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THE SOVIET HIGHER MILITARY EDUCATIONAL SYSTEM

Jack L. Cross

THE TEXAS ENGINEERING EXPERIMENT STATION
THE CENTER FOR STRATEGIC TECHNOLOGY
THE TEXAS A&M UNIVERSITY SYSTEM

The Soviet Higher Military Educational System

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TABLE OF CONTENTS

FOREWORD

Studies of the Soviet military have, over the past few years, undergone an interesting metamorphosis. In the early years, the view persisted that the Soviets saw the world as does the U.S., wants the same things in the world, and responds as we do to international events. Moreover, as the technological domination of the military grew on both sides, it was believed that the technology would force, if not the same organizational structure, at least the same decision-making and behavioral patterns.

Recently, as evidence accumulated that the Soviets do not, in fact, think as we do, there has been great interest in research which seeks to look inside the Soviet military and to learn about its organizations, the men and women who populate them, their behavioral patterns and their educational programs.

This study by Dr. Jack Cross seeks to illuminate a small but significant area of the Soviet military educational system which is an interesting and impressive array of institutions, one not understood by many Western observers.

Research of this type has been encouraged and supported by two remarkably farsighted men, Mr. Andrew Marshal of the DoD Office of Net Assessments and Mr. William Manthorpe of the Office of Navy Net Assessments. We are grateful to them both.

Richard E. Thomas
Director
Center for Strategic Technology

PREFACE

Brief as they are, the two articles by Christina Shelton and Jill E. Heuer on Soviet military higher education in the March 1981 issue of Air Force Magazine are two of the best articles on that subject to appear in the Western press.[1]

There is general agreement between them, but some differences remain in the thrust of interest and in resulting classifications. Ms. Heuer's concern with scientific and technical military personnel led her to a slightly different emphasis and classification. Ms. Shelton's research focused on officers as a group, thus on the whole system of "Commissioning." Both authors accomplish more than a concentration on the military institutions of higher education themselves.

Both worked with the basic catalogue of the "system" Soviet Military Schools (DDB-2680-52-78), DIA 1978, (unclassified)--in itself one of the more current compendia of Soviet military educational institutions.

Nowhere in available Soviet military literature is there a published definitively complete listing and description of all Soviet higher military institutions in one volume. But, over the years a number of them have been written about--sometimes in rather tedious detail.[2]

Shelton and Heuer identify between 136[3] and 169[4] higher military schools, academies, institutes, "courses," and the General Staff Academy in the Soviet Union. Various other authors list differing numbers of institutions.[5] This research sets the current number of higher military educational institutions at 176.

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[1]Christina Shelton, "The Soviet System for Commissioning Officers," Airforce Magazine, March 1981, pp. 55-60.; Jill E. Heuer, "The Role of the Soviet S&T Officer," Airforce Magazine, March 1981, pp. 61-65.

[2]The most definitive work of this kind was published in 1972. See I.A., Kamkov and V.M. Konoplyanisk, Voenniye Akademia i Uchilischa Dlya Tech, Kto Hochet v Nik Uchitsya. Spravki, sovyet. M Voyenizdat, 1972, 310 pp. Each year, Krasnaya Zvezda publishes a list of "Commissioning Schools" with a brief description of entry requirements. See Appendix I in this study for the 1981 listing.

[3]Heuer, op cit., p. 63.

[4]Shelton, op cit., pp. 56-60.

[5]See David R. Jones, Soviet Armed Forces Review Annual, Vol. 4, 1980. This is an "updated" listing based on H. Fast Scott and W.F. Scott, The Armed Forces of the USSR, Boulder, Colorado, 1979, pp. 337-372.

The point is, that for a society dedicated to the triumph of a socialist state with all that implies for a levelling of classes, one of the great ironies of the past 60-odd years of its existence is that the Soviet Union has created the largest and most complex system for producing officers, and providing advanced training for military officer cadres, of any nation in the world's history.

In the early period of their development the military schools were open to a wide assortment of applicants. Gradually entry has been narrowed to include the best connected, talented, and carefully selected individuals. This is particularly true for those with high technical aptitudes and abilities--a result in part of the continuing technological revolution which has occurred and continues to occur in all modern armies since World War II.

The accomplishments of the Soviet military educational establishment is truly epochal. When one considers the decimations of the Revolution, the purges of the 30s, the terrible loss of men and officers in World War II--that despite all these setbacks--the Soviet system could continue to build and maintain such a complex system of military schools is mind-boggling. This is far-fetched to Western observers for whom military service is sometimes considered a civic virtue and duty, but nowhere thought to be a passionate necessity.

There is a singular purpose and intent in the Soviet military officer training system. I say "training system" because a review of the institutions themselves shows at once how specialized each one is. Military specialization leads to training; education involves broader experience and thought.

I emphasize that the Soviet military educational system is not static. It is extremely dynamic; it serves a function of distinction. It provides a national laboratory for experimentation by military and political leaders for social, political, and military control--an aspect of Soviet life not clearly understood in Western societies.

The Soviet military system is different from Western counterparts. This study is an effort to explore some of these differences.

I must thank a number of people who have made this study possible: Bill Manthorpe of Naval Net Assessments, Andy Marshall of Net Assessments/Office of the Secretary of Defense, Jim Westwood for his editorial suggestions, John Erickson and Dick Woff for their comments, Dick Thomas for his unflagging support, and Sandy Segal and Melinda Lindsay for their preparation of the manuscript. Errors of omission and commission are mine.

Jack L. Cross
Research Associate

College Station
1982

CHAPTER I
BUILDING the SYSTEM

Creation of "New" Schools

The October Revolution, which brought the Bolshevik Communist Party to power in the Soviet Union in 1917, broke with past military affairs. Lenin and his party wanted to establish "new" armed forces, dedicated to the defense and establishment of the "new" socialist state.

Lt. General I. Magonov, head of the Higher Combined Arms Command School (Moscow) in an article in The Military Herald in December 1977, described the change as far as military higher education was concerned:

> ...in November 1917 the People's Commissariat for Army and Navy Affairs abolished the cadet schools, warrant officer's schools and cadet corps and made the decision to create new Soviet military educational institutions: military schools, short courses and military academies. And a directive dated 6 November 1917, signed by N. Krylenko, prescribed the following: to provide command personnel, propose to the regimental committees through staffs of fronts and armies to submit lists of comrade soldiers who filled positions and took part in battles by recommendation of regimental committees, for entry into short command courses, the regulation of which will be elaborated as a supplement... .[1]

Thus, the restructuring of the new Soviet officer cadres began with courses like the "Vystrel," and the Central Artillery Officers' Courses leading the way.

In all, from November 1917 to the end of 1929, some 39 institutions of military higher education were established. A number of these schools served apprenticeships as "middle" military schools until the 1950s, and after. In the 1950s, four of these schools were upgraded or changed their roles; in the 60s, fifteen schools were elevated to a higher status; and, in the 1970s, ten schools were designated as "higher" schools.[2]

In the 1930s another 26 military schools were created. Again, some of these (12) continuing virtually unchanged in role and scope, while 14 went through various stages of development ending in their designation as "higher" schools with enlarged or changed functions. One of these schools was elevated to higher status in the 50s; four in the 60s; and eight in the 70s.[3]

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[1]Lt. General I. Magonov, "Oldest Forge of Cadres," Voyennyy Vestnik, hereafter, V.V., December 1977, p. 40. microfiche.

[2]The list of schools established between 1917 and 1929, including those upgraded after World War II, is given in Appendix A.

[3]For a list of schools founded in the 30s and upgraded subsequently in the 50s, 60s, and 70s, see Appendix B.

Prior to and during World War II the Soviets established 20 new schools during a period of almost absolute chaos--a time when students and faculty alternated between study and combat--a time when their institutions moved beyond the range of enemy troops and guns. Of these 20, one was elevated to a higher status in the 50s; seven in the 60s; and four in the 70s.[4]

Following World War II, in the 1950s, the Soviets created only eight new schools, of which two were given "higher" designations in the 1970s.[5]

The greatest number--51--of new higher military educational institutions was established by the Soviets in 1960. Of these 51, fifteen were upgraded to "higher" levels in the 1970s.[6] Twenty-one institutions were created in the 1970s.[7]

As the 1980's approached, this brief review of the establishment of the "new" Soviet military educational institutions comprised of military schools, short courses and military academies shows that since the Civil War, the Soviet leaders have built or established 176 institutions and/or programs to provide educated and trained officers for its military forces.

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[4]For a list of schools created in the 40s, see Appendix C.

[5]See Appendix D for schools created in the 1950s.

[6]See Appendix E for a list of schools founded in the 1960s.

[7]See Appendix F for schools created in the 1970s.

Structure and Organization

Soviet military higher educational institutions, with a few significant exceptions, are creatures of the particular forces or services of which they are an integral part.

A quick review of the establishment and upgrading process of the institutions during 1917-29 and in the decades thereafter reveals as clearly as any index can, the nature of the Soviet military system. For instance, the 39 institutions first built by the new Soviet dictatorship of the Proletariat, reflected the organization and nature of the armies of that day--a predominance of large ground forces, artillery, tanks, with combined arms as a basic military command principle. There was a deepening awareness of signals, medical services, aircraft, naval developments, topography, supply and internal security. One major uncertainty was the reliability of the military commanders themselves--the officer cadres.

Above all, the Soviets distrusted the Imperial Officer Corps, though they pragmatically used those who would be used. Stalin's pre-World War II officers' purge in the late 1930s, horrifying and stupid as it was, eased this distrust, and the "new" officers in their "new" commands attempted to prepare for war.

By the eve of World War II the Soviets had created some 64 academies and "higher military schools" from which leadership in the war against Germany would come.

Relying heavily in the early days of the Revolution on the "Vystrel" and the Central Artillery Officers' "Courses," the doors of the

Frunze Academy were thrown open to the "new" Soviet soldier-officer. In 1936, after much debate and uncertainty among the new "military collectives" the General Staff Academy began operation. During 1917 to 1940 the kinds of institutions created by the People's Commissariat for Army and Navy Affairs and the Ministry of Defense can be seen in Table I.

The period of World War II was one of chaos for the higher educational institutions. Students and faculty scrambled between school and academy routine to combat and chaos on the fronts. Entire schools were moved to the nation's interior. Almost without exception courses and programs were shortened and classes increased in size. Yet despite all this the Soviets established 22 new schools with greatest emphasis on air defense and air force schools (7); rear services schools (4); and naval schools (3).

The decade of the 50s was the low point of military higher education development in the Soviet Union. During this period only eight new schools were built--four air force schools and four air defense forces schools. It was a time for general recovery, for studying what had happened--a time of deep analysis and review. New military technologies and new weapons required radical changes and new institutions. In a typically pragmatic Russian fashion, the Soviets entered their second fertile period of military institutional building. In the 60s they established 52 new schools and changed the role and scope of and/or modernized the facilities and curricula of 26 other institutions. This process continued into the 1970s with construction of 21 new schools and basic modifications in another 40 institutions.

Under the leadership of Khrushchev and his successor, Brezhnev, both of whom were political officers in World War II, this revolution in institution building and modification occurred. With Brezhnev, in particular, even greater stress was laid on the importance of ideological party work. And, with the establishment of at least ten specialized military political schools and one military-political faculty, the ideological unity of the officer cadres was stressed. The dream of the founders of the "new Soviet military man" received new reinforcement.

The present organizational structure of the Soviet higher military educational system presents a simple hierarchial pattern that looks something like the chart on the following page.

The Bureaucracy of Control

In all, there are currently some 200 top-level Soviet commanders who have the basic resonsibility for the higher military educational establishment in the Soviet Union.[8] These include the top

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[8]For a list of these "top" current military education leaders, see Appendix G. Sources for this listing are primarily from two publications: 1) Directory of USSR Ministry of Defense and Armed Forces Officials, CR80-11888, April 1980, and 2) Jones, David R., Ed. Soviet Armed Forces Review Annual, 4, 1980 Gulf Breeze, Florida; Academic International Press, pp. 46-56.

