to the Supreme Soviet for approval. After approval, a single defense budget figure is published for public consumption.

The announced military budgets for the years 1970 through 1973 were a constant 17.9 billion rubles, an increase of only 0.2 billion rubles over 1969 and 1.2 billion rubles over 1968. The budget for 1974 is slightly less, at 17.6 billion rubles. These announced figures do not include the entire cost of the military establishment, and provide no indication of the distribution of funds to various programs or missions. Additional military funds, mainly research and development, are carried in other budget categories.

Because no useful military budget data are published by the Soviet Union, estimates are prepared by U.S. officials using indirect methods of analysis. These methods are not undergoing review because of

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concern in the U.S. intelligence community over the reliability of the results they have provided. Figure 3 shows U.S. estimates of the equivalent dollar value of Soviet military spending for the years 1968-72. These estimates exclude all RDT&E (research, development, test, and evaluation), military assistance, and nuclear warhead costs. For all the above reasons, these figures should be viewed only as a rough approximation of the equivalent dollar value and trends of Soviet military spending.

5. Logistics (S)

The Chief of the Rear, who is a Deputy Minister of Defense, either directly controls or coordinates all logistic functions in the armed forces. His staff is one of the principal armed force policy staffs and is directly subordinate to the Minister of Defense. Subordinate rear service directorates and departments are found in the headquarters of the five force components and in all lower headquarters down to and including regiments.

The counterpart of the Chief of the Rear at subordinate echelons is called the deputy commander for the rear and is, in effect, commander of the rear area. At each level the deputy commander for the rear coordinates and/or supervises all logistic activities. He is responsible for the location of all installations and units within the rear area, and he supervises transportation and local security. Specific responsibilities of the deputy commander for the rear include procurement and supply of fuel, lubricants, food, and clothing; supervision of medical services, veterinary services, salvage, and military labor; transportation by road and supervision of road and rail maintenance; and finance and pay of all personnel. His functions apply not only to his own supply and service units, but to those of the various combat arms and services as well. At *front* level (the largest field command in wartime) the deputy commander for the rear supervises a number of services which perform functions of common support for the ground, naval, air, and rocket forces and also supports and coordinates their respective technical services.

Services and supplies other than the common-use items provided by the Chief of the Rear are normally furnished by the troop headquarters of the various arms and services. For example, engineer equipment is procured directly by the engineer troops, ships are procured by the naval forces, and aircraft by the air forces. Artillery and armored vehicle supply also are accomplished by the appropriate troop headquarters. Artillery supply, in the Soviet sense, includes all weapons and ammunition ranging from small arms up through the heaviest artillery, including tactical missiles, naval ordnance, and aircraft armament. Responsibility for the procurement of these items is centered in the Main Missile and Artillery Directorate of the Ministry of Defense. The procurement of armored vehicles is also handled within the Ministry of Defense by a technical directorate, the Main Tank Directorate. At lower echelons of command the supply of armored vehicles is the responsibility of the Chief of Tank Troops.

The procurement programs, as planned by the various arms and services and by the directorates within the staff of the Chief of the Rear, are consolidated by the Ministry of Defense and then coordinated with the various civilian ministries which are concerned with production. Military inspectors check production at factories and take over materiel upon completion. Equipment is stored in central storage depots in the interior of the country under the control of the Ministry of Defense or of military districts.

FIGURE 3. Estimated dollar value of Soviet military expenditures* (S)
(Billions of 1972 dollars)

MISSION PROGRAM	1968	1969	1970	1971	1972
Strategic attack	9.5	10.0	9.5	8.0	8.0
Strategic defense	8.0	8.5	9.0	9.5	9.5
General purpose	25.5	25.0	26.0	27.0	27.5
Command and support	23.5	24.0	24.0	24.5	24.0
Total	66.5	67.5	68.5	69.0	69.0

*These estimates exclude all RDT&E, military assistance, and nuclear warhead costs. These figures should be viewed only as a rough approximation of the equivalent dollar level and trends of Soviet military spending (see text).

6. Uniforms and insignia (U/OU)

A decree of the Presidium of the Supreme Soviet of the U.S.S.R., effective 1 January 1972, established the new military ranks of *praporshchik* (ensign) and *michman* (warrant officer), to replace the category of extended-service personnel in the Soviet Armed Forces. Personnel presently serving on extended-service tours are permitted to serve out their terms if they elect not to apply for the new ranks of ensign or warrant officer.

The rank of *praporshchik* is used in the Soviet Army, in coastal and aviation units of the naval forces, and in the border and internal security troops. The rank of *michman* is used aboard ships and vessels, in naval support coastal units, and in naval units of the border

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troops. The decree also established the rank of *glavnyy korabelnyy starshina* (chief ship's petty officer) to replace the rank of *michman* in its former sense (warrant officer) for petty officers aboard ships and vessels, in naval support coastal units, and naval units of the border troops.

The title *praporshchik* is properly translated as "ensign." However, because "ensign" implies commissioned officer status and is currently used as a commissioned rank in the United States Navy, it is more appropriately translated as "warrant officer." The rank of *glavnyy korabelnyy starshina* can also be more appropriately translated as "senior chief petty officer" in order to conform to an accepted usage within the petty officers' rank structure.

a. Uniforms

Soviet Armed Forces uniforms, other than the field uniform, may be grouped in three categories on the basis of general design: for marshals, generals, and admirals; for officers, warrant officers, and extended-service noncommissioned officers; and for other (conscript) personnel. Many changes have taken place since the first regulations for the wearing of military uniforms were published in February 1926. In July 1969 the Ministry of Defense published new regulations which introduced several new uniforms and uniform changes. New and improved fabrics are now being used in the manufacture of uniforms.

Officers, warrant officers, and extended-service noncommissioned officers in the Soviet Army were authorized a new parade off-duty uniform which is blue-green for ground forces and blue for airborne troops and air forces personnel. An additional off-duty uniform for marshals and generals includes a light-gray, double-breasted, open-collar coat; white shirt; black tie; and blue trousers. Conscript personnel, students at military schools of the ground forces, and military construction troops wear a new olive-drab parade off-duty uniform consisting of a single-breasted, open-collar coat; matching trousers; and olive-drab shirt and tie.

The basic change to the service and field uniforms was the replacement of the pullover tunic with standing collar by a single-breasted, open-collar coat. Shoulderboards and collar tabs on the service uniform are in the color of the branch of service; on the field uniform they are olive drab.

The uniforms of naval forces personnel remain unchanged on the whole, except for the summer service uniform worn by officers, warrant officers, and extended-service noncommissioned officers, whose white and blue, standing-collar coats were replaced by a white, double-breasted, open-collar coat and a blue, open-collar tunic, respectively. White shirts and black ties are worn with the coat and tunic.

The new parade off-duty uniforms for officers and enlisted men in the ground and air forces and the service uniforms for officers and enlisted men in the naval forces are illustrated in Figures 4 and 5.

b. Insignia

Soviet personnel wear a variety of insignia to indicate grade and branch of service. The grade of officers is shown by varying numbers of stars and stripes on the shoulderboards, the stars differing in size and number according to the grade. In addition, naval officers wear sleeve insignia of grade on several of their uniforms. The rank of warrant officer in the ground, naval, and air forces is indicated by two small stars displayed on the shoulderboards. The stars may be either gold or field-green in color, depending on the service affiliation or the type of uniform worn. Warrant officers also wear insignia (chevrons and stars) of gold braid on the left sleeve of the uniform to indicate the number of years in service, as follows: one narrow chevron—1 year; two narrow chevrons—2 years; three narrow chevrons—3 years; one wide chevron—4 years; one wide chevron and one star—5 to 9 years; and one wide chevron and two stars for 10 or more years. The ranks of other enlisted personnel are indicated by transverse stripes on the shoulderboards. Insignia are illustrated in Figures 4, 5, and 6.

Branch-of-service insignia are usually worn on collar tabs. When the uniform does not include collar tabs, the insignia are worn on the shoulderboards. Branch of service also is indicated by the use of various colors for the shoulderboards, collar tabs, cap bands on service and dress caps, and piping on shoulderboards, collar tabs, cap crowns, overcoats, and trousers or breeches. Branch-of-service colors include: red for motorized rifle troops; black for artillery, engineer, and tank troops; and light-blue for airborne troops and personnel of the air forces. Marshals, generals, and admirals wear distinctive ornamentation on coat-collar lapels in lieu of collar tabs. The shoulderboards of warrant officers in the ground and air forces are made of colored braid (red, black, or light-blue) depending on the service affiliation and component. The shoulderboards of naval warrant officers aboard ships and vessels are made of black braid with white piping. When shore-based, including the naval infantry, they are black with red piping; for naval aviation they are light-blue without piping.

Enlisted personnel in the ground forces display the metallic letters "CA" (Soviet Army) on the

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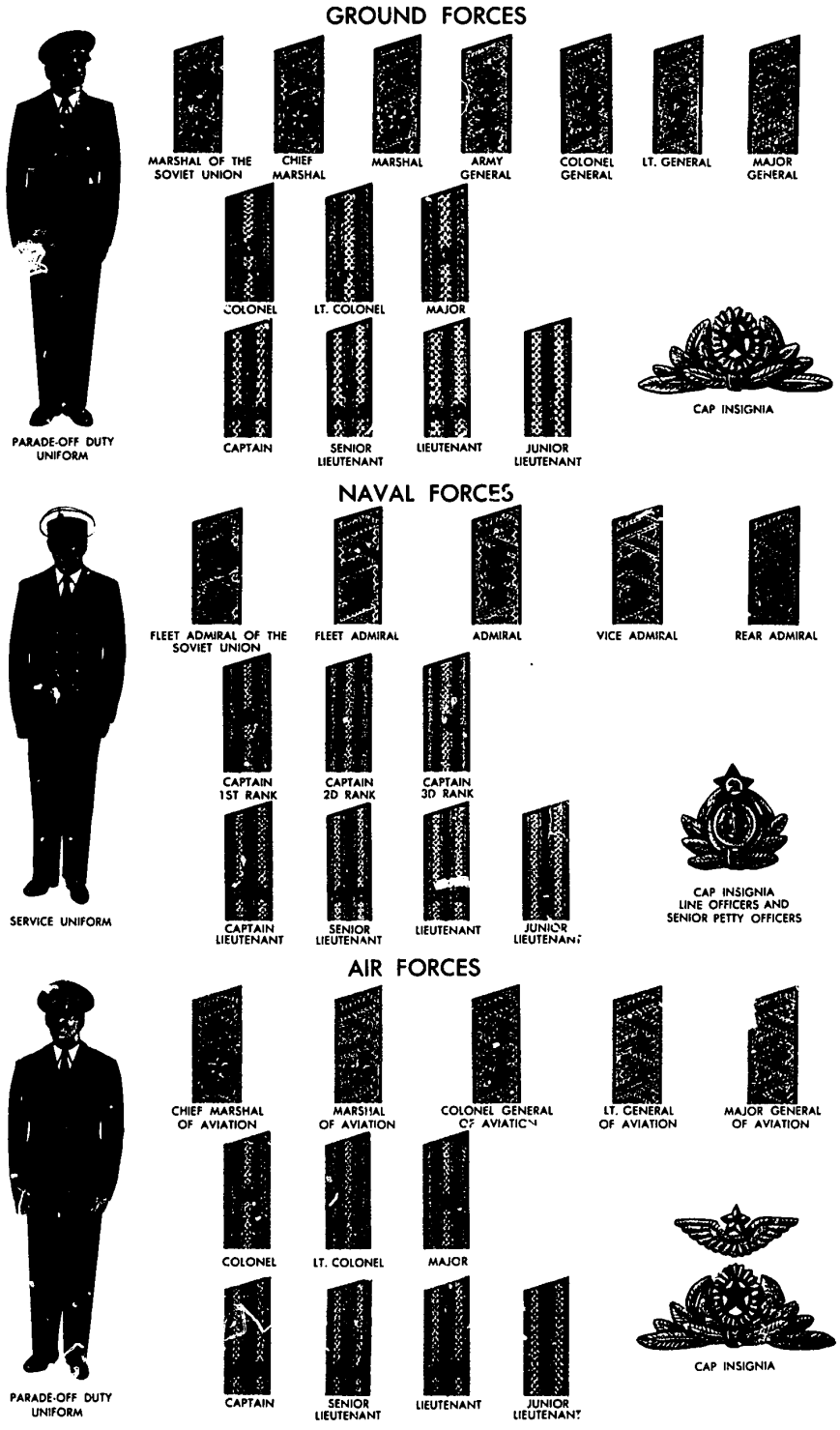

FIGURE 4. Officers' uniforms and insignia (U/OU)

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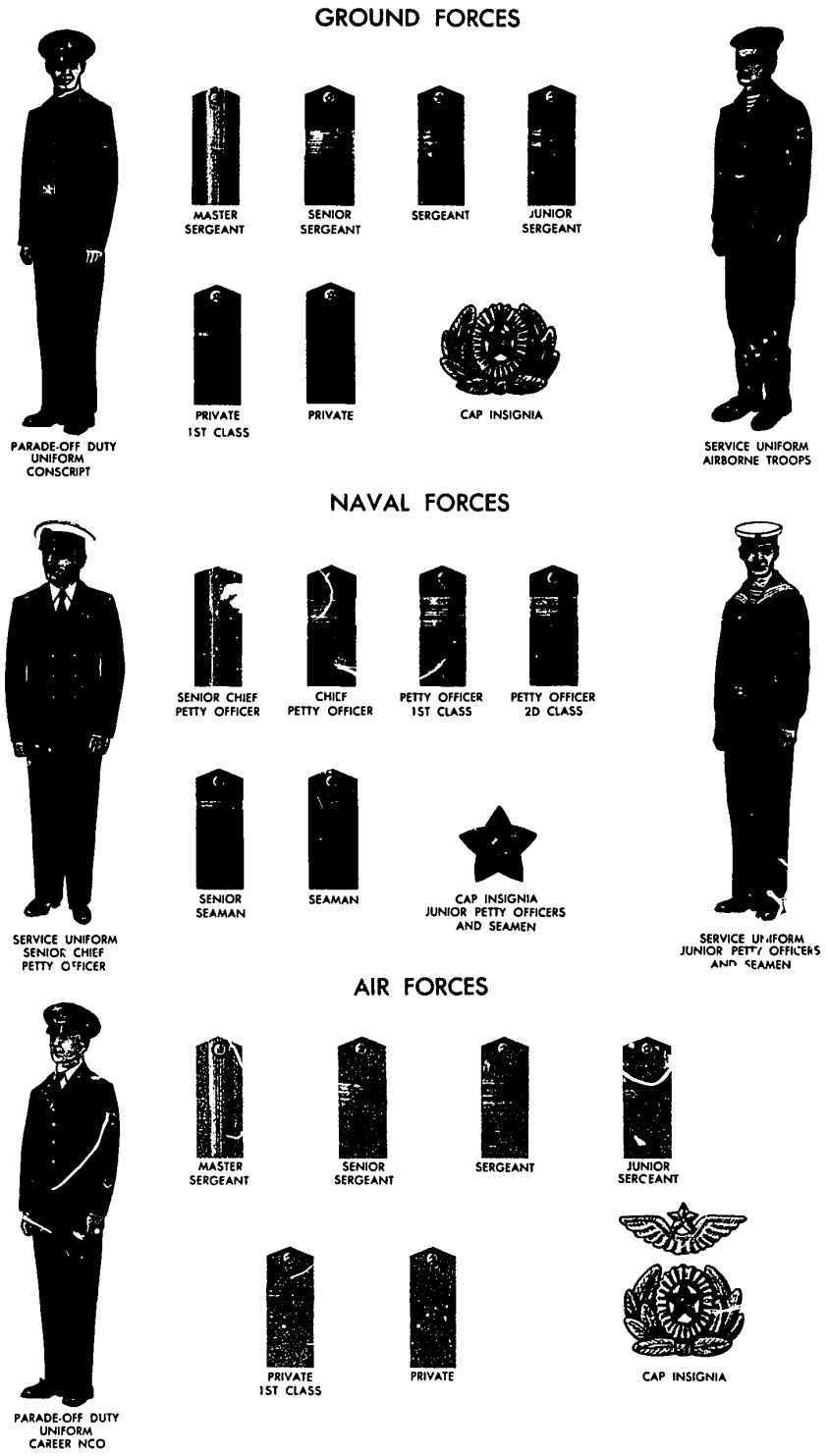

FIGURE 5. Enlisted men's uniforms and insignia (U/OU)

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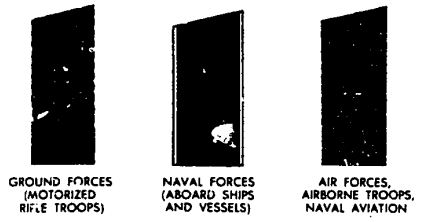

FIGURE 6. Shoulderboards and insignia warrant officers (U/OU)

shoulderboards. Enlisted personnel in the ground and air forces also wear a distinctive shoulderpatch, which portrays the insignia of the combat arm or service, or the upper left sleeve of the parade and parade off-duty uniforms. Students at military schools of the ground forces wear service stripes on the upper left sleeve below the shoulder patch; the number of stripes corresponds to the number of years completed. Students at naval schools wear inverted chevrons on the upper left sleeve to indicate the number of years completed.

C. Ground forces (S)

The ground forces have been designed primarily for exploitation of nuclear strikes and conduct of swift offensive operations to defeat enemy troops and seize enemy territory. In the European theater of operations the ground forces are to destroy NATO troops and rapidly dominate Western Europe. Their capability to fulfill their doctrinal missions relies heavily on the achievement of surprise and success of the strategic strikes.

The ground forces have been undergoing a continuous program of modernization and reorganization since World War II. Changes have been based primarily on the development of new weapons and equipment, modifications in organizational concepts, and the formulation of new operational and tactical doctrine designed for the conduct of war in a nuclear environment. The most significant aspect of the modernization and reorganization program in recent years has been the emphasis on tanks and armored personnel carriers, which has made both the motorized rifle division and the tank division formidable armored organizations by Western standards.