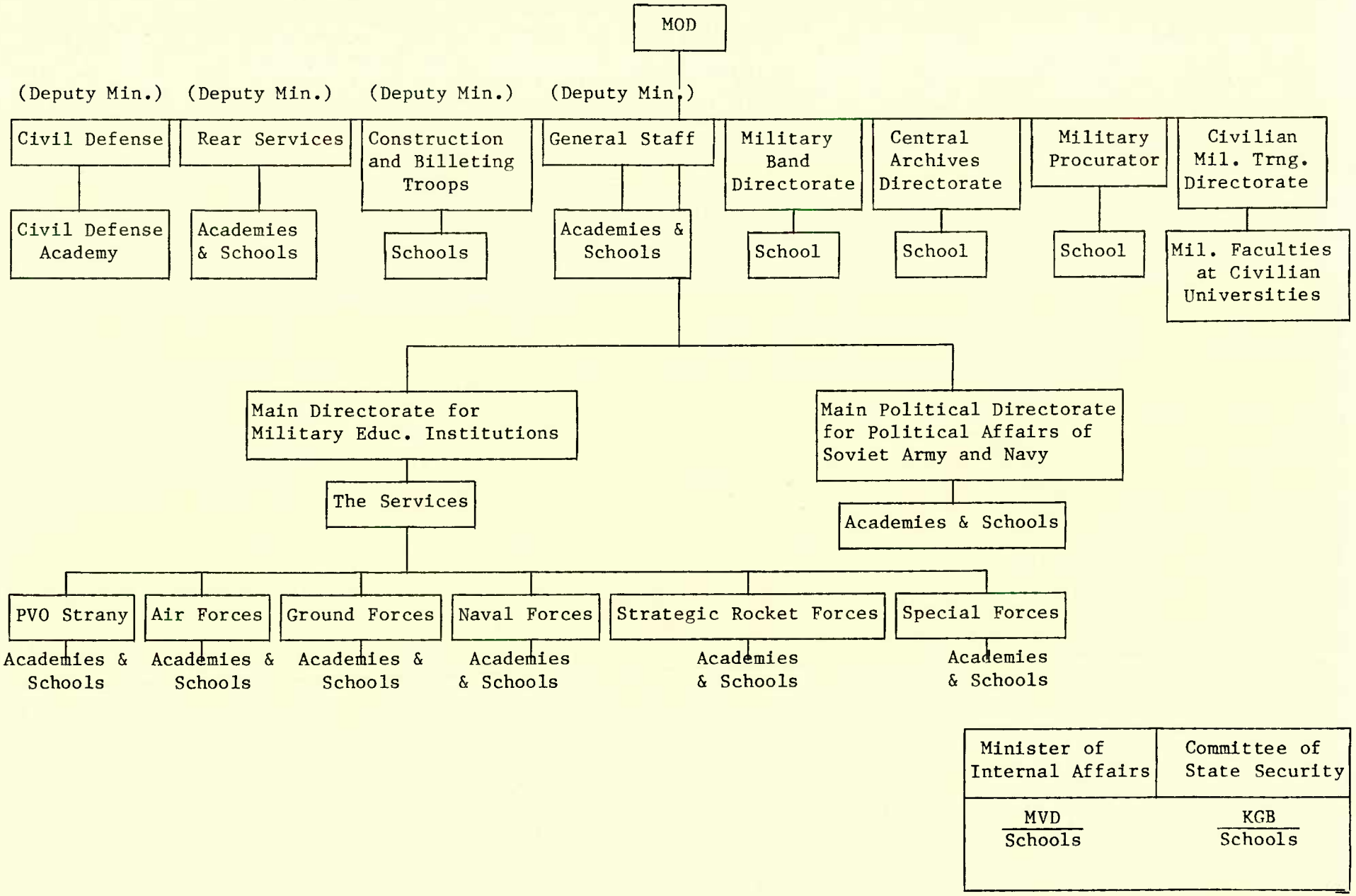
TABLE I

THE CREATION of SOVIET MILITARY HIGHER EDUCATIONAL INSTITUTIONS, by DECADES and SPECIALIZATIONS

	1917-1940	1940-50	1950-60	1960-70	1970-80
Officer Courses	2	2			
All service schools	4	3		1	
Naval schools	5	3		4	
Army schools					
Artillery	9	1		1	1
Engineering	4			4	1
Combined arms and command schools	8	2		4	3
Armored forces	6	1		3	
Signals	5			4	1
Rear services	5	4		3	1
Internal Security	1			1	1
Border guards	2			1	1
Chemical defense and airborne forces	2			1	
Air Force schools	11	2	4	9	1
Air defense forces		5	4	10	2
Civil defense				1	2
Construction and billeting				2	2
Strategic rocket forces				3	
Special forces					3
TOTALS	64	23	8	51	21

GRAND TOTAL - 167 + 9 miscellaneous

OVERALL ORGANIZATIONAL STRUCTURE of the SOVIET
MILITARY HIGHER EDUCATIONAL SYSTEM



staff in the Main Directorate for Higher Military Education at the Ministry of Defense level, the deputy commanders of each of the forces for military higher educational institutions, the deputies for military higher education in each of the 16 military districts, and the chiefs of the higher military education institutions themselves. There has been a close historic relationship between the Minister and Deputy Minister of Defense and the Main Directorate for Military Higher Educational Institutions. Policies developed by the higher organs of the Soviet government are translated very quickly from the Ministry of Defense through the chain of command to the administrations of the schools themselves.

CLOSE TIES: INDIVIDUAL FORCES AND THEIR ACADEMIES and SCHOOLS

If this distribution of the 176 schools, academies, and courses is on track, it is then possible to analyze the various categories of institutions as groups of institutions with common features and problems and to discuss the major differences between the different categories of schools. Features common to all institutions may also be segregated.

In this section, therefore, the categories of the schools of the various arms and specialties from the earliest period of the Revolution when the "new" Soviet officer corps began afresh with "courses" down to the late 70s when new specialists schools were established or older schools elevated to different and/or "higher" purposes will be examined.

The Courses

With the closing of imperial schools and academies by the Peoples' Commissariat for Army and Navy Affairs in 1917, the rebuilding of officer cadres loyal to the Bolshevik cause commenced with the establishment of officer training "courses." The two most important of these which have lasted through the present day were 1) the infantry officers' courses [21 November 1918], and 2) the artillery officers' courses [17 April 1918]. Both have received high recognition for their performance over the years and now carry the names: 1) the Order of Lenin, Red Banner "Vystrel" Higher Officers' Courses imeni Marshal of the Soviet Union V.M. Shaposhnikov, and 2) The Central Artillery, Order of Lenin, Red Banner (twice) Officers' "Courses" imeni Marshal of Artillery V.I. Kazakov.

These courses are often called "Field Academies" and "Forges of Command Cadres" in Soviet military writings. Forges they were. They were born of the necessity to train combat officers in response to desperate need. They were short on theory and long on teaching how to wage war with the weapons at hand. They pioneered methods for determining the "new" Red Army officer. Their faculties were themselves troop commanders who, while not high on "how to teach" knew "what to teach." In fact, this approach of using loyal field commanders to teach was so successful that it was used in the new schools and academies which the Soviet government began opening in rapid fire order from 1918 to 1939.

The Early Academies

From the end of 1917 to 1919, six academies were reopened to new enrollment: 1) the RKKA (Peasants and Workers) Military Academy, later the Frunze, based on the older imperial Nikolayev Military Academy (1918); 2) the Military Engineering Academy, at the end of 1917; 3) the Artillery Academy, February 1918; 4) the Military Medical Academy, Kirov, 1918; 5) the Naval Academy, April 1919; and 6) the Red Army Petrograd Teachers' Institute, later to become a military-political educational institution carrying the name of N.G. Tolmachev, 1919.

The faculties for these institutions were recruited from loyal Civil War red field commanders who were practical, down-to-earth fighters but who, despite their professed loyalty, required "a constant careful check by the party apparatus on their activities."[9] New ways of selecting students for the institutions were also introduced at this time. The military collectives of the military districts, the Revolutionary Military Council of the "armies" and of the "fronts," were asked to nominate combat experienced men who were active politically to attend the RKKA Military Academy (referred to here by Rotmistrov as the General Staff Academy, a function it would perform until the mid-30s). Initially only party members or "sympathizers" representing contingents of the "working intelligentsia" were admitted.

Thus, staffed with combat officers and filled with politically selected field troop officers--after great difficulty--the new schools graduated their first Red officer cadres in March 1920.[10]

Following the Bolshevik victory in the Civil War and the withdrawal of foreign expeditionary forces, the Soviet forces were reduced in size, and efforts were made to strengthen them with ideologically sound proletarians and communists. The nagging fear of further foreign intervention, however, caused an increase in the need for better trained officer cadres. The primary task for meeting this need was given to the higher military schools. They were to produce greater numbers of command, engineering, and political-worker graduates--all with both military and political training, an emphasis which characterizes Soviet military higher education today.

During the 20s, an "Institute of Engineers" was established to train Air Force cadres; the Red Navy Air Force School was reorganized into the Professor N.E. Zhukovskiy's RKKA; the military-political institute was reorganized into the N.G. Tolmachev Military Political Academy to provide political "workers" for senior and higher command echelons; the Military Supply Academy (rear services)

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[9]Chief Marshal of Armored Troops, P. Rotmistrov, "The Establishment and Development of Soviet Higher Military Schools," Voyennaya Mysl', July 1967, pp. 12-27.

[10]Rotmistrov observes that it was necessary in these early days "to draw specialists from among the generals and officers of the former Tsarist schools who were loyal to the Soviet power." Ibid., p. 13.

was made a branch of the RKKA Military Academy; and the Artillery and Engineering Academies were merged into a single RKKA Military-Technical Academy named after F.E. Dzerzhinskiy.

This period of growth and development, according to Rotmistrov, was the "reformation" period of Soviet military higher education. It saw the establishment of two officer "courses," six academies, four "higher" schools, and five military faculties located at civilian higher education institutions. M.V. Frunze was installed as head of the RKKA Academy--later to bear his name. I.E. Yakir headed the RKKA Higher Educational Institutional Administration--the forerunner of the Main Administration for Military Higher Educational Institutions, now in the Ministry of Defense. In 1924, "graduate" work was introduced in the Academies, primarily to teach the newly recruited "field" officer instructors and professors how to teach. The need to improve faculty quality has constantly remained a problem for Soviet military schools.

Attention was shifted to the "Russian" experiences of World War I and of the Civil War from the traditional military science approaches of the Imperial schools. Principles that Soviet battle-experienced commanders had learned were highlighted in educating the new officers for the Soviet armed forces. The RKKA Academy (the Frunze) was charged with not only producing military theoreticians and staff officers but with training officers for regimental and corps commands as well. The study of tactics was made central to all military training, and the schools and academies were ordered to teach those things "necessary to war."[11]

Initially, the faculties in the military schools were forced to use the manuals and textbooks of the old regime. Often these were based on the national military experiences of other countries. They were too theoretical for these new Soviet warrior educators. They did not foresee that a new society demanded a new army commanded by men whose origins were to be from the lower classes of the new society.

In making these changes--Frunze was one of the leaders in this reformation-- the academic program was "infused" with Marxist-Leninist doctrine which was the new "science" governing the approach to all realities--including military. All of the military disciplines which now began their development started from this basic doctrine, and military science, military psychology, military sociology, and tactical and strategic military theory were imbued with this new emphasis--one designed (or intended) to result in unswerving loyalty to and enthusiasm for the party. This was one of the key ways the party used to establish political control over the military, a way which has persisted and grown in intensity to the present day.

Both political and military authorities agreed upon the basic purpose of military higher education: to produce loyal officers capable of leading Soviet forces in combat. To achieve this purpose "concrete subjects of combined arms combat and operations and the utilization of the branches of the

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[11] Ibid., p. 16. USSR Revolutionary Military Council decree, 14 May 1927.

armed forces and combat arms were widely taught.[12]

It was also in this reformation period that "scientific" research work was introduced into the schools with part of its early emphasis on the development of new types of materials and weapons. It was in the 1920s that the basic structures and emphasis of Soviet military higher education were laid.

The Soviets responded to the worldwide depression following 1929 with a renewed dedication to securing and expanding military leadership. To emphasize the enhanced role of the military higher educational system, the Central Committee of the CPSU issued a decree in June 1931, which assigned the military academies and schools the task

> ...of becoming the true leading centers in combat and political [emphasis added] training, in the mastery of equipment, in military-scientific work for the entire military service, and of fully guaranteeing service requirements for a command personnel highly qualified in military, technical, and political relations... .[13]

The first reaction to the decree was the establishment of several new "special" academies, building each on cadres taken from the existing military technical academy [the Dzerzhinskiy]. These academies were: 1) the Military Academy of Mechanization and Motorization--the present Armored Troops Academy; 2) the Artillery Academy; 3) the Military Chemical Academy; 4) the Higher Military Engineering School; 5) the Signal and Electrical Engineering Academy; and 6) the Military Transport Academy.

Simultaneously, enrollments in the Frunze Military Academy, the Military Political Academy and several others were expanded. Another "emergency" device, the military correspondence schools, was created to become a permanent part of the Soviet system of military higher education. Evening and correspondence schools were created at major academies, another instance of Soviet military determination to provide a "system" of military education to train and advance officers in their careers.

In 1935, again resorting to the process of cellular division, faculty cadres were taken from the Frunze to create an institution to provide command personnel for the military supply and salvage services (rear services) and for "technological engineers."

The Soviet General Staff Academy was created in 1936. It concentrated some of the functions initially performed by the RKKA Academy (the Frunze) in the new institution. Thereafter, this institution would become the capstone of the Soviet military educational system--where officers of all the forces would be prepared for the highest levels of command.

During this period, too, the fundamental directions of military higher education in the USSR were set. The USSR Revolutionary Military Council decreed in early 1933 that military schools and academies should create stable educational

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[12] Ibid., p. 17.