In addition, the introduction of new weapons and additional standard weapons has given the ground forces substantial increases in firepower at division and army levels. This has been especially evident in three important areas of artillery: field, antitank, and antiaircraft.

Soviet field artillery continues to be increased in both quantity and quality. The D-30 122mm howitzer found in the motorized rifle regiments and artillery regiments of the motorized rifle and tank divisions continues to replace the older M-30. It is now considered the standard 122mm howitzer in those units. Some motorized rifle regiments have one or two extra 122mm howitzer batteries for a total of 12 to 18 guns. 18x152mm D-1 howitzers are considered standard only in the artillery regiment of the motorized rifle division.

The rocket-launcher strength in both motorized rifle and tank divisions is presently assessed as a standard 18 launchers. The 122mm BM-21 (40-tube launcher on a URAL-375 truck) is replacing both the 16/17-tube 140mm and the 12-tube 240mm systems formerly standard in motorized rifle and tank divisions, respectively. The older types are still observed in service, sometimes in a mix with BM-21's. A number of the old 132mm BM-13 launchers are also present in some units but are believed to be training weapons.

Soviet ground forces continue to improve antitank gun and guided missile capabilities. The standard assessed antitank equipment holdings of the motorized rifle division include: 318 RPG AT grenade launchers, 18 manpack antitank guided missiles (SAGGER), 27 antitank guided missile launcher vehicles (either SWATTER or SAGGER), 18x73mm recoilless guns (SPG-9), and 18x100mm antitank guns (M-55 or T-12). Antitank capabilities are further increased in those units possessing a full complement of the BMP armored personnel carrier which, in addition to its main gun and coaxial machinegun, is capable of mounting a SAGGER missile.

Air defenses of the Soviet ground forces are continually being upgraded by the introduction of new weaponry, some conventional and some sophisticated. At motorized rifle and tank divisional level, the 24x57mm (S-60) antiaircraft gun, with its radar controlled FLAP WHEEL fire control system, is considered standard. Some of the T-55 and T-62 tanks have been retrofitted which allows the mounting of a 12.7mm antiaircraft machinegun on the loader's hatch position to increase air defense protection. Similar modifications have been noted to some of the ASU-85 airborne assault guns. The QUAD 23mm radar-controlled ZSU-23-4, while not fully issued to all Soviet divisions, is now accepted as standard in the self-propelled antiaircraft batteries of both the motorized rifle and tank regiments. Some tank regiments still retain their ZSU-57-2 and some motorized rifle regiments also retain their towed antiaircraft machinegun batteries. However, the short-

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range, IR-seeking missile BRDM-2 SAM system is replacing the ZSU-57-2 and the towed antiaircraft machineguns, thus giving the combat regiments a mixed gun-missile-air defense capability. The ZSU-23-4 and BRDM-2 SAM's may in fact be organized into respective regimental air defense battalions.

The SA-7 man-portable air defense missile system is issued down to combat company and battery level in most combat divisions.

The Soviets have deployed the highly mobile, low-altitude SA-6 tactical air defense system with their ground forces. This system organized as a regimental level consisting of five firing batteries is normally subordinate to the field army. The SA-4 provides medium to high altitude air defense for the ground forces. The main contribution of the SA-4 to the defense of the ground forces lies in its mobility. The SA-4 system is replacing the SA-2 system at the *front* and army level. By replacing the SA-2 with the SA-4, the Soviets in effect triple a SAM battalion's firepower without a comparable increase in manpower. Organized in brigade size units, consisting of three battalions of three firing batteries each, the SA-4 will normally be deployed at both *front* and army level.

Another new mobile low-altitude SAM system, the SA-8, is estimated to have performance characteristics similar to those of the SA-N-4 naval SAM system. Although the organization of the SA-8 unit is still speculative, it probably will be deployed at the combat divisional level.

As the modernization of the ground forces has progressed, Soviet helicopter forces have developed increased flexibility. The heavy-lift helicopters already have a greater lift capacity than any other helicopter in the world. The present Soviet concept for the employment of helicopter-borne forces apparently utilizes motorized rifle troops in coordination with helicopter regiments.

Approximately 1,250 helicopters—260 HOOK (Mi-6), 8 HARKE (Mi-10), 430 HOUND (Mi-4), 140 HIP (Mi-8), and 420 HARE (Mi-1) and HOPLITE (Mi-2) are allocated by Military Transport Aviation (VTA) to the tactical air armies within the U.S.S.R. and to the Soviet groups of forces in Eastern Europe. Most of these aircraft are unequally distributed among 19 known helicopter regiments. HOOK, HARKE, HOUND, and HIP provide the basic heavy-lift and assault capabilities. The smaller lift characteristics of HARE and HOPLITE make them more suitable for liaison, reconnaissance, artillery fire direction, and antitank warfare. Helicopter-borne assaults, as demonstrated in Warsaw Pact exercises, probably would be employed in time of war to seize key areas ahead of advancing armor. Exercises indicate that the Soviets consider a reinforced motorized rifle battalion as most adaptable for such a mission.

With the increased conventional artillery and helicopter-borne assault capabilities, the Soviets have exhibited a flexibility in practice which lends substance to the possibility that war with NATO may be, initially at least, conventional.

Concurrently, there have been improvements in the missile and rocket systems available to provide nuclear and chemical, as well as conventional, fires. FROG battalions, standard in both motorized rifle and tank divisions, are mostly equipped with four launchers, either the FROG 3 or 7. SCUD tactical missile brigades in the Group of Soviet Forces, Germany (GSFG), and probably those in the Soviet western border areas and along the Sino-Soviet border have acquired a third battalion, increasing the number of launch vehicles from six to nine. In addition, five of the brigades in the GSFG, at least, appear to have 12 launch vehicles each.

To satisfy the need for a tactical missile system with the range and mobility suited to the needs of the *front*, the Soviets have developed a 500-nautical-mile mobile missile, the SS-12 SCALEBOARD. Equipment for the SCALEBOARD has been observed at ground forces installations, and it is likely that it would be used in support of theater of operations. The increasing availability of these varied rocket and missile systems provides the theater forces with improved delivery capabilities for nuclear, chemical, and high-explosive warheads.

The requirement for improved logistical support increased sharply with modernization and increased mechanization of the ground forces. Soviet efforts to modernize their support elements as well as their maneuver units have led to the introduction of tactical pipeline units; greater emphasis on helicopters; the appearance of new and better vehicles, including tank transporters (Figure 7); and the development of improved bridging equipment. The operating range of vehicles throughout the theater forces has been improved through the extensive addition of auxiliary fuel tanks for the vehicles.

1. Organization

The Commander in Chief of the Soviet Ground Forces participates in operational planning but is not in the operational chain of command. Within the Ministry of Defense, the responsibilities of the Commander in Chief of the Soviet Ground Forces include administration of the ground combat and certain technical arms, development of tactical

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doctrine and training programs, and supervision of training.

In the event of a major war, it is considered likely that an intermediate headquarters would be found between the General Staff and the *fronts* in order to alleviate some of the command and control responsibilities at the Moscow level. The Soviets have used the term "Theater of Military Operations—TVD" which appears to apply to this organizational concept.

The largest field command in wartime is the *front*, formed from certain military districts and groups of forces. It is a tactical and administrative unit consisting of several ground armies, an air army, and supporting combat and service units. In peacetime, forces stationed outside the country, except for two divisions in Mongolia, are under groups of forces headquarters—one each in Czechoslovakia, East Germany, Hungary, and Poland. The two divisions in Mongolia apparently report to the Transbaykal Military District.

Directly subordinate to the Ministry of Defense in both peace and war are the 16 military districts of the U.S.S.R. These are tactical and administrative commands, organizationally similar to the groups of forces. Being territorial in nature, military districts are charged with several housekeeping responsibilities such as logistic support for schools, depots, and miscellaneous military activities, as well as the administration of conscription, reserve training, and mobilization activities.

Ground armies are of two basic types—combined arms and tank; a typical combined-arms army would consist of three motorized rifle divisions and one tank division; a typical tank army would consist of three tank divisions and one motorized rifle division. Combat support units in both types include a surface-to-surface guided missile brigade SCUD (SS-1), one or two SAM regiments and/or brigades, one artillery division (Type B) or brigade, an engineer regiment/brigade, a ponton bridge regiment, an assault crossing battalion, a signal regiment, two signal intercept battalions, an early warning battalion, a long-range reconnaissance company, a chemical battalion, a motor transport regiment, and intelligence elements. Service support, including medical and quartermaster, is provided in both types of armies by numerous units subordinate to the deputy commander for the rear.

Many of the support units listed above at army level also may be found directly subordinate to groups of forces, military districts, and to the Ministry of Defense. These would be expected to become *front* level units in wartime. A typical *front* would have an artillery division armed with 152-mm gun-howitzers and 130-mm guns. Two SS-1 brigades (or a follow-on system) would provide *front* surface-to-surface missile support with two SAM regiments and/or brigades providing air defense. The SA-4 air defense missile system utilizing the GANEF missile is used with the field forces (Figure 8). Combat engineer support of a *front* would include a general-purpose engineer brigade, two ponton bridge regiments, and three assault-crossing battalions. Signal support would be provided by a signal brigade, two signal intercept regiments, and two ECM battalions and an early warning regiment. A chemical battalion and intelligence elements complete the combat support elements of a *front*. Service support would be provided by a multitude of directorates, agencies, and units subordinate to the *front* deputy commander for the rear.

The majority of line divisions are of two basic types—the motorized rifle division and the tank division. The main fire and maneuver elements of the motorized rifle division are three motorized rifle regiments, each of which consists of three motorized rifle battalions transported in armored carriers, supported by regimental reconnaissance and artillery units and a battalion of medium tanks; a tank regiment with three tank battalions; and a reconnaissance battalion equipped with seven light amphibious tanks (Figure 9). Division combat support elements include an artillery regiment, a FROG battalion, an antitank battalion, an antiaircraft artillery regiment, a multiple rocket launcher battalion (Figure 10), an engineer battalion, a signal battalion, and a chemical defense company. Division service support elements consist of a medical battalion, a motor transport battalion, a maintenance battalion, and other rear service elements.

The principal combat elements of the tank division are three medium tank regiments, a motorized rifle regiment, and a reconnaissance battalion. All these units are practically identical in organization to their counterparts in the motorized rifle division. Divisional combat support includes an artillery regiment, a FROG battalion, an antiaircraft artillery regiment, a multiple rocket launcher battalion, an engineer battalion, a signal battalion, and a chemical defense company. Division service support consists of a medical battalion, a motor transport battalion, a maintenance battalion, and other rear service elements.

The ground forces also have an airborne division organized around three parachute regiments. Supporting elements include an artillery regiment with howitzer, assault gun, antiaircraft, and rocket

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FIGURE 7. MAZ-537 truck with lowboy trailer carrying T-62 medium tank (C)

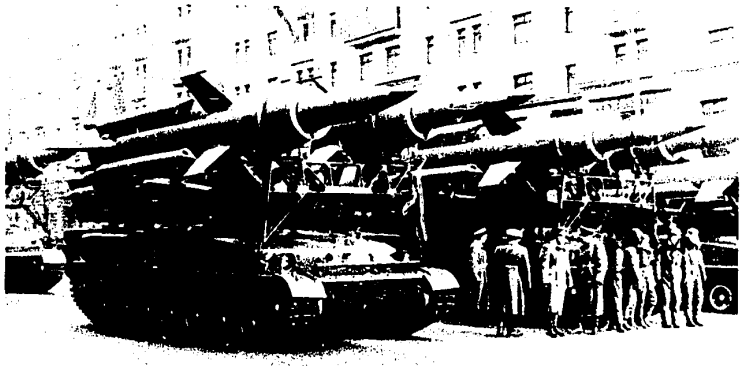

FIGURE 8. GANEF (SA-4) surface-to-air missile system (C)

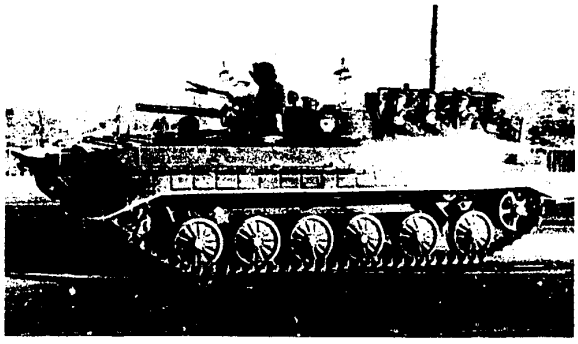

FIGURE 9. Amphibious armored infantry combat vehicle, M1967 (C)

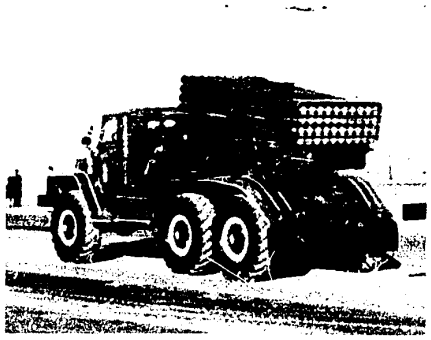

FIGURE 10. 122-mm 40-round rocket launcher on URAL-375 M1964 truck (C)

launcher battalions organic to it. Medical, signal, engineer, chemical defense, reconnaissance, and service elements complete the organization structure.

Some of the most significant developments within the tank and motorized rifle divisions are expected to occur in motorized rifle regiments. Following a trend initially noted in 1971, many motorized rifle regiments now have tank battalions with 41 rather than 31 tanks. This organizational change increases the total tank count in a motorized rifle division to 218 tanks, bringing it more on a par with a U.S. mechanized division which has 216 medium tanks.

The Soviets have shown an increasing willingness in recent years to tailor the rifle regiment. Examples of

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this are evident in those units to which additional artillery, antitank guns, or an additional maneuver battalion has been subordinated. Additionally, the low altitude BRDM-2 SAM system has been introduced to replace the towed antiaircraft machinegun battery. The ZSU-23-4 and BRDM-2 SAM combination greatly increases the air defense capability (Figure 11).

The Soviets can be expected to continue the modernization of ground forces while increasing their capability to fight both a conventional and a nuclear war in response to doctrinal requirements. The trend to develop this capability can best be observed within the tank and motorized rifle divisions, where an increasing emphasis is being placed upon improving the combat and service support capabilities. This trend is evidenced by the improvements in equipment and a corresponding increase in the size of the divisions' logistical tail. The quantity and quality of general-purpose cargo and special-purpose trucks continues to increase. Also, certain units, such as the division chemical company, have been enlarged in order to provide more support to the division.

2. Strength, composition, and disposition[1]

Personnel strength of the general-purpose ground forces is about 1,570,000. Principal ground forces organizations are: 21 combined-arms armies and tank armies, 10 army corps, 109 motorized rifle divisions, 51 tank divisions, and 7 airborne divisions. The current deployment of these forces places the majority of the divisions either in the groups of forces in Eastern Europe or in the more strategic border areas of the U.S.S.R., the greatest concentration being in the western border districts and along the Sino-Soviet border. All command and control headquarters are also in peripheral areas.

3. Training

Training procedures, in general, emphasize the fundamentals of soldiering. Prior to the enactment of the military service law of 1967, the conscript underwent three 1-year training cycles before he was released from active duty. Under the 1967 law, conscripts serve only 2 years; the biannual induction has required an adjustment in the training cycle.

Noncommissioned officers in the ground forces receive their training primarily within schools of the regiments and separate battalions of divisions. In peacetime, all regiments operate these schools to supply noncommissioned officers for line duty within subordinate units of the division's main arm. Technical service noncommissioned officers for all units of the divisions are provided by noncommissioned officer schools operated by the ancillary units of the division, such as the engineer, motor transport, and signal battalions. In addition to the unit school system, each military district and group of forces has its own training units or schools which graduate noncommissioned officers for the special troops of the military district or group.

Officers are trained through a progressive system of military schools. This network begins with cadet and officer candidate schools or academies to the highest military academies in the U.S.S.R. Among the more important schools are the M. V. Frunze Military Academy, the Military Academy of Chemical Defense, the V. I. Lenin Military Political Academy, and the Military Academy of Armored Troops.

[1]For detailed identification and locations of units of the Soviet Ground Forces, see the current issue of the *Military Intelligence Summary* and *Order of Battle Summary, Foreign Ground Forces*, both published by the Defense Intelligence Agency.

FIGURE 11. ZSU-23-4 anti-aircraft weapon (C)

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Courses range from 3 to 5 years. All activities of these schools and academies are supervised by a special directorate for military educational institutions in the Ministry of Defense. In general, the military school system has proved successful in developing highly qualified leadership.

The semimilitary organization DOSAAF serves the ground forces in two chief ways. First, since all citizens above the age of 15 are urged to join DOSAAF, it is able to provide preinduction training of an elementary nature for several years prior to most youth's actual induction into military service. Second, this civilian society develops for members of all ages certain specialist skills which are of potential value to the ground forces, such as motorcycling, driving, skiing, parachuting, glider training, small-arms marksmanship, horsemanship, vehicular maintenance and repair, and the operation of signal equipment. Local chapters or clubs of DOSAAF usually stress those skills applicable to a particular branch of service. Appropriate equipment, as needed, is made available from nearby military units. DOSAAF plays an important part in the compulsory military training dictated by the 1967 military service law.

Field training in the ground forces is conducted according to an annual training program. Because of the biannual induction, the training program has been adjusted somewhat to include two 1-month training periods for inductees on arrival at their new unit. This training is conducted separately and does not significantly interfere with the simultaneous execution of the regular training schedule. Regular units of the division which contain trained troops may leave the garrison area for field exercises, leaving the recruits behind under a cadre of instructors to continue basic training. On completion of each of the 1-month training periods, the recruits are integrated into their assigned units and thereafter participate in the annual training program. Under this concept, tactical combat training up to army level may be carried out at all times of the year. High-level combined and joint exercises and both command post and field training exercises also are held at any time during the year. This training insures year-round combat readiness and utilizes training areas, particularly those in Eastern Europe, to the maximum. The nature of the training program is essentially the same each year, except that exercises are scheduled at different times and at different locations and may emphasize different aspects of tactics and operations.