[13] Ibid., p. 18.

programs, inculcate practical habits in students and cadets, develop military training along tactical-strategic (theoretical) lines, improve student and cadet mastery of the fundamentals of modern warfare, increase understanding of the technical means of armaments, and improve their abilities to train and educate the troops.[14]

In mid-June 1936, the Central Committee of the Council of the Peoples' Commissars required improvement in the work in military institutions. Defining the types and aims of training for command and engineering officers, the Council demanded the creation of a core curriculum for all schools, including lectures, the teaching of broad scientific and technical subjects, and laboratory practice and application of material learned. The Council also required that, before commissioning, all student officer cadets spend at least a one-year internship with the troops (command), or with industrial production enterprises (technology).* Also emphasized, was a closer tie with the troops in the field; faculty would now be forced to visit troops and participate in maneuvers and in war games--all practices carried on to this day in the institutions. It was during this period also, that the Soviets began to measure the quality of output of the schools and academies by requiring a state examination and a public defense by officer candidates of projects (theses, dissertations). With the creation of "Educational Councils" a major drive was begun to improve the quality of the staff and faculties of the chairs and departments of the schools and academies.

Soviet political leadership looked to the military academies to develop a "modern" theory for waging armed combat (i.e., combined arms) to be incorporated in new military and technical manuals--a work in which Frunze Academy faculty took the lead.

In 1938, the Military-Political Academy was moved from Leningrad to Moscow and named for V.I. Lenin.

As war approached, another reorganization of the military education system occurred, primarily emphasizing, according to Rotmistrov, "the training of the command and technical cadres into line with the demands of the combat practice."[15]

In March 1940, the Red Army Main Military Council issued directives to the academies and schools to develop more accurate definitions of the programs of instruction for the military specialties in which students were being trained, to make an overall review of educational plans, and to improve work schedules. Changes which resulted from this review process gave more time to the study of tactics, "operational skill," and the improvement of work habits of officer-students. As for the cadets studying for commissions,

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[14] Ibid., p. 19. This emphasis has remained to the present day because of inadequate primary/secondary education.

*Emphasis added. Internships would continue and be expanded but later would be largely limited to service with the "troops."

[15] Ibid., p. 21.

the practice initiated in 1936 of requiring a one-year internship with the troops before graduation was re-emphasized, nothing being said at this time about on-the-job internships with industry.

The need for well-trained command and technical cadres of officers was great and enrollments at academies and schools were increased. New schools and academies were created and existing schools given higher status and new responsibilities. For instance, the command faculty, at the N.E. Zhukovskiy Academy formed the groups around which the Air Academy was established. Following a 1941 decree from the "all-union" Communist Party and the USSR Council of People's Commissars, the A.F. Mozhaiyskiy Leningrad Air Academy was later created for the primary purpose of training engineers for the Air Force. Several of the naval schools during this period were converted to higher educational institutions; the military juridical faculty of the All-Union Juridical Academy was reorganized into the Red Army Military Juridical Academy;[16] and a Military Pedagogical Institute "was created on the basis of the pedagogical faculty of the V.I. Lenin Military-Political Academy."[17] The significance of this last institute deserves some special notice because its purpose was to train teachers of Soviet Marxist-Leninist ideology to serve the faculties of the academies and schools.

In 1941, at the close of this first period of development of Soviet higher military institutions (courses, schools, and academies), what could be dubbed "the period of military officer preparation--Soviet style," Rotmistrov gave the total number of Soviet higher military institutions as 26: 19 military academies, seven higher naval schools, plus 10 military faculties at some of the civilian higher educational institutions.[18]

It had been a chaotic two decades for Soviet higher military education. Russian observers of their own past do not agree on the numbers of schools re-established or started afresh. Marshal of Aviation, Koldunov, for example, in an article on "Soviet officers" in the Antiaircraft Defense Herald, February 1978, says that in 1941 the Soviet Union had 19 military academies, seven higher naval schools, 10 military departments in civilian universities,[19] and 203 other military educational institutions.[20] It is in the area of the 203 "military institutions" that our knowledge about Soviet military higher education is most deficient.

Koldunov describes the political reliability of the officer

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[16]This academy does not appear on any of the lists of Soviet military schools to which I have had access in this research.

[17]Ibid., p. 21.

[18]Ibid., p. 22.

[19]At this point he is in agreement with Rotmistrov.

[20]No Western source has listed 203 other "military institutions" in operation on the eve of World War II.

corps on the eve of World War II: "63.3% of the division commanders, 95.9% of all corps commanders, 93% of all division and brigade commanders, and 87% of all regimental commanders were members of the Communist Party." He claims that almost half of the corps commanders (the highest percentage of membership in the party) had academic educations.[21]

What a contrast to the situation in 1918!

> ...The opening of the first command courses in Moscow, Petrograd, Tvera, Kayon and other cities was announced in February 1918. These courses prepared commanders and political workers for the infantry, cavalry, artillery, engineering forces, communications forces, armored and electronic chast' as well as armorers, medics and other military specialists. By the end of the year [1918], more than 63 military training establishments had been founded in the nation. There were 107 by September of the following year [1919] and 153 by early 1920... .[22]

According to Koldunov,

> ...After three years of Soviet rule in Russia, 0.7% entered military training with advanced educations and only 11.4% with complete secondary educations. 62.7% of the students had lower (less than 4 years) educations and there were even people (3.2%) with so-called home educations. 37.5% were skilled and unskilled workers, 24.7% were farmers and 37.8% were others, including peasants. Thus, the representatives of the revolutionary classes who had actively struggled for the power of the people were people of the machine tool and the plough, the true representatives of the nation. The best forces of the Party were directed to military service, and it was primarily communists [italics added] who joined the ranks of Red Commanders and political workers. For example, in August 1920, there were approximately 300,000 communists, and each of these was an organizer of a mass of Red Army soldiers and an example of performance in combat... .[23]

Despite such an inauspicious beginning, by 1978, Koldunov could boast that:

> ...Almost 100% of the positions of brigade commanders and above, more than 90% of the positions of regimental commanders and 100% of the positions of ship commanders are staffed by officers with advanced military educations... .[24]

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[21]Marshal of Aviation, A Koldunov, "Soviet Officers," Antiaircraft Defense Herald, February 1978, p. 17.

[22]Ibid., p. 14., Again, the Soviet Source indicates more activity in military school establishment than has generally been acknowledged.

[23]Ibid., p. 14.

[24]Ibid., pp. 14-15.

It was the building of the Soviet higher military education system that accounted for such dramatic changes in Soviet Military leadership. In the Air Defense Forces, he observed that almost 100 percent had advanced secondary or incomplete secondary educations, while 90 percent of the soldiers were communists or Komsomol members. The level of political and engineering technical training of the PVO officers was especially high and PVO academies and advanced institutes founded during the postwar years [World War II] graduated highly trained specialists who were fully capable of using modern equipment and weaponry and ensuring the execution of any combat missions by the personnel.[25]

The period from 1917/18 to 1941 was one characterized by sometimes desperate innovation, reorganization, and change. Distrusting the officers inherited from the old Imperial regime so recently overthrown, and dedicated to building a "new" army with "new" officers, the Bolsheviks started building the new institutions to produce military commanders in what were euphemistically called "courses." Many of today's military institutions evolved from some of these "courses."

The "officer" material with which the early Bolsheviks had to work was, to say the least, illiterate, lacking education, poor, and comprised of about 300,000 enthusiastic revolutionaries. Determined to promote these loyal communists into positions of leadership of the "new" military forces, the Bolsheviks first commissioned many if not most of the early Soviet officers and educated or trained them later.

This explains the emphasis in Soviet military higher education which exists even today. The Soviet military academies and schools are for the purpose of training officers both theoretically and practically to fight.

A third major conclusion is that the structure and organization of the Armed Forces dictated the specializations of the courses, schools, and academies. Thus, Soviet military higher education from its beginnings, was tied more directly to the military arms as they developed. The infantry (ground forces) became the founder of the Combined Arms Schools and Academies and of "command" schools as well as "special" schools for engineering, chemical troops, tank troops, signals, and all the rest. Naval schools more isolated in their development, a reflection of the relatively low status the Navy played in that period of Soviet history. Air, air defense, and other new armed groupings were in their infancy. But, in their pragmatic way, somehow the Soviets were better prepared for WWII with pilots and antiaircraft forces, for example, than our data on particular schools would suggest. Perhaps several of the 203 military institutions mentioned by Koldunov account for this fact.

A fourth point is that throughout this period the organization of the defense structure was developed

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[25] Ibid., p. 20. Emphasis added.

by trial and error.[26] What emerged was a military system closely tied to and under control of the Communist Party, with the top-level military commanders controlling the establishment and activities of the various schools and academics through a high level "Main Directorate of Military Higher Educational Institutions," and top-level military commanders in each of the forces and in the military districts joining with the heads of the institutions themselves in unity of organization and purpose.

But the purpose of military forces to these Soviet military leaders was to fight, to be combat trained and combat-wise, to be able to train, in turn, their soldiers, sailors, and airmen, to defeat an enemy. It should be doubly emphasized that the Soviet military leadership who defeated the Nazis in World War II were, in fact, those same under-educated people who were shaped into the commanders who led the Soviet forces in battle. This was the single greatest achievement of Soviet military higher education. Somehow despite all the apparent confusion, it worked.

The SCHOOLS at WAR and in POSTWAR RECOVERY, 1940s and 1950s

If the schools and academies worked closely with the various branches of the armed forces in the period leading up to World War II, the outbreak of hostilities found them establishing even closer relationships. As the Nazi invasion moved into the Russian interior, the schools and academies retreated to safer distances, regrouped, and intensified their training schedules. Whole classes of cadets marched off to battle. Thousands of men were enlisted in shortened officer training courses, and in all cases the training was primarily on the very practical level of how to use the weapons, and/or on how to fight. Teachers for the courses and schools were literally pulled out of battle to teach the prospective officers combat techniques.

In all of this, the schools and academies were to play major roles:

> ...From the very first days of the war [World War II] the military personnel of the military academies were faced with the task of rapidly absorbing all the latest information contributed by military action in the field of military art and of reflecting this latest information creatively in the educational process. The forms and methods of studying military experience were most varied. Combat orders and decrees were studied; instructors were sent to the field forces for the execution of individual operations; numerous operations were conducted on the firing and test range to resolve various technical and engineering problems; the combat experiences of the

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[26] See John Erickson, "Soviet Combined Arms: Past and Present," College Station Paper No. 1, The Center for Strategic Technology, Texas A&M University System: College Station, Texas, May 1981, pp. 1-51.

> students attending the course were utilized... The teaching staff worked hard on drafting the regulations, manuals, instructions, and other guiding documents. During the entire war the military institutions of higher education maintained the closest ties with the field forces... .[27]

In April 1942, the "Peoples' Defense Commissariat" instructed the schools to concentrate on the study of equipment and on how to use it. It required the schools in the training of what were termed "Combined Arms Commanders" to emphasize the study of the military equipment of the combat arms (ground forces), the artillery and the air force, the tank and engineer troops, and particularly to stress the "organization and coordination" of all branches.[28]

Prewar and early wartime provisions for training officer cadres was in fact so successful that despite the evacuation of many of the schools and academies to the interior, by the end of 1942 "the special academies," and by mid-1943 the combined arms academies, returned to their regular programs of training while simultaneously increasing their entrance requirements. Standards for the competitive entrance examinations were also raised.

The importance of the political "officers" was heightened by the experiences of the war and initially at least, the military-political academy tried to maintain its three-year program of training. Toward the end of 1942 its course was shortened to one year. In mid-1943, it was reorganized into one-year political "courses" for all forces under the Main RKKA Political Administration. Political officers were produced for the different services. This was a forerunner of the development in the mid 60s of special higher military-political schools for the various services.

The war itself, then, tied the higher military educational institutions to the "troops" even more tightly than before. Combat-experienced officers taught combat-experienced students the theory and practice of war. This relationship would be the foundation of the military reorganizations to occur after the defeat of Germany and Japan.

The immediate postwar period and throughout the 1950s was a time of relative quiet and a regrouping and stabilization of the schools and academies in existence. During the 1950s, for example, apparently only eight new schools in all were established: four air defense [PVO Strany] and four air force schools.

The older academies became the centers in which the experiences of World War II were studied and analyzed to become the basic materials for training cadets and students of the higher military schools. The Frunze and the General Staff Academies took the lead in this research. From it the "norms" for logistical requirements of all kinds were developed; the needs for numbers of men, machines, and ammunition, etc., under different kinds of battle situations were developed--all of which has become part

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[27] Rotmistrov, op cit., p. 23.

[28] Ibid., p. 23.

of the training and combat readiness posture of the post-war Soviet armed forces. Most Westerners have no real sense of the magnitude and volume of these studies, and, in fact, some do not understand how basic this work became in the reorganization and restructuring of Soviet forces in the 1960 and 1970s.

In 1977, the USSR Academy of Sciences published a bibliography of published works on Soviet World War II experiences. It contains over 7,900 individual citations.[29] Michael Parrish's new work, The USSR in World War II: An Annotated Bibliography of Books Published in the Soviet Union, 1945-1975[30] contains over 7,500 items. Much of this huge mass of material was done by veteran officers of World War II who rotated through the academies researching their experiences while simultaneously advancing their own "academic" credentials and preparing themselves for higher levels of command.

Except for the work of a relatively small number of Western military experts fluent in Russian, most of this published and available literature had yet to be digested by Western observers and students. Too much of it has been abstracted rather than translated, and bibliographic control over it, particularly the journal articles, has not yet been established. Hence the importance of Parrish's work. As John Erickson observes in his introduction to Parrish's bibliography, "Ignorance of and apathy towards important sections of Soviet historiography of the 'Great Patriotic War' on the part of non-Soviet historians and commentators have led to some serious shortcomings even in avowedly serious works dealing with the Soviet Union at war. The cry that all Soviet sources are 'unreliable' or, as mere extravagant propaganda, devoid of value must fall flat when the sources have never been examined... ."[31]

The academies and the higher military schools absorbed "the gigantic experience of the war" and concentrated upon training officer cadres "with regard for the implemented mechanizing and motorizing of the ground troops and the rearming of the air force, the navy, and the air defense troops with new and perfected equipment."[32]

The 50s ushered in what the Soviets termed a profound military technological revolution. The development of nuclear weapons and their technologically sophisticated delivery systems, the "widespread introduction" of radioelectronics, resulted in a greater emphasis on

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[29] SSR V Gody Velikoi Otechestvennoi voyni (Iyun 1941 - Sentyabr' 1945 G.) Ukazatel' Sovietskoi, AKADEMIA NAUK SSR, IZDATELSTVO "NAUKA". Moscow 1977. 691 pp.

[30] Parrish, Michael. The USSR in World War II: An Annotated Bibliography of Books Published in the Soviet Union, 1945-1975. New York and London; Garland Publishing, Inc., 1981.

[31] Ibid., p. xviii.

[32] Rotmistrov, op cit., p. 24.

the need to train a large number of specialists in the military forces. Those specialists (officer cadres) would have the primary responsibility, after mastering the new technologies themselves, of training the troops under their command to use the new systems and weapons, while never foresaking the old.

With the development of radioelectronics and nuclear weapons in the postwar period, the Soviet military literature began emphasizing the "revolution in military affairs." Adapting the latest military technologies to the theory and practice of war had been a constant effort on the part of the Soviet military and its general staff after the mid-30s and the schools, academies, and courses played their part in transferring these ideas and principles into practice. Chief among these efforts was mechanization of ground forces. The air force, navy, and the air defense troops were re-armed, processes begun simultaneously with rebuilding a war-ravaged economy.

How were these new dimensions of scientific developments in new weapons and radioelectronic advances to be translated into theory and practice? Primarily through the institutions developed since the Revolution for this purpose: the military academies, higher military educational institutions, and correspondence and "officers" courses.

In the rebuilding program undertaken by the Soviet Union of its military forces, the "new" officer would have to have a "thorough knowledge" of all modern and new equipment. He would have to be "skilled" in the organization and conduct of "modern" war, including the latest weapons. He would have to have a high moral character and be thoroughly trained politically--and absolutely reliable. Finally, he had to become a teacher, for it would be his lot to transfer to the troops the new military technological skills required by new weapons and procedures.[33]

It was this role, the technology transfer, that was to dominate the work of the military academies and schools in the 1960s and 1970s. The latter were two decades of unparalleled growth and development replete with constant reorganization.

Out of the postwar period of analysis of what military higher education should be, came the new emphasis on producing specialists, establishment of new kinds of institutions (headed by the military-political schools established in the mid-60s), the elevation of older schools to higher level status and the creation of new command and command-engineering schools. Curricula of all the schools were reexamined and an increased emphasis on basic sciences introduced--a greater proportion of the physical and mathematical sciences, chemistry, as well as other theoretic and general engineering disciplines. Nevertheless, cadets and officers attending those reformed, reorganized institutions were still to concentrate on learning what is necessary for war!

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[33] Ibid., p. 25.

To accomplish these ends, the military educational system of the 60s and 70s would undergo reorganization, revisions in their "training" profiles, and the creation of the required educational and laboratory base.[34]

The "NEW" MILITARY EDUCATIONAL SYSTEM: The 60s and the 70s

Rotmistrov aptly described the 1960s as the period of the flowering of the "creative" force of the Soviet higher military educational institutions. It was in the academies that research on the experiences of World War II was done. The General Staff Academy took the lead in translating these findings into doctrine and regulations. It was in the academies that the theories of waging "modern" war were developed and where operations for fighting against a "nuclear backdrop" developed. New branches of science were added to the curricula including electronics, nuclear physics, chemistry, and courses on various aspects of the Soviet economy.[35]

The system did flower! In the 1960s, 52 new schools were created and 26 existing units upgraded to higher levels--in Soviet parlance, raising the higher military educational to "the level of modern requirements," the thrust of the title of Colonel General V. Makarov's article appearing in Technology and Armament in May 1975.[36]

In the 1970s, another 21 new institutions were created and 40 other institutions modified in role and scope to meet the new level of "modern" requirements.

In the 20 year period under study, 73 new institutions were created and 66 were elevated to higher status--an unprecedented period of change and reorganization--and, all to a serious purpose.

According to Makarov, the Communist Party having determined that the threat of aggressive "imperialist" enemies had not changed, the need to increase the "combat capabilities" of the Soviet (and brotherly) armed forces had to be met--, including the military educational system. Acknowledging the accomplishments of Soviet higher military education along these lines since 1945, he pointed to new responsibilities of the teaching staffs in the system. They were to provide operational and tactical training of cadets and officers with particular responsibilities on those faculties in the institutions elevated to higher level for "quality" training.

It is on the "quality of training that combat readiness and

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[34] Ibid., p. 25.

[35] Makarov, V., Colonel General, Chief of the Main Directorate of Military Educational Institutions, "At the Level of Today's Requirements," Technology and Armament, May 1975, pp. 126-135.

[36] Rotmistrov, op cit., p. 25. I have leaned more heavily than usual on this article by Rotmistrov. It is brilliantly, tightly written and supported by the several articles cited in the general bibliography.

combat capabilities of the Soviet Armed Forces rest."[37]

The quality referred to by Makarov meant producing officers in the higher schools and developing the commissioned officers as they proceeded through their military careers to have (1) the capacity to act effectively (with initiative) in the complex conditions which occur in modern battle in critical situations, and (2) to have the stability, composure and will to concentrate their efforts on accomplishing their "assigned" mission.

Their training should achieve four major goals: 1) "mastery" of the fundamentals of Marxist-Leninist teaching; 2) development of a clear understanding of the political goals of the party and the country; 3) achievement of a broad "scientific" and "practical" background; and 4) learning specialies to perfection.[38]

To accomplish these objectives, Makarov laid out for the Higher Military Education Bureaucracy--some 200 top administrative military commanders serving in the top echelons of command in the Forces, in the military districts, and in the academies and schools--how these political military goals could be achieved. There would be constant improvement of operational, tactical, and special training in the field, air, and sea for "students" and "auditors" alike. (For "students" read cadets and non-commissioned ranks, and for "auditors" read commissioned officers rising through the command ranks.)

Emphasis would continue on-the-job (hands on) training in the form of combat field exercises, now to be carried out by students and auditors with the field forces in field maneuvers and with other exercises to be practiced routinely on the new field training bases established at most of the academies and schools.

There would be a "new" system of military training introduced which would involve a review of curricula, programs and textbooks, which would perfect the content and form of military and political training as well as require major improvement of the physical facilities of the schools.

More importantly, there would be a shift to the study of facts and details (the result of the research on World War II carried on so exhaustively following the War in the academies, led by the General Staff Academy.) There would be an intensified effort to achieve mastery of general behavior patterns (troop control) as well as finding ways of acquiring "new" knowledge, for which Makarov means a greater emphasis upon the encouragement of "independent study" which he thought to be one of the major achievements of the military schools.[39]

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[37]Makarov., op. cit., pp. 126-127.

[38]Ibid., p. 127. See also: Kozlov, S.N., Gen. Major, The Officer's Handbook: A Soviet View. Moscow 1971. Published under the auspices of the United States Air Force. Soviet Military Thought Series, No. 13.

[39]Makarov, op. cit., p. 128.

What cadets and officers got in all levels of military schools and academies in the system in 1975, was:

1. a high level of military training and expertness in their "arms" specialty

2. an understanding of the nature of modern battle, including nuclear, bacteriological, and chemical

3. the necessary skills for controlling troops (regiments and/or battalions) in any situation

4. a detailed knowledge of "complicated" equipment and armaments

5. an "unlimited devotion to the affairs of the Party and the people"

Makarov observed that new types of armament meant unavoidable changes in tactics, in the operational "arms," in strategy, and in the organization of troops. Likewise, changes in the military operational and technical training of officers were required. In the command schools, faculties gave cadets well-rounded training perfecting them for regimental and battalion command and teaching them the effective use of equipment and armament under any battle condition while grounding them in the fundamentals of operating and storing equipment.

In the engineering schools and academies, students received:

1) detailed military engineering knowledge and skills required for providing engineering logistics in battle, and the training necessary for performing engineering tasks requiring the use of mathematics and computer programs

2) research experience in the form of theses, dissertations and research papers designed primarily to deal with research subjects of practical value to the troops

3) particular stress upon making "military" men out of the engineering cadres

> ...The military engineer, whether he is a school graduate, or an officer who graduates from the engineering department of an academy, is first of all a military specialist, one whose training cannot be limited to the framework of engineering disciplines. He must have a clear understanding of the essence of modern battle and operations [emphasis added], and have a profound knowledge of questions concerned with the organization and conduct of the latter (operations). Only under these conditions can he successfully perform the missions involved in providing technical support for them... .[40]

Both departments of general engineering and the military en-

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[40] Ibid., pp. 130-131.

gineering disciplines in the system emphasized a thorough knowledge of weapons and equipment, their combat potential as well as the "rules of use" of both. In fact, all schools had to train their students and graduates to train and indoctrinate subordinates in all the areas noted above.

While Makarov was satisfied that the quality of teaching, the qualifications of faculty, physical facilities including teaching equipment, laboratories, and field training installations--were at a level to assure an adequately high quality of military-engineering and command training, he urged continued improvement in several areas which had been persistent problems. There was a continuing need:

1. to improve the "quality" of training officer cadres

2. to improve the operational, tactical, and special military training given "auditor" students

3. to improve the "technical" competence and "command" qualities of cadets and officers in the system

4. to improve the teaching and training abilities of graduates and auditors

There was, indeed, the need to improve "post-graduate" work, to improve the selection of field officers to staff-teaching functions in the institutions and to improve these field officers' abilities to teach. Ideological work had to be increased at the same time that "new" emphasis was being put on "independent study" or "self-education."

As Makarov surveyed the Soviet higher military educational system from the very pinnacle of command, he suggested the direction of development of the system for the balance of the 1970s and into the 1980s. While the system may not have completed its growth, it was, by and large, in place, reorganized, and dedicated to well-understood goals. The "new" stage of development for the system of 170-odd institutions would include an increase in the levels of scientific research in the higher military educational institutions concentrating these research efforts on solving the most current problems of military science and military art; an emphasis on the design and perfection of equipment and armaments; and on finding ways to increase combat readiness. In all cases, and this is an important point of emphasis, this research should be directed primarily toward solving the "needs of the troops." In other words, the research would be primarily applied, not basic and it should be directed primarily toward increasing the Soviet armed forces' combat abilities and readiness.

Makarov announced that the Ministry of Defense required the establishment of model training centers, ranges, armor training areas, and other installations all addressed to combat readiness.

Greater emphasis and significantly higher levels of investment too would be placed on and in audio-visual support systems: automated lecture halls, television,

motion pictures, recorders, trainers of every sort, computer training centers, and other training aids in order to intensify the training process of the whole military system--a kind of "trickle-down" theory of training, but also necessary because of the increased volume of scientific and engineering information needing to be covered. Simultaneously, the system was to continue to stress the development of practical skills.

Thus, Makarov foresaw the construction of complexes of new study equipment and the introduction of procedures for using them, all on a "genuine" scientific basis, and the application of results of research to improve the military education system.

The Universal Military Conscription Act of 1967 meant that training would necessarily have to become a first-order priority in the military educational system. Thus, came into being the current dilemma of the Soviet Higher Military Education System: training large numbers of new conscripts serving two or three years, then rotating them back to civilian life to be held in active reserve status to a relatively advanced age though involved in continual upgrading of skills. This approach produced officers from the higher schools who when taking their first commands would be skilled teachers with the technical and political knowledge necessary to ensure effective troops in the different forces. Field officers are to be moved through higher levels of technical, command, and political skills in the specialized academies belonging to the specialized arms or forces. This system then selects for top command of the forces officers from the combined arms, specialized command academies; and finally, officers selected to the highest levels of command who usually would move through the Frunze and then, through the General Staff Academy.

To illustrate further the flexibility of the officer training program in the Soviet Union, all Academies and many of the higher military schools offer correspondence courses of four and five year duration.[41]

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[41]Kamkov and Konoplyanisk, op. cit.