During the period 1953-65 ground forces training featured nuclear settings, and all offensive and defensive field exercises were based on nuclear scenarios. In 1965 the Soviets introduced a form of flexible response to supplement their nuclear concept. This plan calls for the use of conventional weapons during the initial stages of a war with NATO and has been evidenced by recent increases in conventional artillery with ground forces divisions. The shift toward a flexible response has not reduced the importance of nuclear firepower nor has it changed the mobile dispersal posture of the battlefield for tactical operations.

Warsaw Pact exercises also represent a major feature of the training program. These exercises generally involve ground forces of at least two or more Warsaw Pact countries training together several times a year. Normally these exercises will be capped by one major Warsaw Pact exercise directed by the Warsaw Pact command or the General Staff in Moscow. These types of exercises familiarize East European personnel with Soviet communications systems and procedures as well as increase the competence of staff personnel in all aspects of combat operations. The Warsaw Pact's conduct of numerous exercises over widespread areas indicates interest in the testing of contingency plans in all areas opposite NATO.

Overall, a comprehensive program of training and exercises insures the maintenance of the combat readiness of the ground forces, particularly in units in Eastern Europe opposite NATO.

4. Logistics

In the U.S.S.R., logistic support is planned in the Ministry of Defense by the Chief of the Rear on the basis of plans drawn up by the General Staff of the Soviet Armed Forces. At each echelon from *front* down through regiment, the deputy commander for the rear coordinates and supervises all logistic activities, whether performed by elements directly subordinate to him or by other elements of the headquarters and staff. He provides the logistic part of staff planning and directs the use of all transportation facilities. He is directly responsible for the supply of common-use items such as rations, clothing, fuel, and medical supplies. He coordinates and supports the supply and service functions performed by combat arms (such as supply of weapons and ammunition by the artillery arms).

Each military district commander has administrative control over units located within his area. He provides logistic support for them through a system of military district depots under the deputy commander for the rear of the district. These depots draw from the central depots of the Ministry of Defense which are

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strategically disposed throughout the U.S.S.R. The bulk of the strategic reserves of military materiel and supplies is maintained in the central depots, while unit mobilization reserves are kept either with the units or in the military district depots.

Wartime supply of troops in the field is accomplished through depots assigned at *front* and field army levels. *Front* level depots may deliver their stores to army forward or rear depots or divisional supply points. The impetus of supply is forward; rail transportation is used as far forward as possible, although increased motorization at all levels and product pipelines have materially increased transportation capabilities.

Recent doctrinal, organizational, and logistic developments indicate the increasing importance of road transportation for unit movement. Roads are considered to be less vulnerable to permanent disruption than railroads, are more easily repaired, and provide alternate routes and bypasses in greater number than rail. The increased emphasis on mobility has led the Soviet Union to develop and produce a new generation of vehicles with good cross-country performance and greater load capabilities. Trucks now issued to troops range in size from light-weight, air-droppable vehicles to large 8x8 vehicles capable of transporting tactical missiles and their launchers, and of towing heavy missile systems, artillery, and tank transporters. The predominant load carrier now in the Soviet Groups of Forces' motor transport units is the 6x6 URAL-375 (4.5MT capacity) with a 5MT trailer; however, the URAL-377 (7.5MT capacity), a 6x4 version of the URAL-375, is appearing in increasing numbers in the GSFG. The ZIL, GAZ, and KRAZ variety of trucks continues to be employed throughout the Soviet Army.

The maintenance system has undergone considerable modernization since World War II. Not only are repair facilities more numerous and extensive, but their technology, versatility, and general efficiency have increased. The system appears adequate for present needs of the ground forces. Modern repair and recovery units are at all echelons, and continuing emphasis has been placed on the training and procurement of technicians. Maintenance doctrine emphasizes the repair of equipment and vehicles as close to the front line as possible, either by the users of the equipment or by mobile repair crews sent out by the parent unit or a higher echelon. Where on-the-spot repair is not feasible, speedy evacuation is emphasized. Separate evacuation battalions are organized at army level for removing damaged vehicles to repair bases at division and higher echelons. Heavily damaged tanks, trucks, and field artillery pieces are evacuated to plants in the interior for rebuilding or scrapping.

Military stockpiles of ground forces materiel are believed to be sufficient to equip fully the line divisions at wartime strength, although in some divisions, as well as nondivisional support units, certain motor transport and engineer items would have to be mobilized from civilian resources. Since World War II the quality of ground forces materiel has continually improved with the introduction of a wide range of new types of equipment, including missile and combat vehicles. Due to the uneven distribution pattern of equipment, however, many of the older models remain in service.

D. Naval forces (S)

Soviet naval policy has three broad objectives: to contribute to the national deterrence capability, to defend the Soviet Union from maritime attack, and to support Soviet interests abroad and at sea. To meet these objectives the missions of the navy are to: counter the threat from hostile strategic forces and hostile naval forces generally; interdict sea lines of communication; defend the offshore zone; support land operations; contribute to strategic deterrence and, upon commencement of hostilities, attack strategic land targets; and support Soviet policies abroad.

The navy's main operational forces are divided into four fleets—Baltic, Black Sea, Northern, and Pacific. The majority of the missile and long-range attack submarines are based in the Northern and Pacific fleets. While each of the fleets is capable of accomplishing its assigned missions without recourse to immediate support from another area, geographic and climatic factors limit Soviet access to the open ocean and prevent rapid reinforcement and resupply among the four widely dispersed fleet areas.

Despite the large naval forces available to them at the outbreak of World War II, the Soviets, generally regarding their navy as the seaward extension of the ground forces, failed to make effective use of their seapower. After the war, the Soviet Union set about reconstruction of its devastated naval and shipbuilding facilities and embarked upon an extensive naval construction program designed to transform the U.S.S.R. into a major naval power. This program concentrated on producing large numbers of cruisers, destroyers, mine warfare ships, and long-range submarines. Current ship construction programs encompass guided missile cruisers, frigates, destroyers,

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and patrol boats; amphibious and mine warfare ships; logistic support ships; and nuclear-powered ballistic missile, cruise missile, and torpedo attack submarines. Construction is also underway on an aircraft carrier which is expected to carry vertical or short-take-off and landing (V/STOL) aircraft and helicopters. Its specific role is as yet unknown. Present construction reflects Soviet determination not only to meet their needs for deterrence and wartime defense of the homeland, but also to have the capability to deploy creditable naval forces worldwide in support of foreign policy.

During the period 1947-57, the Soviets completed 19 cruisers, more than 100 destroyers, 72 destroyer escorts, nearly 1,000 patrol craft of various types, about 330 minesweepers, a number of auxiliary types, and about 350 submarines (more than three-fourths of which were of postwar design). This program had actually begun to level off in about 1956, when the changes in Soviet naval thinking that probably followed upon Stalin's death in 1953 began to take practical effect. These changes took into account the advances in naval technology, particularly nuclear propulsion for submarines, nuclear-armed missiles, and modern electronics, and aimed at the qualitative rather than quantitative improvement of Soviet naval capabilities. The naval building program declined sharply after 1956, but by 1958 the first missile-equipped surface ships and submarines began to appear.

In the mid-1950's two of the *Sverdlov* class light cruisers were converted to SAM guided missile cruisers. One was subsequently scrapped; the other still serves the Black Sea Fleet. By late 1959 two classes of guided missile destroyers and two classes of guided missile patrol boats were in service. The KILDIN,[2] which was constructed on a KOTLIN hull, served as the first guided missile destroyer (DDGS). It was followed by the KRUPNYY class DDGS (the first serially constructed DDGS built as such from the keel up), which is armed with a single SSM launcher fore and aft.

Since 1959 the development of missile armament in the navy has proceeded at a rapid pace. In 1962 the first of four KYNDA class guided missile light cruisers (CLGM) was completed. It incorporated both SSM (eight missile launchers) and SAM (one twin SA-N-1 launcher) armament. The SSM is the SS-N-3b, which has a likely maximum operational range of 150 nautical miles. Also in 1962, the first KOTLIN class destroyer was converted to carry a twin SA-N-1 launcher aft. In 1963 a new gas-turbine-propelled guided missile frigate (DLG), the KASHIN class, was completed. Its armament includes two twin SS-N-1 SAM launchers. The KRESTA I class CLGM, which has two twin SS-N-3 SSM launchers and two twin SA-N-1 SAM launchers, was completed in 1967 (Figure 12).

Four KRESTA I class CLGM are now operational and class construction has terminated. In 1967, the first modified KRESTA I class CLGM, designated KRESTA II, was launched (Figure 13). The KRESTA II is fitted with an improved SAM system, the SA-N-3 GOBLET.

In 1968 the *Moskva*, the first guided missile helicopter ship (CHG) (Figure 14), became operational; a second, *Leningrad*, became operational in mid-1969. These units are armed with two twin SA-N-3 GOBLET launchers and a twin SUW-N-1 antisubmarine launcher which fires the FRAS-1 weapon. The primary mission of the helicopter ship is ASW, but it is capable also of significant antiair warfare (AAW) and task force command ship functions. Also in 1968, the first conversion of a KRUPNYY class guided missile destroyer (DDGS) to a SAM configuration was completed and given the class name KANIN (Figure 15). All SSM armament was removed and replaced by additional guns, ASW armament, and SA-N-1 SAM launchers. This conversion program will be completed when two units in the Pacific are finished about 1975. The next addition in missile-armed combatants was the NANUCHKA class guided missile patrol gunboat (PGG) (Figure 16). The first of these became operational in the summer of 1969. NANUCHKA's surface-to-surface missile, housed in two triple-tube launchers, is believed to represent a modification of the SS-N-3. The horizon range capability of this SSM is probably about 30 nautical miles. Using a BEAR (Tu-95), another ship or submarine, or a HORMONE (Ka-25) helicopter for target indication, this weapon could be fired to a range of about 100 nautical miles.

A new destroyer class of about 400 feet, designated KRIVAK class, carries one probable SSM launcher and a point defense SAM launcher forward and aft.

In early 1972, the first unit of the KARA class (Figure 17) guided missile light cruiser became operational. This class, which is similar to the KRESTA II class, is the world's first ship to be equipped with three missile systems (SS-N-10, SA-N-3, SA-N-4).

[2]NATO code names assigned to ship types, missiles, aircraft, and electronic gear are indicated by the use of caps. Ship classes based on known names of Soviet ships are italicized (e.g., *Sverdlov* class light cruiser).

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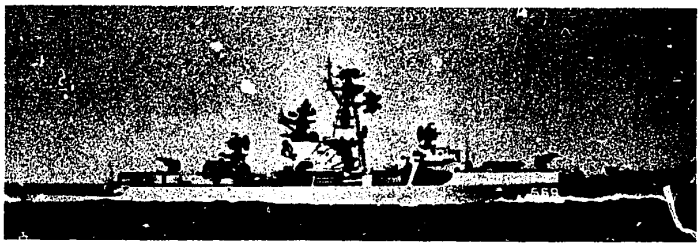

FIGURE 12. KRESTA I class guided missile light cruiser (C)

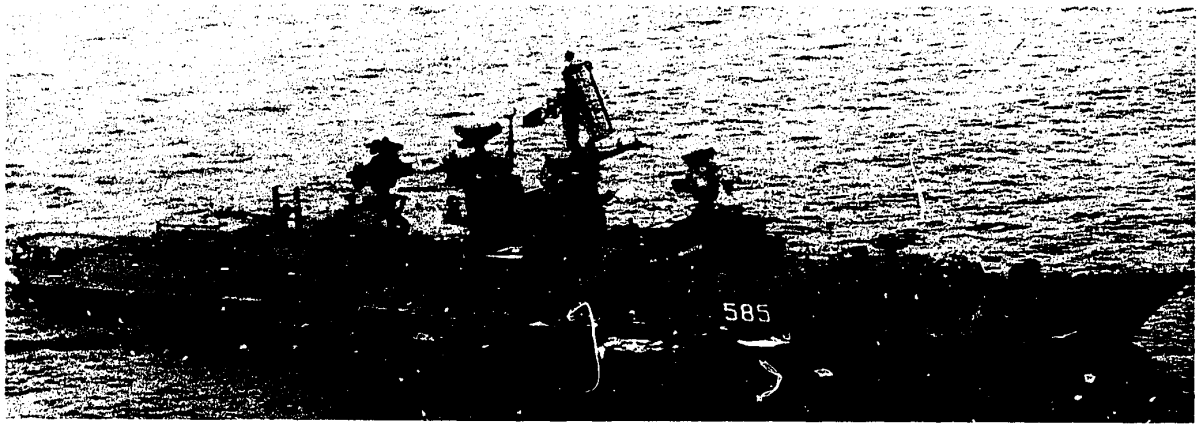

FIGURE 13. KRESTA II class guided missile light cruiser (S)

As of April 1973 the submarine force consisted of 24 classes, of which 13 were equipped either with cruise or ballistic missiles. Since 1968, six new classes have been added to the operational inventory: YANKEE class, nuclear-powered, ballistic missile (SSBN); CHARLIE class, nuclear-powered, cruise missile (SSGN) (Figure 18); VICTOR class, nuclear-powered (SSN) (Figure 19); ALFA class, nuclear-powered (SSN); PAPA class, nuclear-powered (SSGN); and BRAVO class (SS).

Three (the YANKEE, CHARLIE, and VICTOR) of the six new classes are second-generation nuclear-powered submarines, and the ALFA and PAPA may be third-generation nuclear-powered submarines. The PAPA appears to be similar to but considerably larger than the CHARLIE.

Although it was once in series production at Severodvinsk in the Northern Fleet area and at Komsomolsk[3] in the Pacific area, the YANKEE class SSBN is now constructed only at the latter yard. Production at Severodvinsk has been discontinued in favor of the newest member in the Soviet submarine inventory, the DELTA class SSBN (Figure 20). It is 25 feet longer than the YANKEE class and is also expected to be built at Komsomolsk. The YANKEE class carries 16 1,300-nautical-mile, submerged-launched SS-N-6 ballistic missiles; the DELTA class probably carries 12 4,200-nautical-mile, submerged-launched SS-N-8 ballistic missiles.

Unique to the navy is the diesel-electric or nuclear-powered cruise missile submarine. The navy's latest entries into the cruise missile force are the CHARLIE and PAPA SSGN classes. The first evidence of the CHARLIE class was early in 1968 in the Northern Fleet. The PAPA class was first observed in the same area early in 1971. The CHARLIE class carries eight SS-N-7 missiles in its bulbous bow. The PAPA class, which has a similar but larger bow, is estimated to carry antiship cruise missiles also, although they have not been identified. Unlike other nuclear-powered cruise missile submarines, the CHARLIE and PAPA classes are believed to have submerged-launch capabilities. The range of the SS-N-7 is estimated to be up to 40 nautical miles, but the range of the PAPA class missile is not known.

Follow-on to the NOVEMBER Class nuclear-powered submarine is the VICTOR class, first observed under construction at the Admiralty

[3]For diacritics on place names see the list of names on the apron of the Summary Map and the map itself in the Country Profile chapter.

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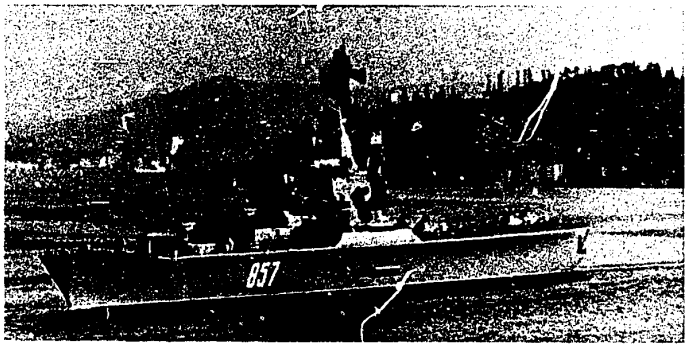


FIGURE 14. *Moskva* guided missile helicopter ship (C)

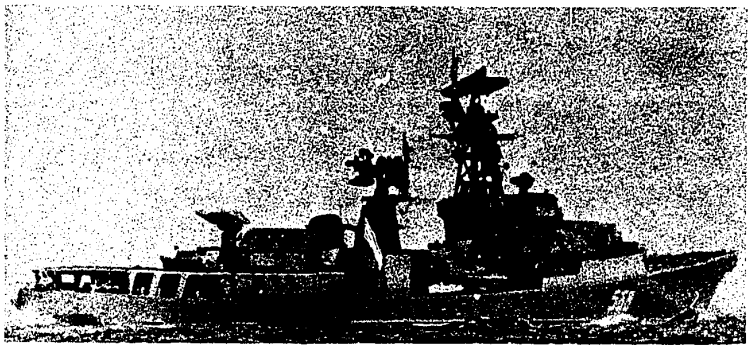
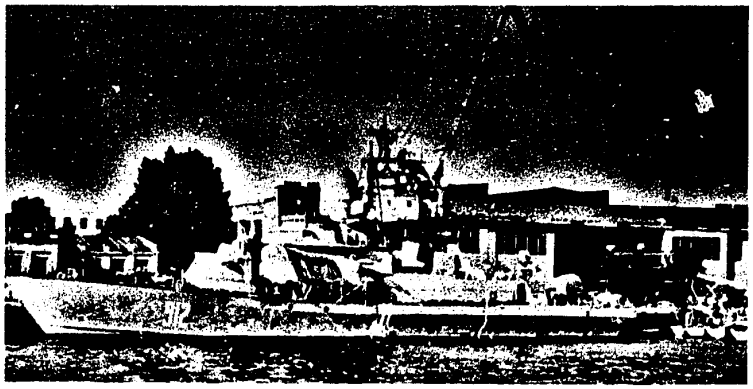


FIGURE 15. KANIN class guided missile destroyer (C)



At pierside, with missile launcher and 57-mm antiaircraft mount covered by canvas

At sea, with equipment unshrouded

FIGURE 16. NANUCHKA class guided missile patrol gunboat (S)

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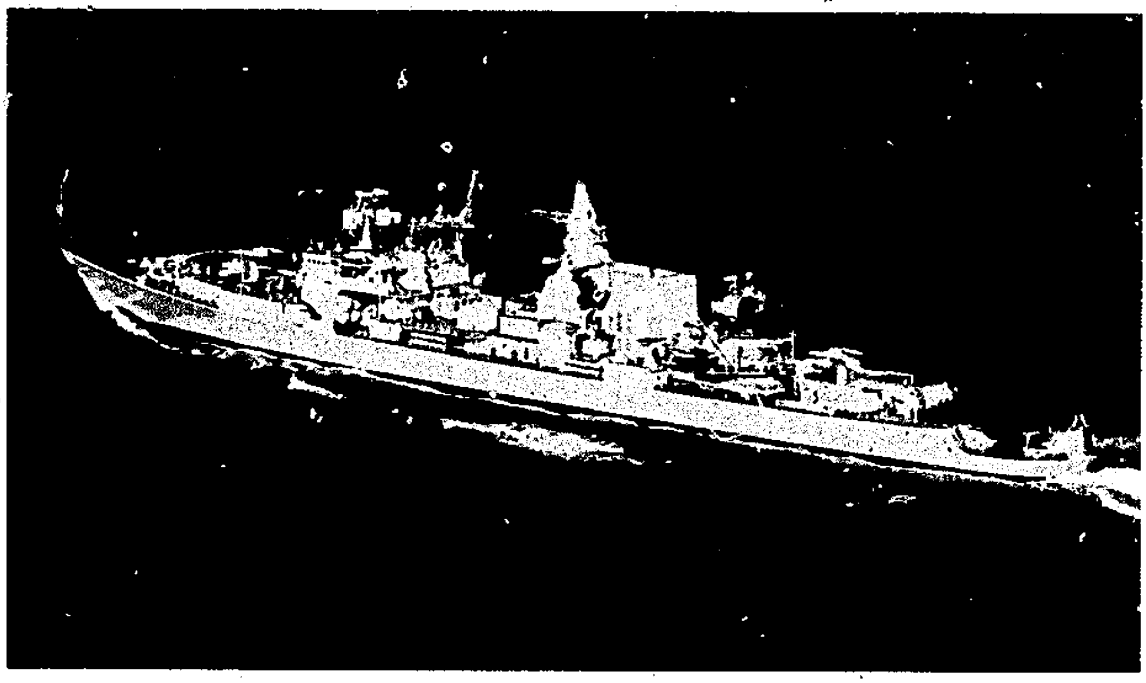

FIGURE 17. KARA class guided missile light cruiser (U/OU)

Shipyard in Leningrad. Like the CHARLIE class SSGN, the VICTOR became operational in 1968; it is estimated to be the fastest submarine in the world, with a maximum submerged speed of at least 32 knots. The VICTOR class is in series production, 12 units having been built as of April 1973.