CHAPTER II

MINISTRY of DEFENSE SCHOOLS and ACADEMIES

The system of Soviet Higher Military Education is structured specifically to provide commanders of all forces with specialized skills as well as with broad integrated experiences to the purpose of succeeding in combat. The higher military schools concentrate on producing young officers who begin service with the troops before moving up the intricately developed training ladder to command levels. The academies concentrate on development and explanation of theories and practice of military art--war making, the utilization of all weapons and the strategies for using them, and the perfection of "loyalty" to the socialist system. They are the "command and control" centers of the Soviet military educational system. Officers' specialized "courses" (important institutions in themselves) provide promotion opportunities for officers in the field who cannot leave their posts. The correspondence and night schools programs offered by the academies and schools provide an additional series of opportunities for advancement.

While embedded in a tightly structured system under the highly centralized Ministry of Defense and the Main Directorates of that Ministry, and workings within the military collectives of the military districts in which they are located, most of the schools and academies remain the creatures of the forces which spawned them. The first level of analysis, therefore, is of the institutions whose scope is all-forces wide and, as a consequence look directly to administrative units at the Ministry of Defense level. The second level is that of the forces themselves and the schools producing officers for the different arms within that service.

For the Ground Forces, the largest arm in the Soviet forces, the Frunze Academy produces top-level commanders, while the General Staff Academy acts in the same way for the highest military ranks of all arms and services, including the Ground Forces.

An analysis of the schools and academies of the Soviet military educational system based on the Forces to which the schools belong seems to be the most sensible approach to understanding what appears to be an inextricably complex system consisting of a large number of institutions, totally out of conformity with military educational approaches in the western democracies.

The Ministry of Defense, The General Staff, and the Directorates: Academies and Schools

Sitting atop the military hierarchy of the Soviet Union, the Ministry of Defense (MOD), represents the military in the highest levels of the Communist Party apparatus and translates into action the policies developed by the CPSU, its Politburo, and other central CPSU bodies. It works through its Main Directorates and the General Staff to achieve the purposes of the State.

In military higher education, the MOD works through the Main Directorates as well as through the deputy ministers themselves who command Forces or head directorates. At this administrative level, certain institutes, academies, and schools function at an all-service level as illustrated in Chart A.

By administrative lines of authority, one-fifth of the 176 military educational institutions surveyed by in this study may be attributed to MOD main directorates or the General Staff. The balance, 132, belong to the Forces of which 9 are assigned to the KGB and/or to the MVD. One hundred and twenty-three schools, academies, or courses are directly related to the Forces under the administrative supervision of the Main Directorate of Higher Military Educational Institutions, whose officials are directly linked to the Forces represented in all cases by a deputy commander for military higher education on those command staffs. Finally, the linkage of coordination is completed by the military educational institution staffs of the 16 military districts themselves. It is to this chain of command that the heads of the 123 institutions* have to respond and from whom policies are determined and funds for facilities and improvements are provided.

Of the 40 institutes, schools, and academies at the Ministry of Defense level, several may be mentioned very briefly, largely because of the particular functions they serve. For instance, the Military Band Leader Department of the Lenin State Conservatory may well be located directly under the Military Band Directorate on the MOD level and serve all branches of the military system, but its significance is of a lower priority in an assessment of the military officer strength of the Soviet Union. Particular needs are met by the Institute of Military History of the Ministry of Defense of the USSR in research and publishing. It produces the famous Voennyy-istoricheskiy-Zhurnal, for example, one of the chief repositories on the research done on the Soviet experience in World War II, the Civil War, and World War I. The Military Institute of Foreign Languages and the Military Institute of Physical Culture may or may not be clearly linked to one of the MOD Directorates as suggested in Chart A. There is more than a hint in the open press that the Institute of Physical Culture is also a major research center concentrating on psychological aspects of combat stress and strains. The Red Army Juridical Academy is probably administered by the Military Procurator located at the MOD level.

1. The General Staff: Schools, Institutes and Academies (See Chart B)

It is with the General Staff that Command and Coordination lines begin to be clearer. The General Staff Academy is the creature of the General Staff as is the Military Diplomatic Academy of the General Staff.

*The several "courses" in the Soviet system are considered in this analysis to be "institutions" in the true sense of the word.

CHART A

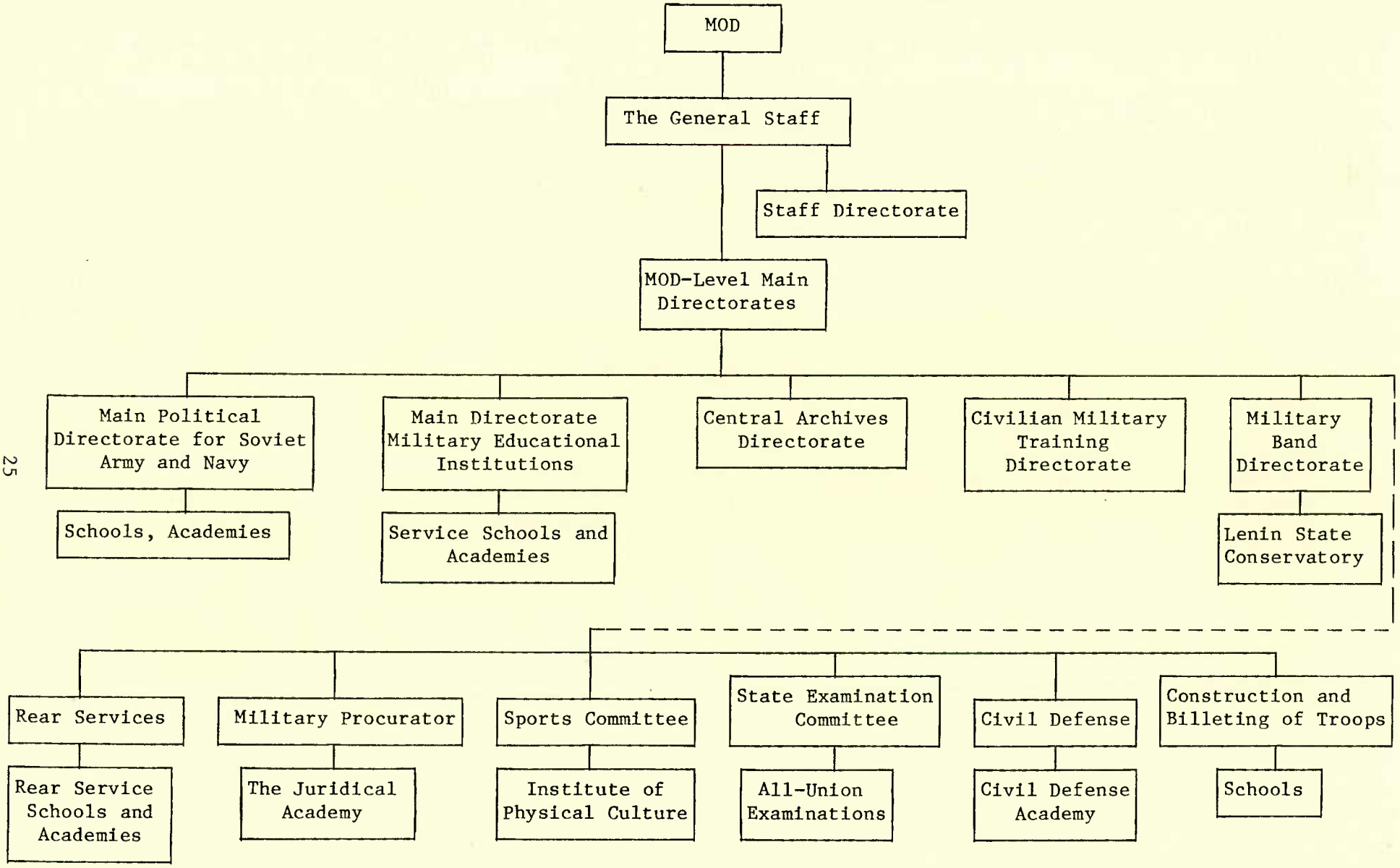
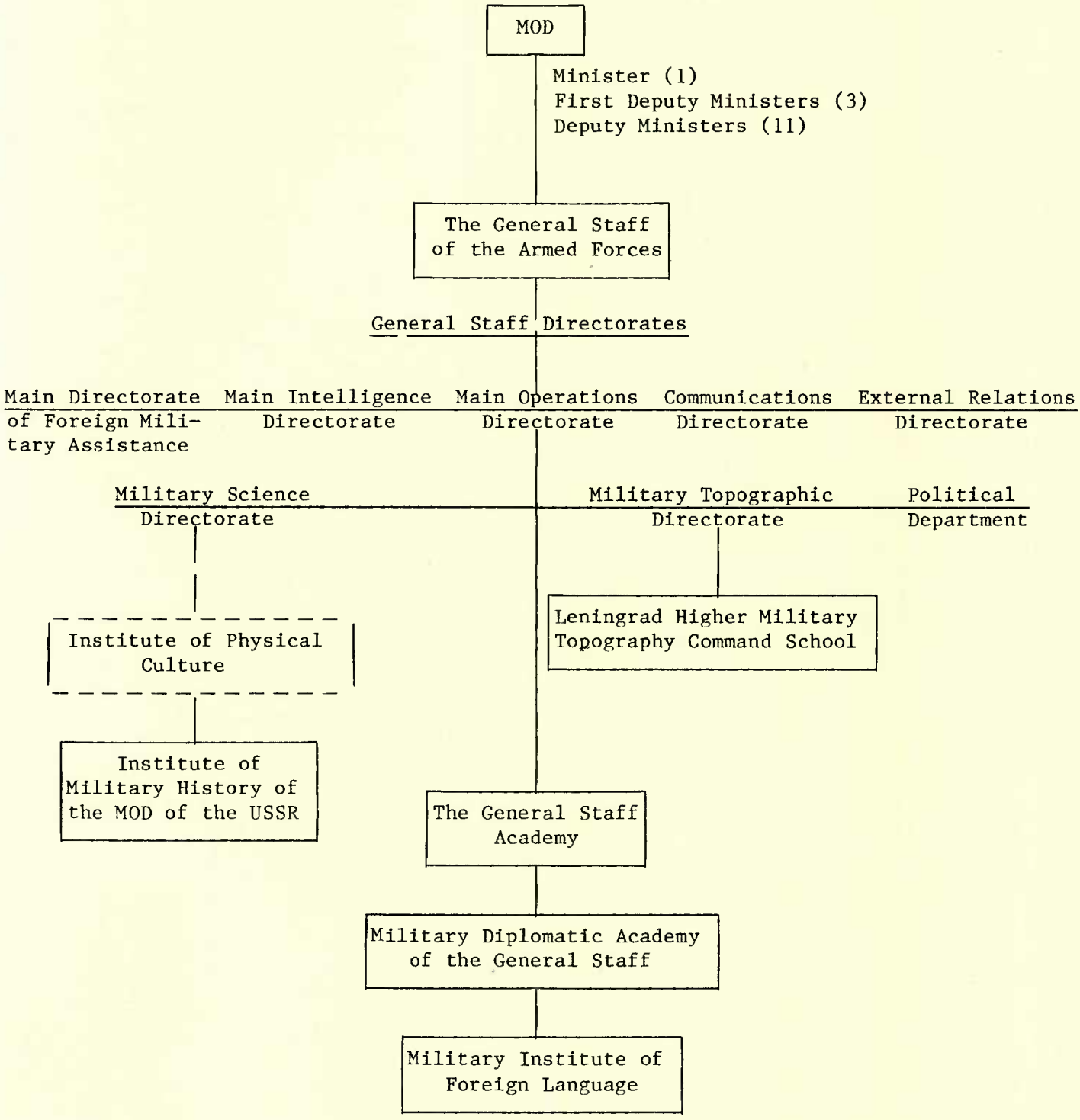

MOD
The General Staff
Staff Directorate
MOD-Level Main Directorates
Main Political Directorate for Soviet Army and Navy
Schools, Academies
Main Directorate Military Educational Institutions
Service Schools and Academies
Central Archives Directorate
Civilian Military Training Directorate
Military Band Directorate
Lenin State Conservatory
Rear Services
Rear Service Schools and Academies
Military Procurator
The Juridical Academy
Sports Committee
Institute of Physical Culture
State Examination Committee
All-Union Examinations
Civil Defense
Civil Defense Academy
Construction and Billeting of Troops
Schools

Chart B


MOD
Minister (1)
First Deputy Ministers (3)
Deputy Ministers (11)
The General Staff of the Armed Forces
General Staff Directorates
Main Directorate of Foreign Military Assistance
Main Intelligence Directorate
Main Operations Directorate
Communications Directorate
External Relations Directorate
Military Science Directorate
Military Topographic Directorate
Political Department
Institute of Physical Culture
Leningrad Higher Military Topography Command School
Institute of Military History of the MOD of the USSR
The General Staff Academy
Military Diplomatic Academy of the General Staff
Military Institute of Foreign Language

The administrative location of the famous Leningrad Higher Military Topographical Command School is under one of the General Staff Directorates--that for Military Topography. There is a close link between the General Staff Topographic Services Directorate and this school. It trains both officers and civilians. It commissions officers for all of the forces. It produces military topographers particularly trained for combat support.

The "Red Banner Order of the Red Star" Leningrad Higher Military Topography Command School began in 1918 as the first Soviet Military Topographic "Courses."[1] It evolved through several reorganizations during the 20s and 30s until in 1968 it was elevated to a higher military school level with broader programs installed to deal with the "revolution in military affairs." Its students fought in the Civil War, World War II, and following that conflict participated in mapping the Soviet Union.