The BRAVO class submarine, a small submarine approximately 220 feet long, is probably under construction at Komsomolsk Shipyard. The BRAVO class propulsion system for submerged operations and the mission of the BRAVO class are undetermined. It is believed that the BRAVO class utilizes diesel propulsion in a surfaced condition.

As of April 1973, only one unit of the ALFA class had been observed. It is probably nuclear powered. Although its exact mission is not known, the ALFA class is probably a prototype test platform for the third generation of nuclear submarines.

A new class Soviet submarine was sighted late in 1970 operating at sea in Northern Fleet waters. The submarine was sighted on the surface operating independently and could not be correlated to any known Soviet submarines. The hull of the submarine was reported to resemble that of a CHARLIE class nuclear-powered cruise missile submarine (SSGN). The observed length of 350 feet, however, was much longer than the CHARLIE class length of 308 feet. The sail of this unit was similar to that of an ECHO class SSGN, and the bow was extremely broad and bulbous. Neither the propulsion nor the weapon system on this unit is known; however, nuclear-powered propulsion is estimated. Because of its resemblance to the CHARLIE class SSGN, it is possible that this class may incorporate a cruise-missile system in the area forward of the sail. Only one unit of the class has been observed to date. Although no data available indicate that the class is in series production, this submarine has been designated PAPA class SSGN.

First-generation ballistic missile submarines (SSB) and nuclear-powered ballistic missile submarines (SSGN) remain active in naval operational units. The HOTEL-I to HOTEL-II SSBN conversion program was concluded early in 1970, while the GOLF-I to GOLF-II SSB program continues (Figure 21). By April 1973, 12 units had been converted to the GOLF-II configuration. While the GOLF-I carries three 300-nautical-mile, surfaced-launched SS-N-4 ballistic missiles, both the GOLF-II and HOTEL-II carry three 700-nautical-mile submerged-launched SS-N-5's. Two GOLF-I units are undergoing an extended modification indicating that they will be configured other than the normal conversion to a GOLF-II. One HOTEL-I unit is estimated to have been converted to carry six missile launchers. Designated HOTEL-III, this class is probably a research and development missile test platform and was probably used for the new 4,200-

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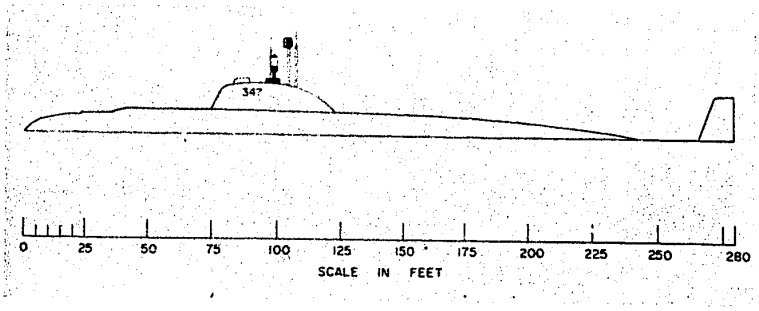
FIGURE 18. CHARLIE class nuclear-powered cruise missile submarine (U/OU)

FIGURE 19. VICTOR class nuclear-powered submarine (S)



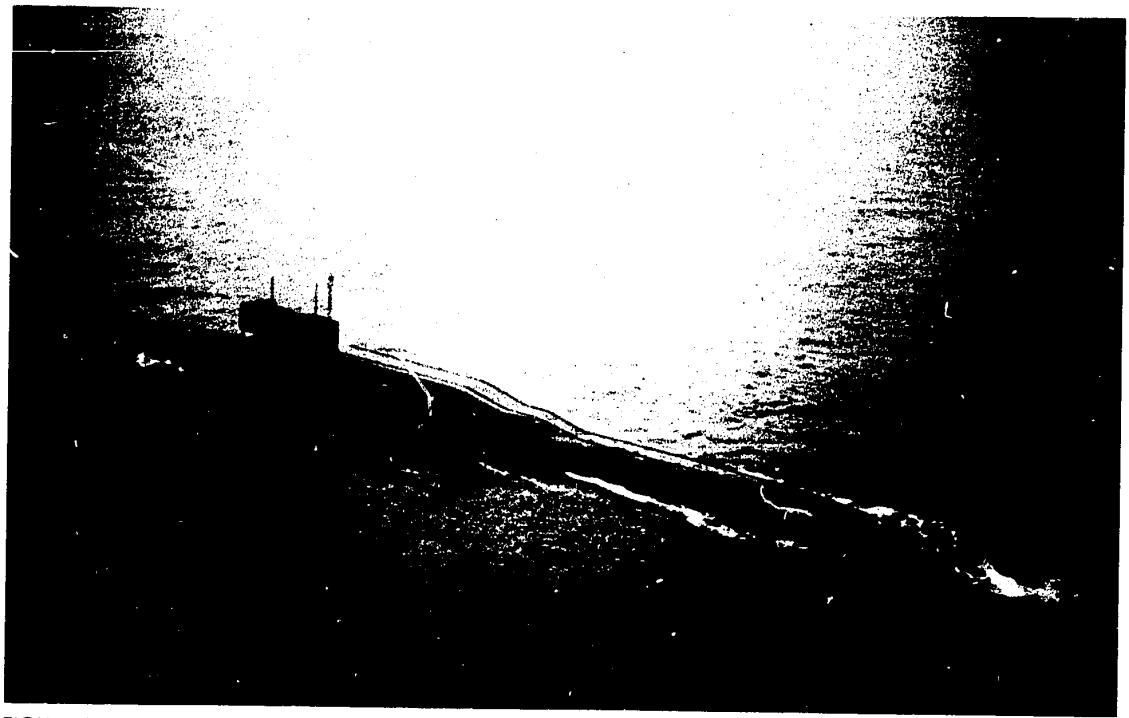


FIGURE 20. DELTA class nuclear-powered ballistic missile submarine (U/OU)

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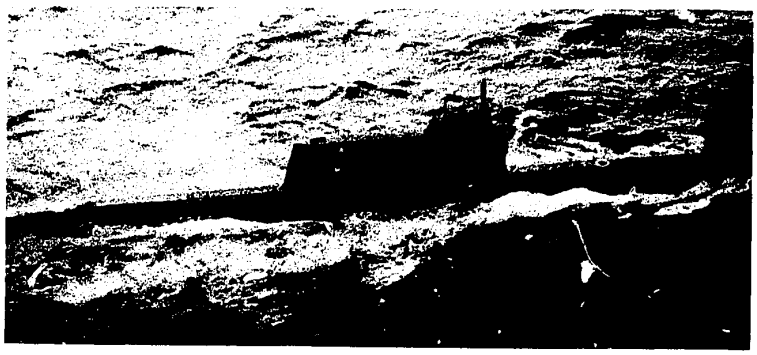

FIGURE 21. GOLF class ballistic missile submarine (C)

nautical-mile SS-N-8 SLBM believed now operational in the DELTA class. Similar conversion of HOTEL-II to HOTEL-III are not expected. The last active ZULU Conversion class SSB was placed in a reserve training status in December 1972. The ZULU Conversion carries two SS-N-4 missiles.

The older cruise missile submarines are the ECHO-I and ECHO-II, JULIETT, and WHISKEY classes. Two Pacific Fleet ECHO-I nuclear-powered cruise missile submarines have had their missile tubes removed in the course of conversion to nuclear-attack submarines. The remaining three Pacific Fleet ECHO-I's will probably be converted to the ECHO-I SSN configuration. The ECHO-I SSGN carries six SS-N-3 cruise missiles. The ECHO-I follow-on, the ECHO-II, carries eight SS-N-3's. The maximum operational range of the SS-N-3 is 220 nautical miles. The JULIETT class cruise missile submarine (SSG) program concluded in 1969 with a total of 16 units constructed. The JULIETT class carries four SS-N-3a missiles and is the only diesel-powered cruise missile submarine (SSG) actively engaged in out-of-area operations. The navy's oldest operational SSG, the WHISKEY class LONG BIN (four launcher) and TWIN CYLINDER configurations, have not been deployed out-of-area in recent years. The WHISKEY class SSG's have been restricted to in-area waters—the Sea of Japan and the Baltic, Barents, and Black Seas.

Qualitative improvements in capabilities have been evident in areas other than missile armament and nuclear propulsion. Research and development efforts in ASW since 1960 are apparent in the employment of improved sensors and weapons. New models have been installed in some units. For example, low frequency sonars of 3.0 and 4.5 KHz plus a variable depth sonar (VDS) are fitted on the *Moskva* and KARA classes, and 8.0 KHz bow sonars probably have been fitted on KANIN and KRESTA II and KRIVAK class combatants. The *Moskva* class has also been equipped with the SUW-N-1 long-range (16-nautical-mile) antisubmarine warfare (ASW) rocket. Conversion of KRUPNYY SSM (SS-N-1) configured guided missile destroyers to KANIN class SAM (SA-N-1) configured guided missile destroyers, with improved ASW qualities, continues. Additional units of the KASHIN guided missile frigate are under construction. A program to retrofit the KASHIN class with a variable depth sonar and a helicopter platform is underway. The new general-purpose destroyer KRIVAK, carrying both surface-to-air and surface-to-surface missiles, along with improved ASW equipment, may serve as the replacement for the aging Soviet conventional destroyer and destroyer escort force and substantially upgrade Soviet open-ocean capabilities. More important, new equipment is seen as standard on the classes of ships in current production.

Mine warfare has had a significant share of research effort, resulting in a new acoustic-rising mine with a considerable capability of selecting its target, and which presents mine-countermeasure problems. Developments of Soviet mine-countermeasure forces have centered on the wooden-hulled VANYA class coastal minehunter, which first appeared in 1961. A new minesweeper, designated ZHENYA, was added to the naval strength in 1970. This 145-foot vessel may be constructed of wood-reinforced fiber glass; if so, it would be the largest ship in the world to be so constructed. Only two ZHENYA were produced and it is believed they were prototypes for a glass-reinforced, plastic-hull minesweeper.

During the 1960's, the gas turbine and combined diesel and gas turbine propulsion systems were introduced, and great strides were made in the quality of support ships and auxiliaries. Improvements have taken place in electronic equipment, particularly in air search radar, communications, and electronic countermeasures.

After languishing for almost two decades following World War II, the naval infantry was reactivated in

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1963 to provide a specially trained and equipped force to spearhead amphibious landing operations. In addition to this offensive mission, this elite force is also assigned the defensive role of repulsing enemy amphibious assaults. Since 1963, the Soviets have gradually expanded their amphibious strength and capability. The current strength is about 9,000 men organized into about five regiments of about 1,800 men each with one regiment assigned to each fleet, except the Pacific Fleet, which has two. Even though the naval infantry force is small, it is growing steadily, and landing exercises since 1968 indicate that the Soviets are systematically developing the effectiveness of the force. The equipment used by the naval infantry is modern and of the best in use by the infantry and motorized rifle forces of the Soviet Union.

At this time the Soviet amphibious forces are structured and located for operations on the periphery of the U.S.S.R. They have only a limited, long-range seaborne-assault capability. In certain circumstances they could carry out small-scale, unopposed landings. However, against significant opposition such a force would have little utility. Amphibious units do frequently deploy to distant areas. Since the end of the Arab-Israeli War in 1967, the Soviets have normally maintained one tank landing ship and two medium landing ships in the Mediterranean. This represents an amphibious lift capability of one battalion landing team (433 men and associated equipment), although it is not known if such a team is actually embarked in the Mediterranean ships.

Soviet Navy coastal defense forces comprise the primary combat forces and equipment activated for the defense of important installations in coastal sectors. These forces include personnel at coastal gun and missile sites and their supporting echelons. Although missiles constitute the bulk of the forces, some naval bases remain partially dependent on guns for their protection. The initial missile in the coastal defense forces was the SSC-2b (SAMLET) missile. This highly accurate system still provides protection for major naval installations and straits on a point-defense principle out to a distance of 25 to 45 nautical miles from the coast. Improved capabilities have been realized with the SSC-1b (SHADDOCK), a transporter-erector-launcher-type 250-nautical-mile missile, which is deployed in the Baltic, Black Sea, and Pacific Fleet areas.

Against this buildup of naval strength are arrayed a number of weaknesses. The navy is handicapped mostly by lack of adequate construction and repair facilities in each fleet area. The physical separation and the dependence on two fleets to provide most major construction is one of the major weaknesses. A limited open-ocean ASW capability and a vulnerability to carrier-launched air attacks remain a problem. Current construction and conversion programs, however, have emphasized ship and weapon production designed to lessen these problem areas. The Soviet Navy also lacks a high-speed underway replenishment capability. Underway replenishment is usually accomplished by the stern-to-bow or bow-to-stern methods, which are time consuming. Although the navy is able to provide adequate logistic support in peacetime with a combination of naval and merchant ships, its lack of proficiency in alongside underway refueling reduces flexibility and, in a conventional war, would make the ships vulnerable to attack during a replenishment operation.

The quality of naval personnel is generally high. The top echelons of command have been infused with dynamic and apparently well-qualified younger men. Rapidly advancing technology has placed a high premium on professionalism, and junior officers have found incentives and room for advancement. Continued emphasis on complex exercises and realistic out-of-area training will improve personnel efficiency.

1. Organization

Since March 1953, the navy, as well as all other services, has been under overall operational control of the Minister of Defense. The Commander in Chief of the Navy concurrently holds the position of a deputy minister of defense. In this capacity he participates in the formulation of top-level military policy decisions. Within the framework of the Ministry of Defense policy, the Commander in Chief of the Navy is responsible for the overall control, administration, development, training, and general state of combat readiness of the naval forces. He exercises this control through a main naval staff, a number of main naval directorates, and the commanders of the several fleets and flotillas.

The Main Naval Staff is the operations and planning organ of the Commander in Chief of the Navy. It is composed of a dozen or more subordinate directorates and departments, each of which is designated by a number as well as a title. The directorates of the Main Naval Staff which have been identified are: Operations (1st); Intelligence (2d); Observation and Communications (3d); Organization (4th); Electronics (5th); Military Transportation (7th); Cryptography (8th); Combat Training; Personnel; and Training and Replacements. The Main Naval Staff maintains close liaison with the General Staff of

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the Soviet Armed Forces, as well as with the staffs of the several fleets and the one independent flotilla command. Detailed information on the functions of the Main Naval Staff is not available.

There are four other principal groupings of naval services and directorates: Political, Naval Training Establishments, Shipbuilding and Armaments, and the Rear Services. Each group is headed by a Deputy Commander in Chief.

The major operational forces are divided into four fleets, one for each of the principal maritime approaches to the U.S.S.R. These fleets are named after their respective geographic areas—Baltic, Black Sea, Northern, and Pacific. Each fleet is practically a self-contained force, having elements of naval aviation, coastal and antiaircraft defense, naval infantry, and the necessary rear services to support all the forces ashore and afloat. The organizational structure of a fleet headquarters parallels that of the navy as a whole, with the fleet commander responsible for all matters pertaining to his command. There are, in addition, two independent commands: the Caspian Sea Flotilla and the Leningrad Naval District. These have independent status directly subordinate, at least in peacetime, to the Commander in Chief of the Navy. In time of war they would probably be subordinated to the nearest major fleet.

Since 1964, the Soviets have maintained a naval force in the Mediterranean called a squadron (*eskadra*). It has grown steadily in size and capability. In 1972 it averaged 49 surface ships and submarines. The political impact of the presence of this squadron has given it international status roughly equivalent to that of the U.S. Sixth Fleet. It is probable that the Soviet Mediterranean Squadron is now a permanent force directly subordinate to the Commander in Chief of the Navy.

2. Strength, composition, and disposition[4]

The personnel strength of the navy has remained fairly stable at about 470,000 for several years. The major fleet and flotilla strength consists of two guided missile helicopter ships; 12 light cruisers; 14 missile cruisers; 2 old heavy cruisers; 40 guided missile destroyers; 38 destroyers; 105 destroyer escorts; and 340 submarines, including 63 ballistic missile submarines and 66 cruise missile submarines. In addition, there are 769 minor surface combatants, 370 mine warfare types, 229 amphibious ships and craft, and 725 auxiliary types. Some additional surface ships are in reserve status (one cruiser, 23 destroyers, 14 destroyer escorts, and some minor combatants and auxiliaries). Also, 73 medium- and short-range submarines are believed inactive. These units could be restored to active service if required. In terms of total number of naval ships (but not total tonnage) the Soviet Navy is the largest in the world. Figure 22 shows the disposition of the Soviet Navy.

The Soviets repeatedly have stated that nuclear-powered missile-equipped submarines are the main striking force of their navy, and construction programs reflect this. There is ample evidence, also, of efforts to improve the ASW capabilities of the submarine force. The VICTOR class has been built for an antisubmarine submarine role.

3. Training

The navy operates a large network of training establishments. All fleet areas contain schools for enlisted men, officers, and future officers. Leningrad is the chief center of training for naval officers and officer candidates. Severomorsk, Sevastopol, and Vladivostok are also important training centers. More than 100 separate training establishments are estimated to be in operation.

Unit training afloat and ashore is conducted in accordance with tactical and operational doctrine established for the navy as a whole. Training is constantly underway, is rigorously supervised, and ranges in scope from squad drill to combined exercises among the fleets of the Soviet-European Communist countries. Competitions and awards are liberally employed as incentives for individuals and units to attain high training standards.

Specialization is a basic principle of training. Separate higher naval schools train future officers for line, line-engineering, shore-engineering, submarine, communications, aviation, coast artillery, and political specialities, among others. It is usual for an officer to serve his entire career within the specialty for which he has been trained. Advanced specialization is just as much a goal of enlisted training as it is of officer training.

Political indoctrination is another important aspect of training, just as it is in the everyday life of all Soviet citizens. It is a standard feature in training afloat as well as in units and schools ashore and occupies a prominent part of all curriculums, training schedules, and leisure activities.

Inductees undergo a relatively short period of recruit training, after which they are assigned to operational units. The best qualified enlisted

[4]For detailed information see the current issue of *Military Intelligence Summary* and the *Automated Naval Order of Battle, Volume I*, both published by the Defense Intelligence Agency.

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FIGURE 22. Disposition of active units of the Soviet navy (S)

	BALTIC FLEET	BLACK SEA FLEET	NORTHERN FLEET	PACIFIC FLEET	TOTALS
Helicopter ships	0	2	0	0	2
Cruisers	6	10	6	6	28
Destroyer and escort types	43	*53	40	47	183
Minor combatant, mine warfare, and amphibious types	422	**420	195	331	1,368
Auxiliary types	160	***172	200	193	725
Submarines	29	28	177	106	340
Total	660	685	618	683	2,646

*Includes three destroyer escorts in the Caspian Sea.
**Includes 95 units in the Caspian Sea.
***Includes 16 units in the Caspian Sea.

personnel may be sent to specialist schools, with consequent opportunities for advancement to petty officer. Outstanding enlisted personnel are permitted to apply for officer training in a higher naval school. Until recently, however, preference was given to graduates of naval preparatory schools or civilian secondary schools.

Advanced training for officers is conducted at officer specialist schools on a level equivalent to that of the U.S. Navy postgraduate schools. One naval academy in Leningrad, the Order of Lenin Naval Academy, takes officers under the age of 36 who have served in the fleet between 6 and 10 years and trains them for senior staff appointments.

4. Logistics

All ships added to the Soviet naval inventory in recent years have been built in Soviet shipyards, except for a few classes of amphibious and auxiliary ships of East European origin. Naval shipbuilding is performed in yards specializing in naval construction and in yards building both naval and merchant ships. Current construction programs include both nuclear and conventionally powered submarines; a large air-associated combatant; guided missile cruisers and destroyers with increased ASW, antiair warfare, and extended-range cruising capabilities; escorts, submarine chasers, mine warfare craft, amphibious craft, and auxiliaries. New construction programs are being augmented by submarine and surface ship conversion programs.

Key naval ship construction yards are located at Leningrad, Kaliningrad, Severodvinsk, Gorkiy, Nikolayev, Kerch, Komsomolsk, Khabarovsk, and Zelenodolsk.

A number of naval repair yards are available, though hard pressed, to support the expanding Soviet fleet. Major naval repair yards are located at Kronshtadt, Liepaya, Rosta, Severodvinsk, Sevastopol, Vladivostok, and Petrovka. These repair yards are able to provide all types of repairs, conversions, modifications, routine maintenance, and overhauls.

The Soviets have and will retain the capability to build and maintain their fleet at a level which meets their national requirements. In the event of mobilization, there is sufficient shipyard capability to satisfy increased demands on the ship construction and repair industry.

5. Naval aviation

Soviet Naval Aviation (*Aviatsiya Voyenno-Morskogo Flota*), basically a land-based force, is an integral component of the Soviet Navy. Naval aviation has both tactical and strategic roles, but its primary mission is the destruction of hostile surface forces, with emphasis on the fast carrier strike force. Additional missions include maritime reconnaissance, antisubmarine warfare, destruction of enemy port facilities, protection of the seaward flanks of the ground forces from hostile surface forces, minelaying, and, under certain circumstances, support of amphibious operations.

Naval aviation crews are believed to be highly trained in air-to-surface missile attacks against hostile naval forces, and the acquisition of BEAR D aircraft has greatly increased the naval aviation reconnaissance capability.

In recent years considerable emphasis has been directed toward improving air antisubmarine warfare capabilities through the introduction of new aircraft, weapons, and sensors. In offshore areas these

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capabilities have been enhanced; however, despite the introduction of the long-range BEAR F aircraft, Naval Aviation open-ocean antisubmarine warfare capabilities remain extremely limited.

The fleet air forces are administratively subordinate to Headquarters, Soviet Naval Aviation, Moscow, through the Commander of Naval Aviation, who is a deputy of the Commander in Chief of the Navy. The four fleet air forces—Baltic Fleet Air Force, Black Sea Fleet Air Force, Northern Fleet Air Force, and the Pacific Fleet Air Force—are operationally subordinate to the respective fleet commanders.

Within the fleet areas the operational units are organized into divisions, regiments, and squadrons. While the division concept is evident in all fleets among the medium-bomber strike units, the organization of reconnaissance and antisubmarine warfare resources are oriented toward independent units directly subordinate to the fleet headquarters rather than to a division.

As of 1 April 1973, the combat aircraft strength of naval aviation was estimated at 1,029 aircraft, which is approximately evenly distributed among the four fleet air forces, with emphasis on the Northern and Pacific Fleet areas. The aircraft include 45 heavy reconnaissance BEAR D aircraft, 525 medium jet bombers, 34 light jet bombers, 10 BEAR F long-range ASW aircraft, 44 MAY land-based ASW aircraft, 93 MAIL ASW amphibians, and 278 HOUND and HORMONE helicopters employed primarily in the ASW role. The BADGER C, which carries one KIPPER (AS-2) missile or with a modification thus far observed only in the Northern Fleet area, two KELT (AS-5) or AS-6 air-to-surface missiles, and the BADGER G (Figure 23), configured for delivery of two AS-5 or AS-6 missiles, constitute the primary striking force of Soviet Naval Aviation. The MAIL (Figure 24), MAY (Figure 25), and HORMONE A (Figure 26) are all employed in the ASW role.

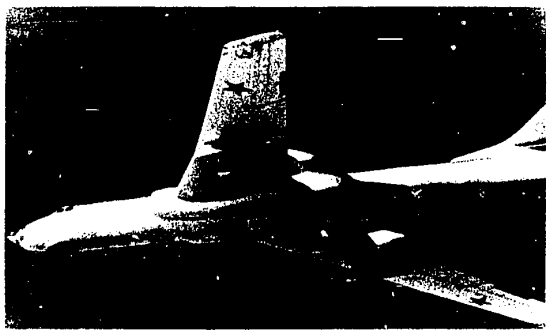

FIGURE 23. Naval aviation BADGER G (C)

FIGURE 24. Naval aviation MAIL (ASW) aircraft (C)

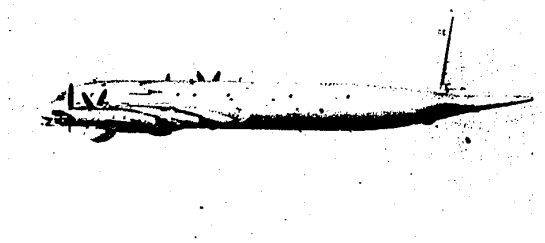

FIGURE 25. Naval aviation MAY (ASW) aircraft (U/OU)

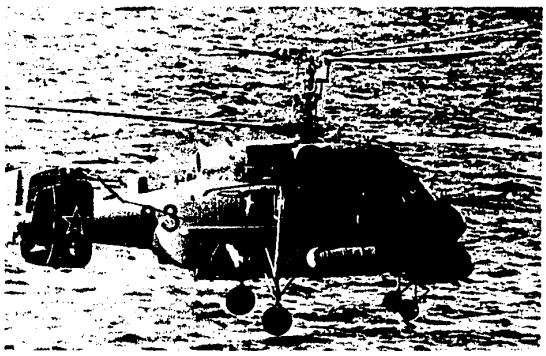

FIGURE 26. Naval aviation HORMONE A (ASW) aircraft (U/OU)

There are, in addition, about 190 transport aircraft of various types assigned to the fleet air forces by Military Transport Aviation. There are an estimated 45,000 personnel assigned to naval aviation, of which 40,000 are in operational units and support elements, and 5,000 are at the Ministry of Defense level and in preoperational training.

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E. Air and air defense forces

1. Soviet Air Forces (S)

The Soviet Air Forces[5] (*Voyenno-vozdushnyye Sily*—VVS) consist of Long Range Aviation, Tactical Aviation, Aviation of Air Defense, and Military Transport Aviation. These forces are being steadily modernized and have strong offensive and defensive capabilities.

Long Range Aviation (*Dalnaya Aviatsiya*—LRA),[6] one of the three strategic offensive forces, has the mission of striking targets of potential enemies with nuclear or conventional weapons, performing armed reconnaissance and bomb-damage assessment, and supporting naval and *front* commanders, as required. LRA crews are believed to be highly proficient in all the basic aspects of strategic air operations: navigation; bombing; air-to-surface missile (ASM) strike procedures; staging; penetration tactics; employment of electronic countermeasures (ECM); and, for most heavy bomber crews, in-flight refueling. The total number of aircraft in the LRA bomber inventory has gradually decreased, primarily through BADGER attrition, but the BLINDER, BEAR, and BISON inventory has remained fairly stable since 1969. The capabilities of the force have been improved by the introduction of the supersonic-dash medium jet bomber BLINDER (free-fall bomber and ASM carrier) in 1962, the acquisition of an in-flight refueling capability for about 40% of the BEAR force, the introduction of the 350-nautical-mile KANGAROO ASM into BEAR units, the 250-nautical-mile KITCHEN ASM into BLINDER units, the 120-nautical-mile KELT ASM and, more recently, the 300-nautical-mile AS-6 into BADGER units. Figure 27 shows the LRA BEAR B aircraft. BISON (Figure 28), the jet heavy bomber, is assigned only to LRA. About 55% of the BADGERs (Figure 29) are in LRA; the remainder are assigned to naval aviation.

Tactical Aviation (*Frontovaya Aviatsiya*, literally Aviation of the *Front*) is a multipurpose force. Its mission is to provide counterair and close air support for ground forces and probably to support PVO *Strany* in strategic air defense. Its employment doctrine stresses mobility and flexibility. It has a good capability for both tactical strike and defensive operations with either conventional or nuclear weapons.

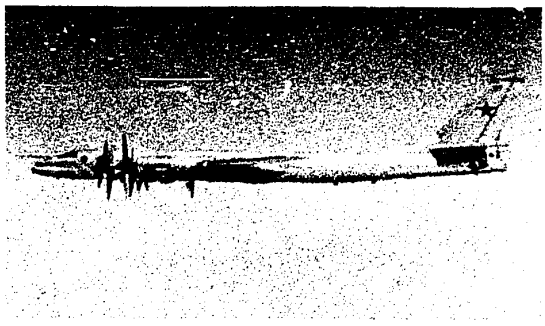

FIGURE 27. Long Range Aviation BEAR B (C)

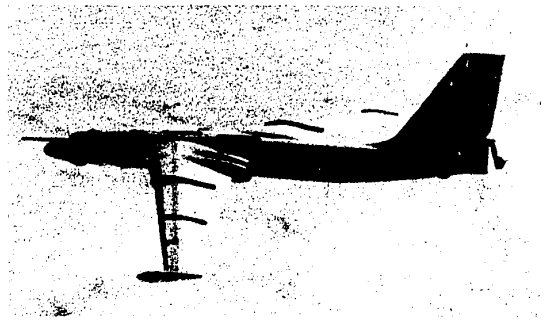

FIGURE 28. Long Range Aviation BISON B (C)

The overall strength of Tactical Aviation has increased by 600 aircraft since 1968. This buildup has been primarily along the Sino-Soviet border, including four Soviet fighter units in Mongolia. The increase consists mainly of older generation aircraft withdrawn from storage and assigned to operational units. There has also been a gradual increase throughout Tactical Aviation of new reconnaissance units equipped with late-model aircraft. The reequipment of Tactical Aviation with current model aircraft is continuing but at a slow rate. Fighter aircraft include the FARMER (MiG-19), FISHBED (MiG-21) (Figure 30), FITTER (Su-7) (Figure 31), FRESCO (MiG-17), a few FIREBAR (Yak-28P), and some FLOGGER. The light jet bomber force consists of subsonic BEAGLE (Il-28) and supersonic BREWER (Yak-28) aircraft (Figure 32). Reconnaissance is performed by MANGROVE (Yak-27), FOXBAT (Mig-25), and by versions of the BEAGLE, BREWER, FISHBED, and FRESCO. All fighters can be employed in multipurpose roles, i.e., an air defense or ground-support role. About 55% of the fighters have an all-weather capability and are used primarily for air defense. Both the BEAGLE and the BREWER have an all-weather bombing capability, and both these aircraft can reach targets within a radius of about 500 nautical miles. At least four

[5]The term Soviet Air Forces used throughout this section does not include naval aviation, an integral part of the Soviet Navy.

[6]Additional details on this subject are contained in the Defense Intellegency Agency study *Soviet Long Range Aviation* (AP-240-6-4-68-INT), amended in April 1970.

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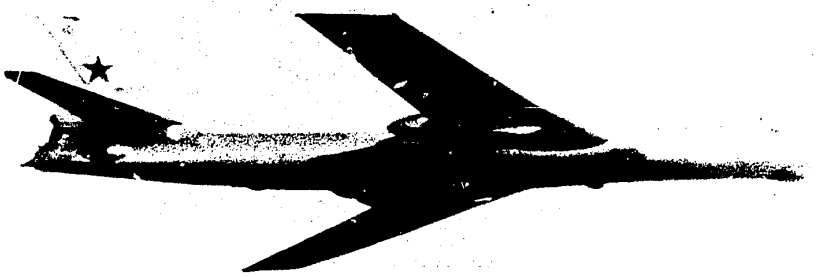

FIGURE 29. BADGER A used in Long Range Aviation and in Soviet Naval Aviation (C)

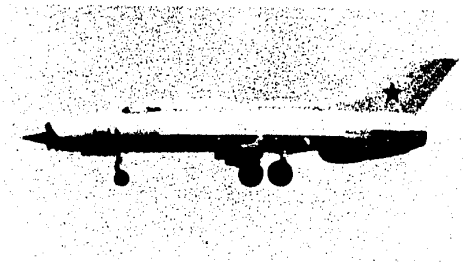

FIGURE 30. FISHBED (MiG-21) used in Soviet Tactical Aviation (C)

aircraft types (FISHBED, FITTER, BEAGLE, and BREWER) are capable of delivering nuclear weapons.

Aviation of Air Defense (*Aviatsiya Protivoyozdushnoy Oborony Strany*—APVO) is one of four functional divisions of the PVO *Strany*. Its mission is to provide air defense of the U.S.S.R., especially for major population, industrial, and military centers.

About 25% of the APVO interceptor force is composed of fighters introduced in 1957 or earlier: the FRESCO and FARMER. These subsonic or low supersonic models are largely gun-armed, limited to tail attacks at ranges of a half mile or less, and have little capability above 50,000 feet. These older fighters

FIGURE 32. BREWER (Yak-28) used in Soviet Tactical Aviation (C)

are gradually being phased out of active units but may be retained in a reserve status. A limited number of FARMERs and FRESCOs are armed with AA-1b (ALKALI) or AA-2b (ATOLL) missiles, providing these aircraft with an air-to-air capability in the range of 2 to 4 miles. Some 25% of the interceptor force consists of the Mach 2 FISHPOT. The FISHPOT B is armed with a first generation air-to-air missile (AAM), which limits this aircraft to tail attacks within a range of 2 to 4 miles. The FISHPOT C, of which there may

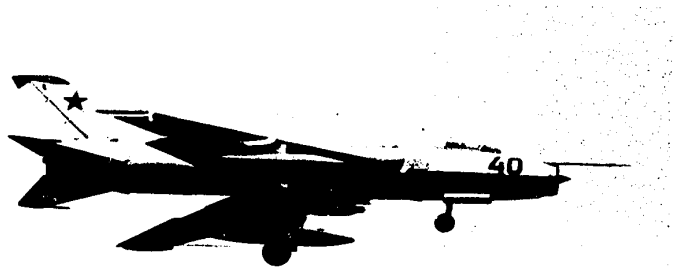

FIGURE 31. FITTER (Su-7) used in Soviet Tactical Aviation (C)

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be as many as 100, is fitted with an improved air-to-air missile and probably with a compatible airborne intercept radar which may permit head-on attacks. The remainder of the force is composed of new interceptors introduced since 1964. The weapon systems carried by these interceptors have longer ranges and can be used in two or more attack modes, thus significantly increasing Soviet air defense capabilities.