Commissioned graduates of the school became officers in the Military Topographic Service where they organize and provide modern topogeodetic support of the USSR's armed forces. Stress is laid on topogeodetic support of combat operations.

Provided with well-equipped laboratories, the school also maintains a topogeodetic field training ground where students practice with field map printing equipment. The program is scientific and technical and includes: photo-topography, aerial photography, geodesy, astronomy, the theory of mathematical processing of geodetic measurements, photogrammetry, higher mathematics, physics, radio-electronics, electronic computers, and computer programming.

In short, this important school prepares the topographers who work not only with all of the service arms in direct support of various missions, but also, by its close administrative relationship, provides well-trained personnel to the General Staff's Directorate of Military Topography, a major instrument in the war planning activities of the Ministry of Defense.

The General Staff Academy with its Military Diplomatic Academy and its Military Institute of Foreign Languages, is among the best known of Soviet military academies. It works with General and Flag-rank officers to develop the top commanders and senior staff officers in the Soviet military system.

The General Staff Academy. The very exhaustive study of the General Staff Academy (named for K. Ye. Voroshilov) edited by the General of the Army (now Marshal) V.G. Kulikov and published in Moscow in 1976, fittingly describes the Academy as the highest military educational institution in the 170-odd system of military institutions in the Soviet system. It is not an exaggeration to say that the Russian victory in World War II against the Nazis was forged in the Academy. Nor is it an exaggeration

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[1]Baranov, V., Major General of Technical Troops, Chief of the Higher School of Military Topography, "Higher School of Military Topography," Tyl, December 1977, pp. 66-70.

to say that this Academy is the institution to which all higher military educational instititutions look for direction in military educational and training philosophies, strategic and tactical planning, and for curricular emphasis. This volume should be required reading for all western military planners.[2]

Kulikov identifies four major periods in the development of the Academy: 1) 1918-1921, originally established with Lenin's support on the basis of the Nikolayevsk General Staff Academy (1832) as the new Soviet General Staff Academy; 2) 1922-1941, renamed August 1921 as the Combined Arms Military Academy of the RKKA (Workers' and Peasants' Army); 3) 1941-1945, the War years; and, 4) the Postwar years. In 1936 the Academy was reestablished as the General Staff Academy. Actually the confusion of the Civil War period and the years leading up to World War II is mirrored in the various changes described so well by Kulikov.

Most importantly, Kulikov divides the postwar years into three major periods: 1946-1953, 1954 to 1964, and 1965 to the present (1976).

1946 to 1953: It was during this first postwar period that the "executive command personnel" of the Soviet Armed Forces assimilated the experiences of World War II and "made further improvements in military art on the basis of a reorganization of the forces and new combat equipment."[3]

By an order issued in January 1946, the People's Commissar of Defense required the Academy now to train combined arms generals and officers from the corps level upwards. There were two main courses, the first and second, established at the Academy (February 1946) and a special nine-month higher academic course (correspondence to begin in March 1946). Emphasis in both the on and off-campus courses was shifted away from "higher formation tactics" to what the Soviets call "operational art"--the central themes of which included Army operation based on World War II experiences and the new weapons and combat equipment, the principles of front operations, and strategic questions.[4] The emphasis on the history of World War II received such impetus that by 1949 a separate faculty of military history was established with a one-year program of study. In 1946, an aviation faculty was established and, in mid-1948, a naval section was formed. Thus the General Staff Academy became the central institution for advanced training of all executive command personnel.[5] Generals and officers of the "fraternal socialist countries" began their training in the Academy shortly after World War II. General of the Army Matvey V. Zakharov was made head of the Academy in 1945, and presided over its early reorganizations. The Academy became the Pantheon of living Soviet military heroes both in faculty and students. Seventy-eight percent of the instructors in 1948

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[2]Kulikov, V.G., General of the Army (Ed.), The General Staff Academy. Moscow: Voyenzidat, 1976, 280 pp.

[3]Ibid., p. 114.

[4]Ibid., p. 116.

[5]Ibid., p. 116-117.

were combat veterans of World War II; 40 percent of these came from the military districts and armies, from positions as chiefs of staff or deputy chiefs of branches of the services of the fronts, military districts, and armies. Ninety-seven percent of the instructors had a higher military education and 46 percent also had the diploma of the General Staff--a figure which rose to 53 percent in 1953.[6]

These instructors lacked teaching experience and special efforts were needed to improve their teaching skills--a phenomenon common to all higher military schools in the postwar years.

The Academy became the center for the development of Soviet military thought during these immediate postwar years, producing over 611 different theoretical works, textbooks, and educational aids immediately pressed into use by the forces and by the other military educational institutions. Kulikov considered one of the main achievements of the Academy during this period to be "the generalization and systematization of the multifaceted experience of the Great Patriotic War and its introduction into the training process."[7] Other contributions included: advanced theories on the preparation and conduct of army and front operations; the deep offensive operation; operations of armored and airborne troops; aviation and artillery; air operations aimed at achieving air supremacy; naval disruption of enemy supply lines and destruction of his ships at sea and in their bases; and amphibious and anti-amphibious operations.[8]

1954 to 1964: In this 10-year period under the guidance of, at different times, General V.V. Kurasov and his "political" deputies, General-Colonel P.A. Kurochkin and General Lt. K.A. Zykov, Marshal I. Kh. Bagramyan (1956-58), General G.K. Malandin (1958-59), General Kurasov (again, 1959--64), Marshal M.V. Zakharov (1963-64), and General Colonel Radziyevskiy, the Academy was formally named the General Staff Academy in 1958.

This was a most critical period in the Academy's development because it was during this period that Soviet military strategy and tactics adjusted theory and practice to nuclear weapons, and the period in which the Strategic Missile Force was created to play the crucial role in intercontinental warfare. In fact a new theoretical basis for training was hammered out in the Academy in 1960-61 and reflected in its syllabuses--an approach which reorganized the Strategic Missile Force as the "main service of the Armed Forces, capable of exerting a decisive influence not only on the course of the war but also on its outcome."[9]

New training programs were introduced which emphasized the vital importance of initial operations of massed use of nuclear missiles and highly mobile troop operations. For the first time, "questions on automation and mechanization of troop command control"

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[6] Ibid., p. 120.

[7] Ibid., p. 133.

[8] Ibid., p. 134.

[9] Ibid., pp. 150-153.

were introduced into the curriculum. Strategy and operational art became the leading disciplines, "Independent study" and seminars, command and staff map exercises, and operational tactical problems became the main methods of education. The course of study was lengthened to two full years. Graduates were required to pass state examinations, and as Kulikov observed proudly,

> ...The state examination commission noted that the students of the Academy's graduation courses had mastered the main theoretical principles of operational art, views on the nature of modern war, and methods of waging it. They also correctly understood the nuclear missile character of a future war and the fundamentals of Soviet military strategy, were familiar with aspects of the preparation and conduct of modern operations, troop organization and the capabilities of combat equipment, had acquired proficiency in carrying out operational-tactical calculations for the use of the main types of weapons and combat equipment, and had studied probable enemies' views on the nature of a future war and their combat capabilities... .[10]

Military-scientific writings poured from Academy personnel to be distributed widely and studied avidly by commanders of the different arms, and cadets and students in the other military higher educational institutions and academies. These works included a four-volume tome on operational art; textbooks on tactics; on the operational art and tactics of the Air Force; on the operational art of the Navy; on the operational art of the Air Defense Forces; on artillery, communications, the rear services; on the development of Soviet military art in World War II; on modern war and military science; the principles of modern operations; the front offensive and defensive operations; and the problems of the development and use of aviation. By the end of 1964, a new textbook based on the experience of military maneuvers and troops exercises was produced by the Academy to become one of the most widely used texts studied by Soviet officers at all levels.[11]

According to Kulikov, the basic premises upon which these new views rested, included:

1. In the event of an aggressor unleashing a nuclear missile war against the Soviet Union or any of the "fraternal socialist countries," massive nuclear retaliation by the Soviet Union would occur.

2. The main forms of military action would be strategic operations in theaters of operation (emphasis added), combat operations of the National Air Defense Forces, and independent operations by the fleets and Long-Range Aviation.

3. The "strategic operation" in the theater of operations would

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[10] Ibid., p. 156.

[11] Ibid., pp. 161-162.

be achieved by the combined efforts of the forces of all Services of the Armed Forces and the Strategic Missile Forces would play the decisive role.

4. The Ground Forces using operational-tactical nuclear weapons would conduct operations against the forces immediately opposing them, secure their defeat, and capture the most important areas and targets in the depth of the territorial part of the theater.

5. The initial period of such a war would be the most important time of action.

Textbooks on the operational art of the Air Force, Navy, Air Defense, Engineering, Rear Services, and other military disciplines had been completely reworked by the end of 1964 and were published and distributed in 1965; 10 courses of study and 50 training aids were also completed and distributed to military schools and academies and to the forces.[12]

1965 to 1976: This third period of postwar development of the Staff Academy was characterized by two major emphases: a continuing but much stronger emphasis on Leninist-Marxist orthodoxy and indoctrination, and a vigorous insistence on combat readiness and combat training.

The Chief of the General Staff exercised final approval of the curricula of the Academy, including the higher correspondence course. State examinations now included testing for political as well as military knowledge. The disciplines already described remained essentially the same during this period, but their content was changed frequently "in conformity with the new tasks to be resolved by the Armed Forces."[13] Such changes were made in response to the resolutions laid down by the 23rd, 24th and 25th Party Congresses under which more time was spent on studying "Lenin's military theoretical legacy." The resolutions of and subsequent Congresses themselves have become the subject matter of much study and teaching. Work continued on the history and development of Soviet military "art," troop organization and tactics, and the improvement of troop control--the technical means of control being given twice the amount of time in the department of operational art.

More importantly, as Kulikov emphasizes,

> ...The main patterns, forms, and modes of the Armed Forces' strategic actions in theaters of operations began to be studied and elaborated on a wider scale at the Academy, not only on the theoretical plane, but by conducting command-and-staff exercises and resolving problems on maps.
>
> The change of opinions about the nature of a possible war necessitated a new classification and strategic description of continental and ocean (sea) theaters of operations, strategic sectors and areas. This being so, addi-

[12] Ibid., p. 162.

[13] Ibid., p. 195.

> tional lectures on the strategic description of theaters of operations [emphasis added] were included in the curriculum... .[14]

As with all other military educational institutions, this period saw physical improvements to the facilities of the General Staff Academy, the addition of new sophisticated educational teaching and learning aids, new lecture halls, and, in particular, a training command post equipped with the latest electronic gadgetry.

Training in the Academy is allocated to three major kinds of activity: 37 percent to "action forms of work" and short operational exercises; 18 percent to lectures and seminars dealing with subjects like "the nature of modern wars," "Soviet military doctrine," "strategic operations of the Armed Forces," "the theory and practice of preparing and conducting operations," and "the use of the Services of the Armed Forces in operations and in War"; and 45 percent to "independent study."[15]

Command and staff exercises are regularly held by the military districts and the fleets and Academy students and personnel participate in them.

But the Soviet admirals and generals test all of their learning against the lessons of the past: details about the "preparation and conduct of the most important strategic operations of the Soviet Armed Forces in land and ocean theaters of operations"; the experiences of the "preparation and conduct of defensive and offensive Army, front, and strategic operations;" the problems associated with "the use of the services and branches of the Armed Forces in war;" and the actual experiences of "strategic control of the Armed Forces, staff work, and methods of troop command and control."[16]

The General Staff Academy is not only the highest military educational institution in the Soviet Union, it is the brightest star in a galaxy of about 170 other institutions which reflect its light. As Kulikov observes, Academy graduates

> ...occupy responsible executive positions in the apparatus of the Ministry of Defense and the General Staff, in directorates and on staffs of the Services of the Armed Forces, or else command military districts, fleets, combined arms strategic formations, and formations of various Services of the Armed Forces...deputy commanders or chiefs and deputy chiefs of staffs of major field forces and groups of forces, heads or deputy heads of military academies... .[17] [emphasis added]

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[14] What these projected theaters of operations include, of course, would be most important for Western analysts to know. That they appear to extend beyond present Soviet boundaries appears to inferred in this source. Ibid., pp. 194-195.

[15] Ibid., pp. 198-199.

[16] Ibid., p. 200.

[17] Ibid., p. 200.

Soviet officers, and particulary executive command officers, spend their lives in training and study either on campus or in correspondence courses--all under the watchful eye of the General Staff and with help of the General Staff Academy.[18]

2. The Main Political Directorate of the Soviet Army and Navy: The Lenin Academy and the Higher Schools

The Main Political Directorate of the Soviet Army and Navy is one of the most distinctive, if not unique, features of the Soviet military system. The V.I. Lenin Military Political Academy is the principal educational institution under the aegis of the Main Political Directorate for the Soviet Army and Navy. It had its humble revolutionary beginnings in 1919 as the Red Army Teachers Institute imeni (named in honor of) Tolmachev. By 1925, it had been designated the Military Political Academy, which it has remained to the present day.