The first of the newer aircraft to be deployed was the all-weather, low- and medium-altitude FIREBAR interceptor. The FIREBAR usually carries two AA-3 ANAB missiles, and some are modified to carry two additional missiles. Radar or infrared homing guidance on the ANAB, coupled with the aircraft fire control system, enables the FIREBAR to conduct both head-on and tail attacks. FIREBAR has also been seen armed with the ATOLL missile. The aircraft can achieve speeds near Mach 2 at higher altitudes but is limited to subsonic speeds at low altitude. Production ceased on the FIREBAR in 1967. This aircraft is based primarily on the periphery of the U.S.S.R., along the seaward and lowland approaches to strategic targets, for defense against low-altitude penetration. In low-altitude defense the FIREBAR is used more effectively over water or relatively flat terrain because of the limited ground clutter suppression capability of its radar. The long-range, medium- and high-altitude all-weather FIDDLER is another of the newer aircraft. The FIDDLER is armed with four AA-5 ASH missiles which are usually carried in mixed loads of two semiactive homing or two infrared homing versions. The FIDDLER is capable of attacking targets from any direction. The third of these modern aircraft, the medium- and high-altitude FLAGON all-weather point-defense interceptor, carries an AI radar and AA-3 ANAB missiles. It can attack both head-on and from the rear. FLAGONs have practiced low-altitude intercepts but do so infrequently.

The newest aircraft in the interceptor force is the Mach 3 high-altitude FOXBAT all-weather fighter, first deployed with a PVO regiment in mid-1970. FOXBAT carries a new air-to-air missile, the AA-6, which incorporates infrared or semiactive radar homing. There has been no indication that the FOXBAT has a look-down/shoot-down capability, although the aircraft is probably equipped with a new radar.

Military Transport Aviation (*Voyenno-transportnaya Aviatsiya*—VTA) is responsible for deploying men and materiel to meet war and near-war requirements, and it operates an air logistic system to supply deployed forces and support other Soviet interests. VTA is committed to provide air transport support to long-range, tactical, air defense, and naval aviation; airborne troops; rocket troops; and special missions under the control of the Soviet Air Forces.

A major reequipment program which began in 1960 has provided VTA with CUB (An-12) medium turboprop assault transports and the COCK (An-22) heavy turboprop logistic transport. The CUB (Figure 33) can move men and materiel in close support of combat areas. Most of these have been used to reequip the element of VTA which supports airborne operations—VTA Central (VTA/CNT). One regiment, at Oranienburg, East Germany, is equipped with the CAMP (An-8). The CAMP (Figure 34), used for military logistic service and for parachute drop, can operate into and out of selected unimproved fields. The new long-range, four-engine heavy turboprop transport, the COCK, first displayed in June 1965, entered service in 1967. COCK (Figure 35) is a long-range heavy logistic carrier. This transport will provide a marked increase in airlift capabilities for VTA/CNT. The COCK fulfills a long-term Soviet requirement for a heavy transport capable of rapid, long-range delivery of troops and larger, heavier combat materiel than the CUB and CAMP can handle. COCK is capable of transporting almost any item of ground ordnance equipment, including heavy tanks, radar vans, and tactical missiles.

The VTA/CNT, using the CUB as prime carrier, can carry assault elements of two airborne divisions in a parachute drop or airlanded operation to a distance of 760 to 900 nautical miles, or it can transport a division with all equipment in a ferry lift operation to a distance of 1,400 nautical miles. Augmentation of this capability can be provided within limits by the civil air fleet. The CUBs assigned to the civil air fleet are equal to three full-strength transport regiments. Other assigned civil transports could be useful in an initial attack. In addition to transport aircraft, the VTA is assigned various models of helicopters. The HOOK (Mi-6) (Figure 36) is a heavy transport helicopter. The HIP (Mi-8) (Figure 37), a large single-rotor helicopter, has appeared in VTA.

Military Transport Aviation is a service organization and, as such, is fragmented into transport units deployed to various force commanders of the Soviet Air Forces. The force commanders assume immediate operational control of assigned transport units. Overall operational and administrative control is retained by the VTA commander which allows him to recall or reallocate transports as necessary.

The operational chain of command of the VTA flows from the Ministry of Defense to the Commander in Chief, VTA. The major element of the VTA is

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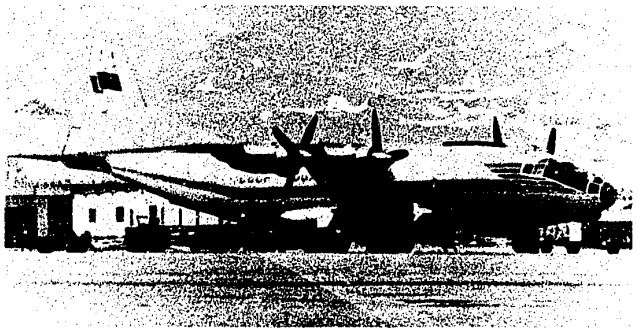

FIGURE 33. Military Transport Aviation CUB (An-12) (U/OU)

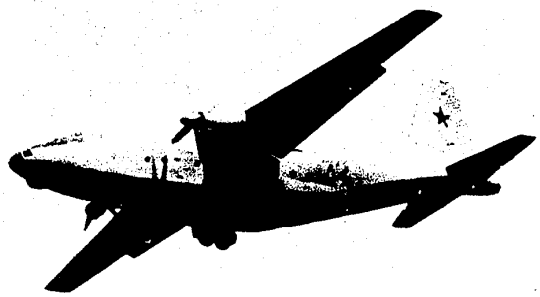

FIGURE 34. Military Transport Aviation CAMP (An-8) (C)

FIGURE 35. Military Transport Aviation COCK (An-22) (C)

FIGURE 36. Military Transport Aviation HOOK (Mi-6) (U/OU)

FIGURE 37. Military Transport Aviation HIP (Mi-8) (C)

VTA/CNT which supports airborne troops and performs other logistic support as required. VTA retains operational and administrative control of this unit.

a. Organization

The Commander in Chief of Soviet Air Forces, a Marshal of Aviation, is also one of the deputy ministers of defense, a member of the Party Central Committee, and probably of the Higher Military Council. As a member of the high command, he is believed to participate in the planning and development of strategy for employment of the air forces in conjunction with other force components and, in this capacity, to participate in the issuance of broad operational directives to the air forces.

The Commander in Chief of Soviet Air Forces provides overall supervision of the component forces in matters relating to doctrine, organization, training, manpower, and logistics. He is assisted by a first deputy commander; three deputy commanders for combat training, aviation engineering services, and rear services; and the chief of the air forces main staff. A subordinate commander for Tactical Aviation has not been identified. Administrative functions related to tactical aviation probably are provided by the air forces main staff and a number of specialized

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directorates within the air force headquarters. One of these is the Military Council of the Air Forces, believed to be an agency of the Communist Party, within the Ministry of Defense.

Long Range Aviation is divided by geographic area into three long-range air armies, each of which is organized into medium bomber and heavy bomber regiments. In addition, an arctic command supports LRA aircraft operating in that region. This command is under the operational control of the Minister of Defense; administrative control is exercised by the Commander in Chief of the Soviet Air Forces. The organization of LRA headquarters is similar to that of air forces headquarters, but on a reduced scale.

Tactical Aviation is organized into 16 air armies. Tactical air armies are a component of military forces comprising unified or integrated commands assigned to military districts within the U.S.S.R. and to Soviet groups of forces outside the country. The size and composition of each tactical air formation varies according to need.

The organization of the systems for command and control of operations of Tactical Aviation appears well defined. The chain of operational command is from the Ministry of Defense to commanders of military districts, or groups of forces, to which air armies at the field level are operationally subordinate. The Commander in Chief of Soviet Air Forces, as a ranking member of the high command at the ministry level, is almost certainly included in the operational planning and strategic direction of tactical air armies.

At the field level, commanders of air armies are believed to be deputies for aviation to the military district, group of forces, or, in wartime, front commands. While coordination of weapons systems is provided in these territorial areas through a joint command and control structure, the operational control and employment of aircraft is retained by commanders of air armies so as to insure appropriate utilization of aircraft capabilities and to provide mobility and flexibility in employment.

For the strategic air defense function, certain fighter elements of Tactical Aviation respond to orders of the Commander of Soviet Strategic Defense Forces (PVO *Strany*) or his subordinate commanders in air defense territorial areas in which the tactical air elements are located.

Soviet forces stationed in East Germany have a modified command structure for controlling fighter aircraft, principally in an air defense situation. Here, northern and southern corps echelons of command have been introduced. This refinement in control authority in a theater-type deployment of Tactical Aviation enhances versatility in employment of fighter aircraft. Additionally, it defines more precisely the areas of responsibility in a weapons-saturated environment and may serve as a medium for integrating operations of weapons systems performing an air defense function. This necessitates the Tactical Aviation Commander, acting as Chief of Air Defense of the Ground Forces (PVO *Voysk*), to have operational control of all air defense forces, i.e., Aviation, SAM's, AAA, and early warning radars, within his area.

Aviation of Air Defense (APVO) is subordinate to PVO *Strany* headquarters near Moscow. The deputy for APVO is responsible to the PVO *Strany* commander for the deployment and employment of fighter units and establishes fighter interception procedures for all fighter aircraft, including fighters in Tactical Aviation when needed for air defense purposes.

The operational chain of command of Military Transport Aviation is from the Minister of Defense to the commander of the VTA. Transport units and their operational control are allocated to commanders of force components by the commander of the VTA for normal air support roles, but he retains overall control and can withdraw or reassign aircraft as necessary for emergency or priority tasks.

b. Strength, composition, and disposition[7]

The Soviet Air Forces have about 573,000 personnel and over 11,600 combat and support aircraft, including helicopters, in operational units. Of the personnel, 472,000 are in operational units and support elements of the several forces (including 130,000 in the air defense forces), and 101,000 are in high command in general support, including Ministry of Defense, research and development, and preoperational training.

As of 1 October 1973, Long Range Aviation, with an operational personnel strength of 57,000, consisted of 875 bombers and tankers deployed on 27 airfields and organized into 26 medium bomber regiments and 9 heavy bomber regiments in three air armies. The 1st Long Range Air Army encompasses the northwestern part of the U.S.S.R., the 2d Long Range Air Army is in the southwestern portion of the country, and the 3d Long Range Air Army is located in the far eastern U.S.S.R.

Tactical Aviation consists of over 4,600 combat aircraft organized into over 100 regiments. It has some

[7]For detailed information on order of battle for all Soviet Air Forces see the current issue of the *Soviet Aircraft Order of Battle* (AP-240-2-4 series), published by the Defense Intelligence Agency.

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187,000 personnel assigned to operational units and support elements. Approximately 6,000 pilots are assigned to operational units. An estimated 35% of the total personnel are assigned to the air armies in groups of Soviet forces in Czechoslovakia, East Germany, Hungary, and Poland. Approximately 33,000 are assigned to the 16th Tactical Air Army in East Germany. There are 12 air armies in the military districts of the U.S.S.R.

Aviation of Air Defense has about 90,000 personnel in operational units and support elements. Combat fighter aircraft total about 2,700 in 84 regiments. About 75% of these fighters are late models.

Military Transport Aviation has approximately 100,000 personnel assigned to its operational units and support elements. Total aircraft strength is about 3,300.

The Soviet air facilities[8] system consists of more than 3,250 airfields and a few minor seaplane stations. About 550 airfields have permanent-surface runways, and 469 airfields have runways which exceed 8,000 feet. The principal airfields used by military aircraft number about 300. There are no active military seaplane stations as Naval Aviation no longer has flying boats in operational units.

In general the Soviet Union and the Eastern European Communist countries each have an adequate, well-distributed air facilities system capable of supporting all types of air operations. Construction activity suggests that a continuing military airfield construction program is considered necessary both to accommodate newer aircraft and to provide a more desirable deployment or dispersal capability. However, airbase hardening, primarily aircraft sheltering, has been the main airfield construction activity for the past several years.

c. *Training*

(1) *Preoperational*—With the reduction in term of service for aviation personnel effected by the 1967 Universal Military Service Law, preconscription elementary military training has become compulsory. Training is to begin when youths have reached 17 years of age. It is planned that this training will be done without detaching the individuals from their studies or work.

The training is to be accomplished in the general-education schools starting with the ninth grade, in secondary specialized teaching institutions, and in the teaching institutions of the vocational-technical education systems. It is to be directed by the Ministry of Defense and DOSAAF. Training is expected to emphasize vocations and technical specialties similar to certain special military qualifications.

For personnel assigned to the air forces, the postinduction period of training will necessarily provide more selective, specialized, and professional training, primarily for those who elect to become careerists. Until about 1967, a total of 27 schools, including two PVO schools, provided this training. There were two 5-year higher military aviation engineering schools, 10 4-year higher military aviation schools for pilots, two 4-year higher military aviation schools for navigators, a 4-year higher military aviation political school, and nine 3-year military aviation technical schools. There is also a 2-year pilot school, probably helicopter, whose graduates are master sergeants with pilot certificates. This contrasts with the 4-year school graduates who are lieutenants with a pilot-engineering degree at a 3d-class pilot level or less. In the past 6 years, six more schools have been opened to try to cope with the increasing demand for a greater number of highly skilled air personnel.

The peacetime 4-year pilot training provides 200 to 250 hours of flight time, depending on the current policy of educational direction. The ground training portion includes studies in mathematics, physics, aerodynamics, chemistry, languages, history, physical education, and Communist Party history. Flight training and related exercises in parachute jumps, strafing, bombing, and air-to-air interception (simulation) begin in the first year.

Long Range Aviation trainees are probably specially selected on the basis of aptitude, and their practical training emphasizes formation flying, navigation, and bombing practice. Total preoperational flying time may average 300 to 400 hours per crew.

(2) *Operational*—Combat training of LRA aircrews is accomplished within the operational units as a part of the normal training program. All units are expected to maintain a relatively high standard of operational preparedness. The unit training program covers 12 months of the year, but the individual crew members actually spend 10 months on their flying duties annually; 1 month each is spent on leave and on political and administrative obligations. It is estimated that LRA operational crew training has progressed to a high state of proficiency.

The annual training program of Tactical Aviation includes all-weather flying, formation, air-to-air

[8]For current information see Volumes 33-39 of *Airfields and Seaplane Stations of the World*, published by the Defense Intelligence Agency. Other details on Soviet air facilities are provided in the Transportation and Telecommunications chapter of this General Survey.

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combat, rocketry, bombing, gunnery, reconnaissance, and deployment exercises. The daily combat readiness of the air units is a continual program, with the units maintaining varying degrees of alert posture according to assignment. The climax of unit training is a series of extensive maneuvers carried out at military district or groups of forces levels in cooperation with ground forces. These maneuvers are usually held in the autumn.

The quality of Soviet pilots is difficult to assess. Flying hours per year, about 100 to 120, are considerably less than that of U.S. pilots. However, extensive pre- and post-planning, and mission critiques, coupled with short distances to ranges, lessen this discrepancy to a certain extent. Flying is conducted under rigid ground control, allowing little independent action. Upon graduation from a 4-year training school, a new pilot is assigned to an operational unit as a pilot 3d-class or, in come cases, even a lower category. At this level, pilots are not mission capable or combat ready. After extensive training in a unit, they progress to 2d-class, at which time they are combat capable but not proficient. Further training advances them to 1st-class pilot, or combat proficient. This training cycle takes 7 to 10 years. It is estimated that an average regiment is composed of one squadron with 3d-class pilots, one with 2d, and one with 1st-class pilots.

Operational training for Aviation of Air Defense (APVO), in addition to the invaluable training gained from actual scrambles and intercepts of peripheral non-Soviet flights of various kinds, includes a training cycle in which the training exercises for the year begin in February or March. Local joint exercises in spring maneuvers usually provide some fighter training in air-ground coordination. Summer months are used to fulfill the assigned syllabus, with heavy air activity during favorable weather. Training culminates in the autumn of each year with large-scale joint manuevers with other air units and ground or naval forces. The operational training program is very detailed and designed to take maximum advantage of the limited flight time available.

Flight training activity ranges from routine flight activity (take-offs and landings, local flight activity, weather reconnaissance flights) to ground-controlled intercept/airborne intercept/air-to-air missile training, and mobility training. The air defense or interceptor training syllabus includes some air-to-air gunnery and rocketry as well as dummy runs, camera gunnery, and firing runs on target sleeves. Practice alerts are staged regularly as well as participation in actual intercept of unidentified targets.

Deployment and mobility flights form a significant phase of fighter training. Such flights are often practiced in order to develop a tactical advantage over hostile forces as well as to preclude the destruction of the regiment's complement of aircraft in the event of an attack on the base. The ability to deploy to strengthen fighter defenses in specific areas is an important aspect of the regiment's training tactics. There has probably been an increased emphasis on head-on intercept training as the new interceptors became operational.

Soviet operational pilots fly only 100 to 120 hours per year. They are given little opportunity to exercise personal initiative in the air; practice interceptions depend almost entirely on close ground control rather than pilot interception of aircraft.

Operational training in Military Transport Aviation is accomplished after officers and crews are integrated into their units. Proficiency in flying transport aircraft through all conditions of weather is acquired under actual flight conditions—instrument training flights in heavy overcast, and winter night flights from airfields covered with snow and from icy runways. It can be assumed that tactical paratroop drops by squadron are part of the routine training. There is evidence that, weather permitting, field training exercises in conjunction with airborne troops continue throughout the year. Crews receive extensive briefing before an operation, and postoperation analysis of errors is conducted.

There is evidence that cross-training in heavy transports and helicopters is a requisite for commanders. Commanders are trained for positions one step higher than that which they occupy, so that replacements are always available. It is probable that older combat pilots from fighter and bomber units, after retraining, are transferred to transport aviation.

Enlisted technicians in operational and maintenance units are given on-the-job training or attend special schools which give 1½- to 2-year courses of intensive theoretical and practical training. Technical officers are assigned to operational units after graduation from technical officer candidate schools. These schools provide 3-year courses with specialization in such fields as special equipment, electronics, instruments, aircraft engines, and armament.

Advanced training for officers is accomplished through a number of higher staff schools and academies. These include Lipetsk Air Tactical School, Advanced Officer School, Advanced Navigation School, and the two major air academies—the Military Air Academy and the Zhukovskiy Air Engineering Academy.

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d. Logistics

Rigorous planning is required in determining the Soviet Air Forces' (SAF) materiel requirements. Top-level control, planning, and procurement of items peculiar to the SAF components is a primary responsibility of the Directorate of Rear Services of the Air Forces.

The Director receives logistic requirements, other than those for complete aircraft, which have been coordinated and forwarded through the various rear services organization channels. Requirements for subordinate units of Long Range Aviation, Aviation of Air Defense, and probably Military Transport Aviation, are compiled by the directorates of rear services at the respective force headquarters. Logistic control and planning for Tactical (Frontal) Aviation occurs at the air army level. The Chief of Rear Services at the tactical air army level is tasked with the coordination of supply plans and schedules for the army's air units and is responsible for delivery to the operational bases.

All requirements are coordinated by the SAF Director of Rear Services who forwards them to his counterpart at the Ministry of Defense for approval prior to procurement.

The lowest echelon within the supply and servicing organization is the Air Base Support Battalion (Air Technical Battalion). Such a battalion is located at each operational airfield where a unit of regimental strength is assigned. It performs the housekeeping functions necessary to maintain both the airfield and the air unit in a state of combat readiness. Air Base Support Battalions are comprised of six companies: Headquarters, Guard, Air Traffic Control, Transport (vehicle), Airfield Maintenance, and Technical Support (POL and ammunition upkeep and delivery).

An essential element of the supply system is an extensive network of depots for storing technical supplies, fuel, and ammunition. Air Forces' depots storing these stocks are established at several echelons—SAF headquarters, air army, and airfield—and are under the control of the respective Rear Services chiefs. Common-use items are procured at the Ministry of Defense level for all services and distributed through the military districts from their central supply depots.

The Directorate of Engineering Services at SAF headquarters places orders for the procurement of complete aircraft with the Ministry of Aviation Industry, and is responsible for the acceptance, inspection, and allocation of these aircraft. Spare parts kits are provided with each aircraft delivered from the factory. These kits include all spares and special tools required for normal maintenance up to overhaul, at which time the kits are reissued. Individual item requisitions are thus limited to replacing parts that fail, malfunction, or are damaged before expiration of their guaranteed service life.

Maintenance and repair of aircraft and associated technical equipment are the responsibility of the Directorate of Engineering Services. At SAF headquarters, the duties of the Director, also known as the Chief Engineer of the Air Forces, encompass supervision of all Aviation of Engineering Services personnel and facilities, in addition to formulating aircraft maintenance policies and procedures in conjunction with the Ministry of Aviation Industry. The Director has a counterpart at every level of the air forces, down to and including the regiment. Each echelon in the chain of command is responsible for inspecting its subordinate units and insuring that these maintenance policies and procedures are strictly enforced.

Aircraft maintenance is performed at the regimental level by both squadron mechanics and regimental specialists, at division-level repair shops, and at major aircraft repair bases. At the regimental level, squadron maintenance personnel are responsible for servicing the aircraft, giving preflight inspections, and eliminating minor defects. The regimental specialists are assigned to Technical Exploitation Units whose responsibilities consist of medium aircraft repairs and periodic inspections. These maintenance personnel are trained to work with mobile or portable tools and ground support equipment, and frequently work on aircraft parked in the open. They are accordingly capable of moving quickly to other airfields without degrading their effectiveness.

Division-level maintenance specialists primarily perform intermediate-level maintenance, i.e., minor modifications and repairs which are more extensive and time-comsuming than those performed at regimental level. Major aircraft maintenance and overhaul are accomplished at the aircraft repair bases which are under the control of the air army.

The SAF rear organization has proven effective in peacetime and should be adequate to support operational air units in a short conventional or nuclear conflict. The Soviets have placed great emphasis on providing adequate stocks of POL and ammunition in the forward areas where conflicts are likely to occur.

The aircraft maintenance system, encompassing the performance of minor or routine regimental maintenance at the operational airfields, with major maintenance and overhaul being accomplished at

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selected repair bases, eliminates the need for the dispersal of extensive maintenance facilities and highly trained specialists. This lack of specialized equipment and personnel at the operational level might well, however, prove detrimental to the SAF combat capability in a sustained wartime environment.

2. Soviet Strategic Defense Forces

Soviet Strategic Defense Forces (PVO *Strany*) are charged with the strategic air and missile defense of the U.S.S.R. The system consists of aircraft control and warning radars manned by Radio Technical Troops (RTV-PVO), SAM sites manned by Surface-to-Air Missile Troops (ZRV-PVO), air defense aircraft manned by Aviation of Air Defense (APVO), and possibly the ABM sites manned by the Antiballistic Missile Troops (PRO/PVO). Although PVO *Strany* has improved means of handling defense threat data, it would have great difficulty in coping with large-scale air and missile attacks which employed a variety of weapons and sophisticated tactics. The capability of intercept aircraft and air-to-surface missiles decreases with the altitude, and at very low altitude is limited by the line-of-sight coverage of ground radars and by the difficulty of tracking a target and interceptor through ground clutter. Generally, in the western U.S.S.R. and the approaches to major military industrial centers, the air surveillance network is capable of maintaining a continuous tract of aircraft flying down to about 1,000 feet. Some specially mounted radars may give a coverage capability down to 500 feet or less. In areas of less dense coverage, Soviet radars are unlikely to be able to accomplish continuous tracking of aircraft below 3,000 feet. The only ABM system, the ABM-1b/GALOSH, is located around Moscow and its capabilities are limited to protection from only small-scale unsophisticated attacks. (S)

a. Organization (S)

PVO *Strany*, an operational and administrative command, implements coordinated air defense plans involving all appropriate elements of the armed forces and supervises operational training and effectiveness. PVO *Strany* headquarters includes offices for administration, political affairs, personnel, research and development, training, and a main staff; their precise organizational status is not known. There is also a military council, probably for the development of plans and policies, which apparently consists of the commander in chief and his deputies.

The U.S.S.R. is divided into 10 air defense districts, which are subdivided into zones and sectors. District commanders coordinate air defense operations, but weapons are assigned at lower levels.

b. Strength, composition, and disposition[9] *(S)*

There are about 475,000 persons in the air defense forces. Of this number about 85,000 are in Aviation of Air Defense, 90,000 in air control and warning radar, and 300,000 in the SAM system.

There are about 2,700 interceptors in Aviation of Air Defense concentrated mainly in the European U.S.S.R., although large numbers of fighters are deployed in industrial and military areas throughout the U.S.S.R. Most of the FIREBAR aircraft (Yak-28P) (Figure 38) are assigned to APVO. The long-range interceptor, FIDDLER (Tu-128), is operational in the Moscow, Northern, and Trans-Siberian air defense districts. The short-range interceptor, FLAGON (Su-15) (Figure 39), is operational in all air defense districts. The Mach 3 high-altitude FOXBAT (Mig-

[9]For current information see *Soviet Aircraft Order of Battle* (AP-240-2-4 series), published by the Defense Intelligence Agency.

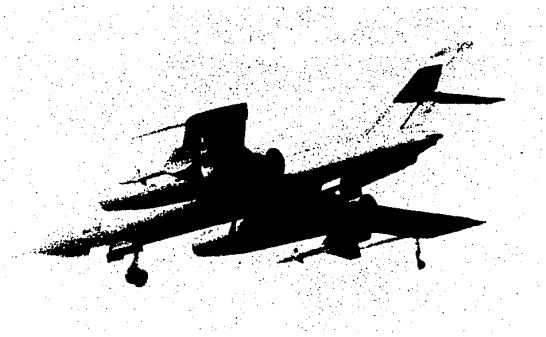

FIGURE 38. Aviation of Air Defense FIREBAR (Yak-28P) (S)

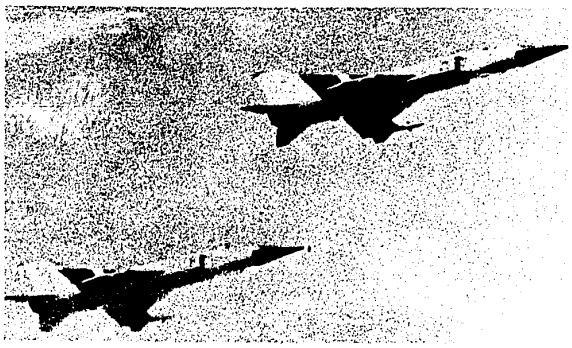

FIGURE 39. Aviation of Air Defense FLAGON A (Su-15) (C)

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25) (Figure 40) was first deployed to an APVO regiment in mid-1970. FOXBAT is now operational at four APVO bases in the Western, Moscow, Baku, and Sverdlovsk Air Defense Districts. An airborne warning and control aircraft, MOSS (Tu-124) (Figure 41), is employed in limited numbers over water and in conjunction with long-range interceptors.

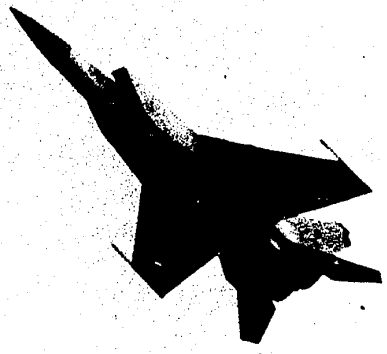

FIGURE 40. Aviation of Air Defense FOXBAT (MiG-25) (C)

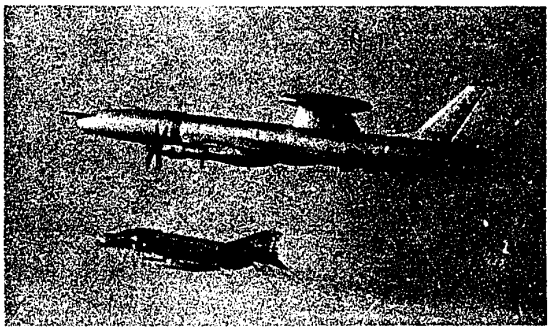

FIGURE 41. Aviation of Air Defense MOSS (Tu-124) (U/OU)

FIGURE 42. FARMER (MiG-19) employed in Aviation of Air Defense and in Soviet Tactical Aviation (S)

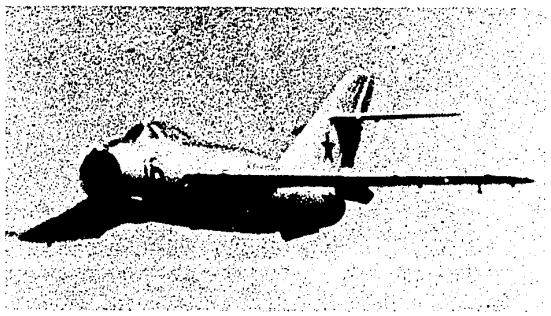

FIGURE 43. FRESCO (MiG-17) employed in Aviation of Air Defense and in Soviet Tactical Aviation (C)

In the U.S.S.R. the FARMER (Mig-19) (Figure 42) and the FRESCO (Mig-17) (Figure 43), in both day-fighter and all-weather versions, are being phased out of APVO.

Four SAM systems provide air defense protection of vital areas within the U.S.S.R. The SA-1/GUILD is deployed only in the Moscow area, where there are 56 sites. There are about 1,040 SA-2/GUIDELINE sites in the U.S.S.R., of which about 640 are believed to be occupied on a more or less permanent basis. The SA-2 (Figure 44) is widely deployed in the Soviet Union and

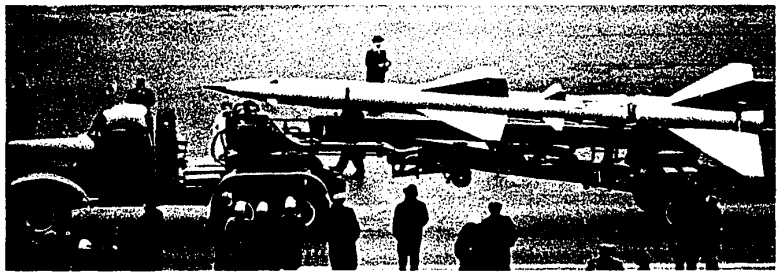

FIGURE 44. GUIDELINE (SA-2) surface-to-air missile (S)

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other Communist and non-Communist nations. There are about 240 SA-3/GOA sites in the U.S.S.R., most of which are believed to be occupied on a more or less permanent basis. The SA-5/GAMMON system is deployed at about 105 complexes (a complex may consist of from one to five firing sites). About 90 of these complexes are believed to be operational, with 15 under construction. The system is a long-range high-performance SAM, deployed to counter a high-speed, high-altitude aerodynamic threat, and is considered unlikely to have an ABM role, although this possibility cannot be excluded. Evidence has been available for several years that the Soviets have been developing antimissile-missile systems. The ABM-1/GALOSH antiballistic-missile system (Figure 45) is being deployed around Moscow and furnishes a limited defense of the Moscow area.

There are more than 4,500 ACW radar sets deployed in about 1,000 sites within the 10 air defense districts of the U.S.S.R. TALL KING (Figure 46) is a long-range early warning radar. BAR LOCK (Figure 47) is the most numerous early warning radar in the Soviet inventory, and when collocated with a height finder it often functions in a ground-controlled interception role. SIDE NET (Figure 47) is the most widely deployed Soviet height finder, and ODD PAIR (Figure 48) is the newest.

c. *Training* (C)

Operational training aims at the effective integration of the various components and other contributing forces into the overall system. Training emphasizes practice in the specialized procedure of the particular components as well as exercises involving the overall system

d. *Logistics* (S)

The various components—aircraft, surface-to-air missiles, radar—that make up the air defense system are supported by the Chief of the Rear and by the parent organization, i.e., aircraft by the Soviet Air Forces, surface-to-air missiles by the Soviet Ground

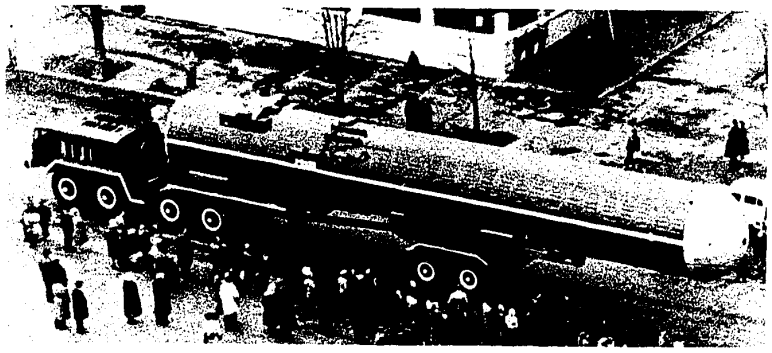

FIGURE 45. GALOSH (ABM-1) antiballistic missile (C)

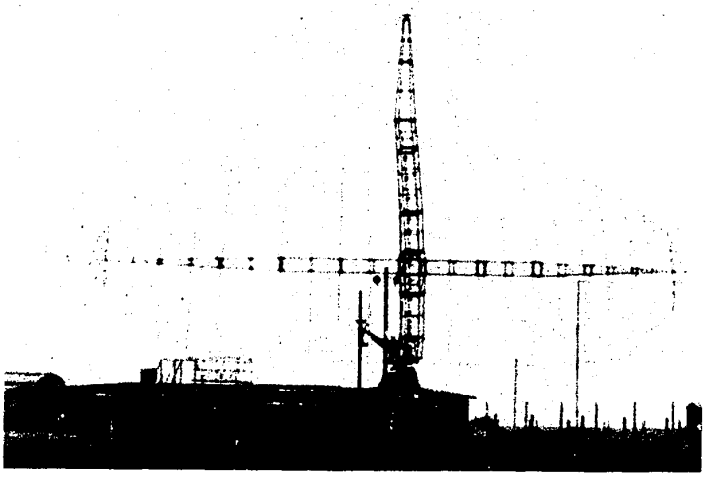

FIGURE 46. TALL KING early warning radar (S)

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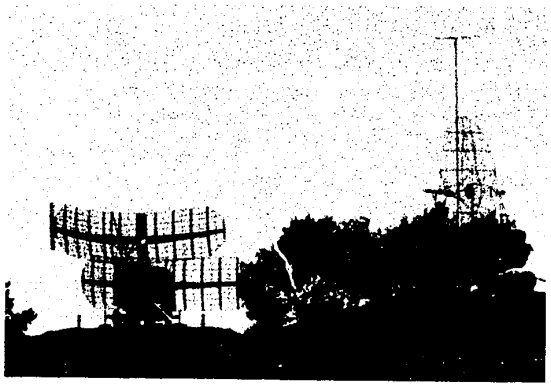

FIGURE 47. BAR LOCK early warning radar (left) and SIDE NET height-finder radar (C)

Forces, and ACW radar by both ground and air forces, since members of both services are employed in this field.

F. Rocket troops (S)

The Soviet Strategic Rocket Troops (*Raketnyye voyska Strategicheskogo Naznacheniya*) constitute the main strategic striking force of the U.S.S.R. The primary mission of this force is to destroy the enemy's means of nuclear attack, main governmental and military control centers, and important industrial concentrations. Constituted in 1960 as a separate force on a command level with ground, navy, air, and air defense forces, the Strategic Rocket Troops function as one of the instruments in support of Soviet foreign policy, form the main deterrent force, and enable the Soviets to employ the element of maximum surprise in intercontinental strikes.