There are now 12 military-political educational institutions, one group of advanced central courses, and a military-political faculty at the Rostov Higher Military Command School. Except for the V.I. Lenin Academy, the other 11 schools are generally specialized for the different branches of the services and they produce commissioned officers for service in the troops of those arms and for the schools and academies under their respective control.

The extent to which these institutions are the direct responsibility of the Main Political Directorate of the Soviet Army and Navy, on the Ministry of Defense level, and the amount of supervision exercised by the Main Directorate for Higher Military Educational Institutions, is not easy to determine. Evidence suggests, however, that the Military-Political Academy and the higher military-political schools are directed by the Main Political Directorate for the Soviet Army and Navy. One of the deputy ministers of defense is Chief of the Main Political Directorate; none of the other deputy ministers represent the Main Directorate for Higher Military Educational Institutions. The Communist Party leadership emphasizes Party control over the military, and the Main Political Directorate, the Military-Political Academy, and the military-political higher schools, may therefore be instruments to achieve that purpose. It should be emphasized that all of the 11 higher military-political schools, except for the Academy, were established under L.I. Brezhnev's administration in the mid-60s, and it must be remembered that Brezhnev was a division and army political commissar in World War II. The creation of these "new" schools occurred simultaneously with the "revolution in military affairs," and with the creation and elevation of military schools and academies in the 60s. It is also important to realize that every Soviet military unit in the field, and, in the

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[18] Ibid., p. 200. The higher education correspondence course of the Academy was reestablished in 1968 and counts among its graduates Kulikov himself.

fleets, has its contingent of "political" officers. They are integral parts of the "military collectives," a concept quite foreign to Western observers. Their presence at all levels of decision making in the Soviet military may be as responsible as anything else for the constant refrain of Soviet military men regarding the importance of "one-man" command.

In an article appearing in the Antiaircraft Defense Herald in May 1977, the authors described the operation and administrative relationships of the Leningrad Higher Military-Political School for Air Defense quite candidly:

> ...Since its establishment [1967], the collective has been continually aware of the attention and help of the Main Political Administration of the Soviet Army and Navy, the Political Administration of the PVO Forces, the Military Soviet and Political Administration of the Lenin Leningrad Military District, and the district and oblast' Party organizations. The head of the Soviet Army and Navy, General of the Army A.A. Yepishev and member of the Military Soviet and head of the Political Administration of the PVO Forces, Colonel General S.A. Bobyshev, and leaders of city and oblast' political organizations actively acquainted themselves with the organization of the educational process, the work of Party and Komsomol organizations and the students' affairs during visits to the institute... .[19]

Not a word in the entire article mentions the Main Directorate for Military Higher Education Institutions. Thus, from the Ministry of Defense level itself, it may be hypothesized that, in reality, a dual administrative system exists for higher military education in the Soviet Union: the political and the military.

From the tentative conclusion that control over the military-political academy and higher military-political schools resides primarily with the Main Political Directorate of the Soviet Army and Navy of the MOD rather than with the Main Directorate for Military Higher Educational Institutions of the MOD, a brief analysis of what these institutions do in preparing officer cadres and in training their "own" students for commissioned military service may illuminate the role and scope of these institutions--institutions which are the unique contribution of the Soviet political system to the training and functioning of Armed Forces in the modern world.

The V.I. Lenin Military Political Academy exercises a most pervasive influence throughout the Soviet higher military educational system. It has had academy status since 1925. It is 11 years older than the General Staff Academy. Its graduates and, since 1967, the graduates of the other eleven schools, have become vital members of every military collective in the Soviet military structure. In the higher military educational institutions and academies, including the General Staff Academy and the Frunze, graduates of the Lenin Military-Political Academy hold important administrative and faculty

[19]Malov, Yu, Lt. Colonel and Kuchir, A., Major, "The PVO Leningrad Higher Political Institute: 10 Years," Antiaircraft Defense Herald, May 1977, p. 60.

positions. In the fleets, the various Soviet forces, the military districts, in the Warsaw Pact Soviet Forces, and in individual battle units they are in constant attendance. Soviet political officers (commissars to use an earlier term) are ubiquitous.

In fact, evidence shows that the CPSU Central Committee's resolution [1967] requiring that political officers be provided the armed forces at the company and battery levels, resulted in the building in the 11 new military-political institutions. Whereas, the Lenin Military Political Academy had included as did the service academies regular officers from the different services, this new expansion opened the military command system to "state political workers," who, after entering the new schools, would combine military-political scientific research and agitation training with traditional military training in the various specialist arms. Thus, an infusion of new blood flowed into the military, a major event in the reorganization of the Forces in reaction to the revolution in military affairs.[20]

This is an area of such great significance, representing as it does a very pragmatic and effective method for reaffirming Soviet Communist political control over the military Forces, that it calls for separate and intensive investigation--a matter beyond the scope of this particular paper.

It was in the Political Academy that correspondence "political" courses of three-year duration were introduced in 1929; an evening military-political "university" in 1930; and courses for "one-man" commanders.[21] Initially the Academy concentrated on training and commissioning its own students, opening thereby the opportunity for loyal Party members to become commissioned officers. However, as time passed, there was a shift of emphasis to perfecting the military capabilities of the political officers in the new schools for the different forces. But the Academy throughout has been since its founding an all-force training institution at the apex of all the military educational institutions in preparing political officers and in determining the "proper" areas of military-political-scientific research.

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[20] Ibid., p. 59. ..."The introduction of state and political workers into batteries and companies opens up broad new possibilities for intensifying Party influence on personnel, allows more successful education and instruction of servicemen and the organization of Party-political work on a scientific basis to skillfully probe all profound processes and occurences existing in the Army and to actively implement Party ideas."

[21] The article by General of the Army, Ye Ye Mal'tsev, Commandant of the Lenin Military-Political Academy in the Soviet Military Encyclopedia, Vol. 2, Moscow, 1976, is of particular importance in gaining some sense of the importance and role and scope of this unique Academy. See translation of the article in General Electric Co. Report GE77TMP-40A, entitled "Soviet Defense Manpower Associated with Commissioning Schools and Higher Military Training for Soviet Officers," pp. F-41-45.

The kind of "scientific" research carried out by faculty or students, in the Academies and higher military-political schools depends in large part on the "profiles" of the schools or academies themselves--except that in the "political" scientific research areas all schools and academies which sponsor and conduct such work--in fact, the "social sciences," as they are called--look to the military-sociological research and the social sciences teaching departments of the Main Political Directorate of the Soviet Army and Navy for their "marching orders."

The best way to gain a quick appreciation for the nature of "scientific" research in the social sciences is to list a series of titles of monographs produced at the Academy which are basic study materials in all military and naval elements in the system.[22] Some of the works by Academy faculty include:

Marxism-Leninism on War and the Army
Methodological Problems of Military Theory and Practice
The CPSU and Building of Soviet Armed Forces
V.I. Lenin's Military-Theoretical Legacy
V.I. Lenin on the Role and Importance of Party-Political Work in the Soviet Armed Forces
V.I. Lenin on War as an Art
V.I. Lenin and the Soviet Armed Forces
Military Pedagogics
Military Psychology
The Bases of Soviet Military Legislation
Psychology of the Military Collective Problems of Party and Komsomol Work in the Soviet Army and Navy
Political and Economic Map of the World
Pedegogical Bases of Training Soviet Soldiers
Breeding Discipline Among Soviet Soldiers
Improvement of Forms and Methods of Training Soviet Soldiers in the New Stage of Development of the Armed Forces
Problems of the Moral-Political and Psychological Training of Soviet Soldiers for Modern War
New Weapons and the Discipline of Soldiers
The Role of the Community in Strengthening Legality, Law and Order in the Soviet Army and Navy
One-Man Management in the Soviet Armed Forces
Prevention of Infringement of the Law in the USSR Armed Forces
Soviet Military Discipline and Ways of Intensifying Discipline
Deputy Political Commander of the Regiment [or ship]
Company [Battery]--the Center of Political Educational Work
The Military Ideology of American Imperialism
At the Last Frontier (on the Crisis of World Capitalism)
The Military Ideology of West German Revanchists

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[22] Kuz'min, G., Colonel, "The Experience of Scientific-Research Work in Academies," Voyennaya Mysl', August 1967, pp. 49-58.

Works in which Faculty collaborated:

History of the CPSU
50 Years of the USSR Armed Forces
The Leninist Party--Against Revisionism and Dogmatism
Antifascist Movement of the Resistance in Countries of Europe During the Years of World War II
The Course of Soviet State Law

Research in the Lenin Military-Political Academy is carefully planned. The titles listed were major works published from World War II until 1967 by Academy faculty and graduate students. Many were issued as textbooks to be used by political officers with the troops and by Social Science faculty in the many other military educational system.

The main problems to be researched from 1966 to 1979--and in the Soviet system research problem identification is done at the very top levels--were to deal with some of the following problems:[23]

1. the military-theoretical legacy of V.I. Lenin and problems of the defense of the socialist fatherland under modern conditions
2. the CPSU and organization of the Soviet Armed Forces
3. the revolution in military affairs and basic problems of party-political work in the Army and Navy
4. raising the effectiveness of means and methods of training and educating Soviet soldiers
5. legal problems of organizing and strengthening the Armed Forces under modern conditions
6. exposing the reactionary essence of the military ideology of imperialism
7. problems of the development of military art under modern conditions

These seven "problems" would have subthemes which could be dissertations or monographs. For instance, Problem Number 1 on the military-theoretical legacy of V.I. Lenin and Problems of the Defense of the socialist fatherland under modern conditions would have themes like these:

Problems of Modern War and Organization of the Soviet Armed Forces in the Light of the Philosophical Legacy of V.I. Lenin

Problems of the Methodology and Logic of Military Science

The Dialectic of the Objective and Subjective in Armed Struggle

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[23] I cite these problems and themes here primarily because their enumeration in this article in VM in 1967 illustrates what research emphases would be stressed in the eleven military-political higher schools and in all social science departments in the military academies and schools from 1967 to 1970. The "process" is important in itself.

Determinism in War and Military Science, etc.

Problem Number 2, The CPSU and Organization of the Soviet Armed Forces might include subtopics for research similar to the following:

The Education of Officer Cadres Under Modern Conditions

Ways of Raising the Educational Effectiveness of Unit Personnel During the Process of Combat and Political Training

Pedagogical Bases of Training Soviet Soldiers (suggested doctoral dissertation)

A Psychological Analysis of Combat Activity Under Conditions of Modern War (suggested doctoral dissertation)

Psychological Problems of the Training of Soviet Soldiers for War (suggested doctoral dissertation)

Identification of broad problem areas and listing of possible subthemes, then, represented to the "research managers" at the Lenin military Political Academy, a "scientific" method of inspiring research. Such problems and themes then would be discussed in military-scientific conferences involving other faculties, various levels of command in the navy and troops--and then to work. Conferences of this kind have become quite common, and the Academy under sponsorship of the Main Political Directorate of the Soviet Army and Navy held 10 between 1964 and 1967 in the Moscow Military District and Moscow PVO (Air Defense) District alone.[24]

Feedback from such conferences helps to shape future "scientific" research, and it was agreed in 1967 that future research would have to expand "concrete military-sociological research." So the Academy faculty immediatley set to work on a "textbook" on "The Methodology and Logic of Concrete Military-Psychological Research."

Although taking the lead, the Lenin Military-Political Academy included in its research-work-planning other faculties, corresponding faculties of other military academies, and officers from the troops.

> ...It should be said that the Council for Coordination of Scientific-Research Work in the field of social sciences under the Main Political Administration [of the Soviet Army and Navy] is already conducting much work in this direction which to a considerable extent aids military academies both in defining themes of a scientific-research work and in eliminating parallelism and duplication in the reciprocal exchange of scientific information... .[25]

The role of the Lenin Military Political Academy under the careful eye of the Main Political Directorate of the Soviet Army and Navy is twofold: 1) to prepare officer

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[24] Ibid., p. 54.

[25] Ibid., p. 56.

cadres to fill political officer billets throughout the Soviet Armed Forces, as well as faculty for other military educational academies and schools, and 2) to develop and supervise "scientific" research in the social sciences (including military history, military art, military sociology, military psychology, military pedagogy, etc.) and publish results of such research in monographs produced by Voyenizdat for wide distribution, in articles in the Soviet military journals, and in texts to be used by unit political officers and social science faculties in military schools. It sits atop the 11 other higher military political schools established in 1967 and provides faculty and "work plans" for advanced central "courses" for political personnel, and various other military-political faculties at other higher military civilian schools.

The 11 military-political higher schools established in 1967 or since are presently the major commissioning schools for military-political officers for the various forces. Each therefore has an arms-specific "profile." Although "force-related" evidence suggests that these new schools are primarily answerable to the Main Political Directorate of the Soviet Army and Navy, the "political" control mechanism of the Ministry of Ministry of Defense--"political" training is common for all schools, and, in addition, the cadets and students often receive specific military training in one of the higher military schools of academies.