1. Organization

The Commander in Chief of the Strategic Rocket Troops is responsible for the organization and administration of the organic forces and weapons systems of the command and for implementing operational policy formulated by high authority. Army General V. F. Tolubko is Commander in Chief of the Strategic Rocket Troops. The headquarters probably consists of the commander, a main staff, and directorates for political affairs; engineering; inspection; rear services; equipment, including technical services and special armament; and combat training.

The Main Staff develops operational plans for the Commander in Chief of the Strategic Rocket Troops. It includes sections for planning and operations, intelligence, budget and fiscal, personnel and mobilization, communications, and transportation. The Political Directorate, subordinate to the Main Political Directorate of the Soviet Army and Navy, is responsible for the orientation and indoctrination of

FIGURE 48. BAR LOCK early warning radar (left) and ODD PAIR height-finder radar (C)

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rocket troops in Communist ideology. Its control is projected downward through subordinate echelons. The Chief Engineering Directorate is probably responsible for supervision and coordination of launch site construction and maintenance. The Chief Inspectorate administers the inspection system and monitors all aspects of combat readiness and efficiency of the Strategic Rocket Troops to insure compliance with directives. The Rear Services Directorate of the Strategic Rocket Troops probably performs functions similar to those of its counterpart at the Ministry of Defense level, administering the procurement and distribution of common-use items, probably through several depots conveniently located with respect to the deployed forces.

The Missile Troop Equipment Directorate is unique to the Strategic Rocket Troops. In addition to the management of items in the strategic missile inventory, it also controls all associated ground-support equipment, as well as components and maintenance parts. Its responsibility with respect to strategic missiles is comparable to that of the Main Missile and Artillery Directorate with respect to tactical missiles. Coordination between the Missile Troop Equipment Directorate and the Main Missile and Artillery Directorate is effected at the Ministry of Defense level. It is probable that the Special Armaments Service, which is the supply channel for equipment and maintenance down to battalion level, is subordinate to the Missile Troop Equipment Directorate.

The Chief Directorate for Combat Training is responsible for setting standards of technical training and combat efficiency of troops, including live training exercises at the range. It supervises implementation of the annual training plan in all headquarters, units, and installations, including a number of combat training schools. Final responsibility for troop training, however, is at the regimental level.

ICBM operational units are located at 26 launch complexes, widely deployed along major railroad systems from the Moscow-Leningrad area to the Far East. In addition, there may be some units at the Plesetsk and Tyuratam Missile and Space Test Centers which could have an operational role. Each complex is considered to be a division, and may be operationally subordinate to Strategic Rocket Troops. Army or independent corps echelons are believed to exist, primarily for administrative purposes.

Each complex (division) controls its subordinate units (regiments, possibly, and battalions and batteries) and provides the fundamental administrative and housekeeping services basic to a parent unit. At soft complexes or parts thereof, each launch pad is probably of battery level; each two-pad soft launch site probably constitutes a battalion. Echelons at hard complexes or parts thereof are less well defined. The SS-13 (SAVAGE) intercontinental ballistic missile is shown in Figure 49; this missile is among the types currently deployed.

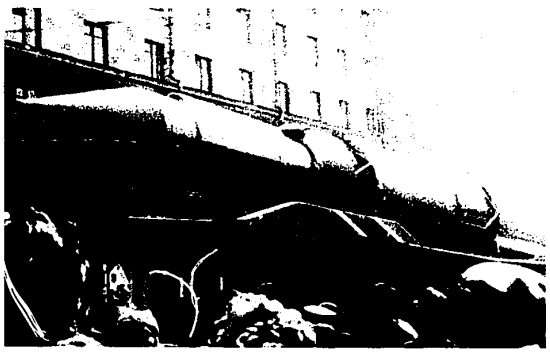

FIGURE 49. SAVAGE (SS-13) intercontinental ballistic missile (S)

The IRBM and MRBM force is organized into missile armies, divisions, regiments, battalions, and batteries. Each launch pad is believed to be of battery level. A complex of two or three IRBM or MRBM sites comprises a regiment which is considered the basic command unit or field launching authority under the direct operational control of Strategic Rocket Troops headquarters at Moscow. Battalions and batteries function as component parts of the regimental command and are completely under regimental control. The role of the IRBM and MRBM armies and division headquarters appears to be primarily coordination of administration, planning, supply, and training. However, in the event of an alert or actual launch of missiles, these intermediate commands may also perform an operational role in that they authenticate alert and launch orders from Strategic Rocket Troops headquarters and serve as centers for assessment and evaluation of the launch units' accomplishments and current status.

The relationship of the strategic missile units to the long-established military district system is similar to that of units of other components of the armed forces. While the launch units are operationally subordinate to the Minister of Defense through headquarters of the Strategic Rocket Troops, the military district commanders function in special administrative and supply roles, such as procurement and warehousing of common-use supplies and equipment. In addition, Strategic Rocket Troops units with appropriate

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weapons systems might be called upon, in certain circumstances, by military district commanders to render support.

2. Strength, composition, and disposition

The personnel strength of the Strategic Rocket Troops has increased steadily since its creation as a separate force in 1960. Total personnel strength is believed to be about 375,500, of whom some 300,500 are assigned to operational units, with the remainder in support and training roles.

Since the inception of the Strategic Rocket Troops, the Soviets have developed and deployed a family of ballistic missiles capable of reaching any potential enemy. The U.S.S.R. now has three categories of strategic ballistic missiles—intercontinental with effective ranges of 2,500 to 6,500 nautical miles (some Soviet ICBM's may be effectively used at ranges as low as 500 nautical miles), intermediate with effective ranges of approximately 2,000 nautical miles, and medium with ranges up to about 1,000 nautical miles. Operational strength in these missiles as of 1 October 1973 is estimated as follows:

Type	Missiles	Launchers
ICBM	1,683	1,549
IRBM	129	87
MRBM	916	496

In the ICBM category, the number of missiles exceeds the number of launchers because the soft sites are estimated to have a refire capability whereas the hard sites do not. In addition to the number of ICBM launchers given above, there are about 100 operational launchers which are ordinarily used for training and research but are suitable for military missile launching.

To date, ICBM deployment has been limited to 26 operational launch complexes within the U.S.S.R. Thus far there is no indication that deployment of this system extends beyond the reaches of rail system support. About 95% of the IRBM and MRBM force has been deployed in western U.S.S.R., with lesser concentrations in southern U.S.S.R. Hardened launchers constitute about 90% of the operational ICBM force and about 20% of the IRBM and MRBM forces.

3. Training

The Strategic Rocket Troops training program emphasizes both individual and unit training. Although a number of schools and training centers are utilized, final training responsibility appears to be focused on the regimental and battalion level of combat units. Cadre training, by which experienced personnel impart learned skills to the recruits, is also emphasized.

Preliminary preservice training has been utilized to the greatest possible extent in securing the best qualified personnel. Graduates of military secondary schools are frequently brought into missile units. Other recruits are obtained from artillery academies, air forces technical training academies, engineering and command schools, and the DOSAAF organization. In addition, the Strategic Rocket Troops are receiving an increasing number of recruits who have completed secondary school ROTC-type programs, which have been expanded to include additional technical training.

Officer training for the Strategic Rocket Troops is carried out primarily at the Dzerzhinskiy Missile Engineering Academy, which is under the direct supervision of the Commander in Chief of the Strategic Rocket Troops. The enrollment at this academy is approximately 2,500, and graduating classes number from 450 to 600. Two courses are offered at this academy—a short course of 9 to 12 months, and one of 5½ years. Selected graduates from the first course are chosen to attend the second. Most graduates of the academy are assigned to the Strategic Rocket Troops, although some go to ground forces tactical missile units. Some graduates of the Artillery Command Academy in Leningrad go to the Strategic Rocket Troops, although this academy is mainly concerned with the training of tactical missile technical officers.

An unknown number of enlisted personnel assigned to the Strategic Rocket Troops are selected for specialized training and attend programs of instruction at military engineering and artillery schools. Courses in armament, instrumentation, electronics, and engine and airframe maintenance, varying in length from 6 to 18 months, are given these enlisted personnel. In addition to schools, enlisted specialists are sometimes detailed to missile factories for specialized technical training.

Unit training occupies an important role in the missile forces. In fact, for most of the rocket troops unit training under experienced officers and noncommissioned officers probably provides the greatest percentage of training. In the Strategic Rocket Troops the period between the original assignment of a unit's cadre until the deployment of the unit at full strength may last as long as a year. After a unit has been activated, it begins a training cycle known as integrated weapons system training. During this

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period personnel qualified in individual specialities are combined and trained as a unit in the sequential duties necessary to launch a ballistic missile. This training is conducted at special training bases, missile test ranges, or operational sites. Actual missile launchings are probably not mandatory as part of this program. As units develop a high degree of competence they participate in exercises in order to perfect the methods and skills required in deploying ground equipment, preparing it for operation, and launching missiles. Certain of these training exercises include actual launch operations. Another feature of unit training is combat support operations, including training of personnel in guarding missile sites against sabotage and agent penetration.

Since its inception in 1947, the Kapustin Yar Missile Test Range has been the scene of missile training activity for missiles of less than intercontinental range. Actual firings of missiles include those by operational units returning to the range for "confidence firings."

Crew training of ICBM personnel is conducted at the Tyuratam Missile Test Center and at the Plesetsk Missile and Space Center, at various special training centers, and at the operational missile sites.

Before an operational rocket troops unit can enter combat duty it must be certified as operationally ready by meeting a specified level of proficiency as determined by an evaluation group responsible to the commander in chief. Once a crew has been certified as capable of performing its combat mission, it may be assigned to perform an actual proficiency firing. In some instances operational units conduct live launchings from their home bases.

4. Logistics

Logistic functions of the Strategic Rocket Troops are the responsibility of the Missile Troop Equipment Directorate. However, actual fabrication of missiles and components is accomplished at plants under the direction of the Ministry for Defense Industry.

ICBM complexes are believed to contain a division supply depot while IRBM and MRBM complexes contain a regimental-level supply depot, each complete with large reserve stocks of supplies for support of launch sites.

Responsibility for supply and maintenance of launch units is believed to be divided among several organizations. Special Armament Service personnel are responsible for the supply and maintenance of missiles and associated equipment except the reentry vehicle and warhead. They are assigned to all echelons down to battalion. They operate the inspection and maintenance vehicle station, a facility capable of field and unit-type maintenance on specialized missile-handling equipment, and provide on-the-job training to launch crews on utilization of equipment and minor maintenance.

Repair Technical Base personnel—attached to operational launch units—supply, maintain, and assemble reentry vehicles, including nuclear warheads. Committee for State Security (KGB) personnel retain security control over nuclear warheads.

Technical Services personnel, under the administrative and technical control of the Central Motor Vehicle-Tractor Directorate, Ministry of Defense, are responsible for the procurement and maintenance of heavy equipment, including all types of rigging, cranes, and construction equipment, but excluding missile transporters and special propellant carriers.

The Engineering Directorate has responsibility for the installation and maintenance of launch and control equipment and for auxiliary facilities.

A deputy commander for the rear at each echelon down to regiment is responsible for the procurement, storage, supply, and transportation of quartermaster and medical supplies.

The Soviets depend primarily on their rail system to support their strategic launch complexes, on a complex-by-complex basis. Air transport serves in a backup and emergency support role.

Supply and maintenance echelons in the Strategic Rocket Troops are believed to go down to battalion level. At the regimental level after the missile has been inspected, assembled, and checked by the Special Armament Service, and a reentry vehicle has been attached under the direction of Repair Technical Base personnel, responsibility for keeping the weapon serviceable belongs to the launch battery. It is believed that when maintenance problems arise which cannot be handled by the Special Armament Service and the Repair Technical Base, the components involved are shipped back to repair plants under the control of the Missile Troop Equipment Directorate.

Maintenance personnel usually are selected for assignment to a strategic missile organization after completion of an initial training period at a service-connected secondary technical school. It is believed that there are unit schools within operational missile launch complexes for the special training of personnel, and that the everyday work of subunits is constituted in large part in the operation of missile equipment.

It has been demonstrated that the Soviet Union has the capacity in many technological fields to produce original and advanced designs. A strong tendency to go along with proven equipment also is apparent. As a

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result, specifications on many items in the U.S.S.R. are more uniform than in the United States. Furthermore, the Soviets produce simple and often more rugged equipment than that used in the United States, leading to more simplified maintenance procedures.

The supply and maintenance programs within the Strategic Rocket Troops are characterized by highly centralized organizational control and rigidly defined duties and responsibilities. The tightly knit organization enables the Soviets to direct priority support and distribution of essential materials as warranted in the development of their strategic missile force. From the Soviet point of view the supply and maintenance systems are capable of performing the tasks assigned.

G. Militarized security forces (S)

The security forces constitute a force of an estimated 250,000 men. These forces are divided into two major groups—Soviet Frontier Troops, estimated at 175,000, and Soviet Interior Troops, estimated at 75,000.

Enlisted personnel are conscripted on the same basis as personnel for the army and the navy. At the annual callup, security troop officers sit with the local draft board and select conscripts for the security troops. Selection is made after consideration of political reliability, social background, education, and general physical health. This selection and the subsequent training provide a force composed of troops who are well prepared for their specific tasks, reliable, and devoted to duty.

Basic training acquaints recruits with the forms and methods of hostile activity engaged in by the "enemies of the people" and with foreign espionage. Recruits for the frontier troops receive special training in patrols, traps, ambushes, search groups, and border picket duties, while interior troops receive special training in making individual, group, and mass searches of persons, buildings, and populated localities as well as in rounding up, arresting, and convoying prisoners. About one-fourth of the instruction time during basic training is devoted to political training. After basic training, recruits receive additional training with their units, and selected enlisted men may take special courses at special training centers and service schools. Each frontier district normally has a noncommissioned officer school. Frontier troops have their own officer candidate schools. No information is available on special officer candidate schools for interior troops. Senior officers are trained at a special institute for security troops in Moscow and at the Moscow Frontier Troops School for the Advanced Training of Officer Personnel.

The supply system for the militarized security forces is probably under the supervision of the Ministry of Defense's Chief of the Rear, who reportedly acts through military district channels after receiving projected supply requirements from the Moscow headquarters of the particular security troop agency.

1. Frontier troops

The Main Directorate of Soviet Frontier Troops, under the Committee for State Security (KGB), is responsible for the prevention of unauthorized entry into or exit from the U.S.S.R., defense of the border against sudden armed attacks, maintenance of general security control of the frontier populace, prevention of smuggling, and patrolling of offshore waters.

The Main Directorate has eight staff sections to support and exercise general supervision over the seven border districts or operational groups. The Personnel Directorate plans mobilization and training. The Operations Directorate controls border security, develops operational plans, and designates emplacement of guard posts. The Counterintelligence Directorate directs counterintelligence activities among frontier troop personnel. The Political Directorate is responsible for the promulgation of party policy and Communist doctrine among frontier troops. The Intelligence and Agents Section is responsible for gathering intelligence on the frontier zone. The Investigations Section investigates, in conjunction with the Counterintelligence Directorate, all political, military, and criminal charges placed against frontier troops. The Communications Section is responsible for conducting communications intelligence operations against frontier zones of neighboring countries. The Department of the Rear plans and procures supplies.

Each frontier district or operational group is responsible for an established sector of the border. The degree of physical security precautions taken and the strength of the frontier troops committed to the sector depend on the degree of friendliness of the country facing the frontier and the importance of the Soviet installations within the area. Subordinate to the frontier district or operational group, which is usually commanded by a major general or lieutenant general, are frontier detachments, and in some cases separate *komendaturas* and an air regiment. In coastal areas sea guard squadrons, which are patrol vessel units of *komendatura* strength, are subordinate to the frontier district and may be attached to the frontier detachment for operational control. Frontier

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detachments range in strength from 1,000 to 2,000 men and are usually commanded by a colonel or lieutenant colonel. Each is usually composed of three to seven *komendaturas*. These may be supported by a reserve group and, for cavalry patrol units, a cavalry remount squadron. The frontier *komendatura*, commanded by a major or lieutenant colonel, has a strength ranging from 200 to 500 personnel. It is the basic tactical unit of the frontier detachment. Subordinate to the *komendatura* are three to seven infantry or cavalry outposts with a strength of 30 to 65 men.

Frontier troop units make defense plans to include anticipated routes of enemy attack; proposed deployment and commitment of local troops; support required; and evacuation plans for the wounded, dependents, and classified documents. Joint plans are also worked out between the ground forces and frontier troop units. Some plans provide that upon notification of attack the nearest division commander designates troops to be at the disposal of the *komendatura* commander. After the division commander deploys his troops and they make contact with the enemy, the division commander assumes command of the area and all troops. When the situation is stabilized, or upon orders from higher headquarters, the frontier troop unit is relieved to assume its role of rear-area defense. In this role, as in World War II, frontier troops would form a continuous and mobile protective band, echeloned in depth, responsible for defense against airborne troops; road and railroad security; military traffic control; security of military depots and storage areas; holding fleeing Soviet troops; apprehending terrorists, saboteurs, and spies; general maintenance of order; and the supervision of the evacuation of civilians from critical areas in cooperation with the interior troops.

2. Interior troops

The Soviet Interior Troops include the internal security troops, the internal and convoy guards, and the government signal troops.

Internal security troops are operational units responsible for suppressing dissident and subversive elements, quelling revolts and strikes, and controlling the civil populace in the event of disaster. They are organized into divisions and separate regiments of from 1,650 to 2,000 men each. Their weapons and equipment are similar to those of comparable units of the ground forces. Relatively small detachments are used for guarding important installations and government buildings. These troops are subordinated to the ministries for maintenance of public order of the constituent republics in which they are located.

Internal and convoy guards are responsible for the guarding of labor camps, prisons, work parties, and prisoners in transit. Convoy troops are normally organized into regiments, battalions, and companies. The guards are subordinated to the ministries for maintenance of public order of the constituent republics in which they are located.

Government signal troops are responsible for the installation, maintenance, and security of communication facilities (telephone and telegraphy) between Moscow and high-level headquarters such as military districts and groups of forces. They are organized into regiments of approximately 1,000 men and are subordinate to the Committee for State Security (KGB).

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