The Forces-specific higher military political schools include:

1. Novosibirsk Higher Military-Political Combined Arms School (Infantry). This school has a separate department for training political officers for the airborne troops.[26]

2. Minsk Higher Military-Political Combined Arms School.

3. Sverdlovsk Higher Military Political Tank and Artillery School.

4. Riga Higher Military-Political School--for the Strategic and Tactical Rocket Forces.[27]

5. Leningrad Higher Military-Political School for Air Defense (PVO Strany Forces).[28]

6. Kurgan Higher Military-Political Aviation School.

7. Kiev Naval Higher Military Political School.

8. Donetsk Higher Military Political Engineering and Signal Troops School.

9. Simiferpol' Higher Military

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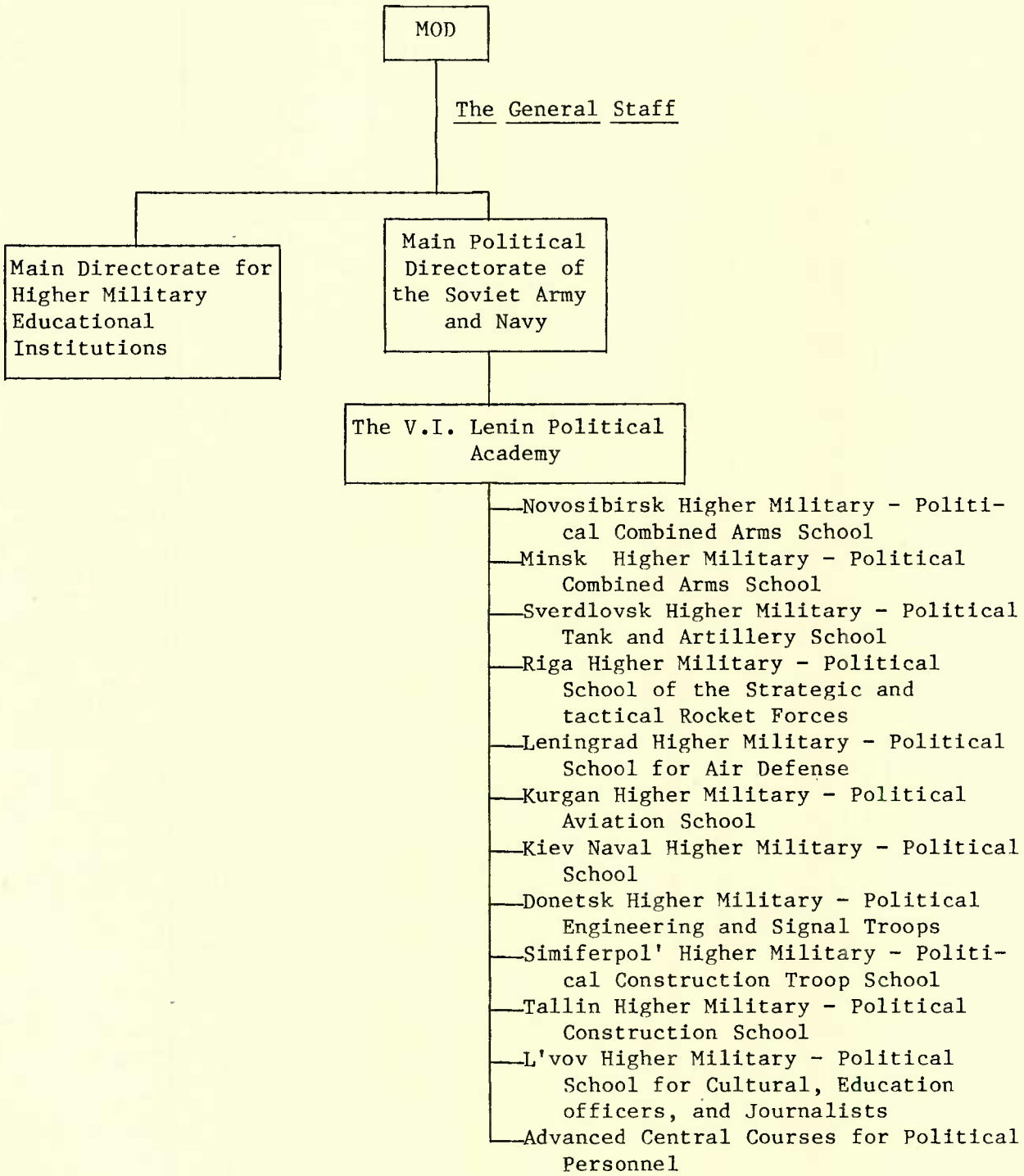
[26]DDB-2680-52-78, DIA, I-14. The Minsk Higher Military Political Combined Arms School must be added to this list. See: Krasnaya Zhvezda, 17 April, 1981.

[27]Malov, Yu., Lt. Colonel and Kuchir, A., Major, op. cit., pp. 59-60.

[28]Aleksandrov, A., Colonel, "Professional Selection at the Higher Military School," (Leningrad PVO Strany, Antiaircraft Defense Herald, July 1976, pp. 84-90.

POLITICAL ACADEMIES and SCHOOLS



Political Construction Troops School.

10. Tallin Higher Military Political Construction School (See note 27).

11. L'vov Higher Military Political School, training "cultural and education officers and military journalists."

3. Rear Services [MOD Level]: Academies and Higher Schools

Logistics support for Soviet military and naval forces is centralized at the Ministry of Defense level in "Rear Services" which in itself is a large military bureaucracy containing at least ten Directorates dealing with finance, food, medical and veterinary services, military transportation, trade, administrative-management services, clothing supply, fuel supply, personnel, and "tourism and excursions."[29] Among other things it publishes Tyl, the military journal on Rear Services, and is a major purveyor of military textbooks and monographs through its book trade directorate. Each of the six services also have their own rear services organization and functions.

Fifteen of the Academies, higher military schools, institutes, and faculties have been created by and are directed by the MOD Rear Services Administration. These Academies and schools train cadets and officers for all the other service arms. The Medical Military Academy (Kirov) and the Military Academy of Rear and Transportation, both descended from the Civil War represent the officer cadre training institutions, though the Kirov Medical Academy stands apart from the institutions under Rear Services with totally different kinds of "profiles" all dealing with medical specialities.[30] At least one military faculty has been identified at the Tomsk State Medical Institute. The Kirov Academy maintains different entrance requirements. It produces military physicians for all the services.

The Military Order of Lenin Academy of Rear Services and Transportation in Leningrad can be traced back to the Intendance Academy of St. Petersburg (1911), which in 1918, was declared to be a "higher" school and moved to Moscow. In 1956, it was combined with the Military Transportation Academy and in 1957 moved to Leningrad as the Military Order of Lenin Academy of the Rear Services and Transportation.[31]

During World War II many of the faculty and administrators of the Academy went to war, and accelerated programs for Rear Services officers were established. The role, scope and admission requirements of the Rear Services Academy and the other schools of the Rear Services are briefly described in

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[29] Directory of USSR Ministry of Defense and Armed Forces Officials, CP 80-11888, April 1980, pp. 14-15.

[30] "Military Medical Order of Lenin Red Banner Academy, imeni S.M. Kirov," Tyl, June 1977, pp. 79-84.

[31] "Military Order of Lenin Academy of Rear Transportation," Tyl, January 1977, pp. 75-76. Other articles on the Academy may be found in the same issue, pp. 77-92.

the two articles appearing in Tyl.[32]

While this discussion is primarily on the Rear Services Academies and Schools sector, the role of the "political" arm of the Main Administration for Political Affairs of the Soviet Army and Navy (and the Lenin Military Political Academy) grows clearer when we analyze the work of the Political Department in the Rear Services Academy. In 1977, Major General G. Chermatkin, Chief of the Political Department described in detail the work of his department in the Rear Services Academy and with the other schools of Rear Services.[33]

The first mission to be accomplished was that of translating the decisions of the 25th Communist Party Congress in 1975, into specific reality for the Rear Services training programs. The political department convened the "specialty" military departments, subject-methods "commissions," and the "councils" of the Academy and schools of Rear Services.

Stress was laid on improving management techniques in all departments, modeling them after those in vogue in "political" agitation areas.

But the political arm does not avoid purely military-technical matters. One officer's lecture on "Planning the Operational Work of Railroads," for example, was critiqued and disseminated widely by the political department. Another Technical Department head lectured on "The 25th CPSU Congress on the Development of Automotive Equipment," dwelling on the role of motor transport in modern war and the provision of such equipment by the "Soviet people" to the Soviet armed forces.

The demand for increased effectiveness (efktivnost) by the Congress in the work of the Academy was also promoted by the Political Department, which found its fruits in the establishment of courses like, "The effectiveness in using military automotive vehicles," "Ways to raise the quality of repairing and servicing vehicles at the troop level," and "An economic analyses of the effectiveness of repair productions... ." Chermatkin indicated that similar studies and courses were being conducted in the other special departments.

One most important point stressed at the 25th Congress, particularly by Brezhnev, was that the effectiveness of science (and scientific research) can only be raised by basing it on practical "work"--a principle which has guided research in all military academies and higher military schools since its enunciation in the mid-70s. Military literature has been filled with the constantly repeated litany of "a close tie with the troops," "close to real life," "effectiveness of the weapon, the man, or the system in combat."

In the Academy of the Rear

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[32]Radizhevskiy, L. Colonel and Mishin, V., Colonel, " Concerning the System for Admission to Military Educational Institutions of the Rear," Tyl, February 1971, pp. 119-122; "On the Entry Conditions into Military Rear Schools," Tyl January 1977, pp. 147-149.

[33]Chermatkin, G., Major General, "In Organic Unity," Tyl, January 1977, pp. 77-83.

Services and Transportation, regular joint sessions of the departments of Marxist-Leninist philosophy and scientific communism, of political economy, and the "military-special" departments are held where, at one session, Chermatkin reported that

> ...the question was discussed on the methodological problems of managing socialist society, the troops and the rear and their reflection on the teaching of philosophy, scientific communism, and rear control... .[34]

The intensification or increase of effectiveness of the Military Academies and schools insisted upon by the 25th CPSU Congress--expanding upon the 24th Congress, while being spearheaded by the "political" departments in the institutions was taken very seriously by the other departments as well--particularly in the Academy of Rear Services and Transportation.

> ...we carried out several scientific research themes with the aim of determining the optimum scope of knowledge with respect to the profile of training and the time periods of teaching. For each specialty we learned the functional duties of the graduates in their primary duties and with respect to their advancement in service within the near future by one or two stages, worked out the requirements, and determined the volume of knowledge. Accordingly, we formulated the fundamental views on training and a list of disciplines. We were greatly assisted in this work by the many years of experience [of] teaching officers in the Academy and in using the method of expert evaluation of leading specialists of the Academy and representatives from the troops... .[35]

Thus, the officer students at the Academy were used to develop course "profiles" and contents and to help in describing what they needed to learn to continue to progress in their military careers as officers of rear services in the various Soviet forces.

The factors affecting the improvements of teaching and research required by the 25th Congress were admirably summarized by Colonel-Engineer V. Rubtsov of the Academy of the Rear Services and Transportation. They included: 1) selection of training material; 2) improvements in teaching methods and improved teaching aids[36] (visual aids, computers, television--gadgetry); 3) raising the quality of

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[34]Ibid., p. 82.

[35]Rubtsov, V., Colonel-Engineer, "On the Basis on Intensification," Tyl, January 1977, p. 84.

[36]Alyab'yev, V., Colonel, "Let's Work for an Increase in the Quality of Instruction," Tyl, August 1976, pp. 56-61.

faculty*; 4) development of the "material base" and introduction of technical means into teaching; 5) a more effective use of faculty and student time, such as rigorous faculty activity analyses like the one pioneered at the Gagarin Air Academy and copied elsewhere; and 6) determination of the knowledge, skills, and qualities needed by the Academy's graduates.[37]

Western observers should remind themselves that "students" of the various academies are experienced field officers. The emphasis on the development of "creativity" and initiative in commanders which gained wide currency in the military establishment co-jointly with the "revolution in military affairs" and the reorganization of the Soviet Military Forces, takes on great significance at the Military Academy level in the military educational system. The term "scientific circles" of students when applied across-the-board to all military schools may be, and often is, downgraded in evaluating its effectiveness; but when the maturity of the experienced officers who are the students of the Academies is considered, the seriousness of this "initiative" drive of the Soviets cannot be so easily dismissed.

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[37]Rubtsov, op. cit., p. 84.

*Two primary methods to achieve this goal may be found in all institutions: 1) teaching field officers selected to teach in the academy how to teach more effectively, and 2) using graduate programs in the various academies to improve the academic credentials of faculty.

The purpose is serious enough. It is to expand the scientific outlook, improve skills of generalization, and develop the ability to analyze "complex processes and events."[38] All, or nearly all departments in the Academy of the Rear Services and Transportation had organized such "scientific" groups by 1977, and the groups were bolstered by active participation of more than half of the faculty. Upper classes (last two years of a four-year training period) and graduate students produced most of the "scientific-technical" research. A quick review of some of the 375 reports and scientific communiques delivered at the 20th military-scientific conference in 1976--out of 700 entries--included studies like these:

1. Captain V. Invent'yev, "The 25th CPSU Congress on the effectiveness of socialist production and its significance in strengthening the country's military might"--certainly a topic of concern for Rear Services officers;

2. Major A. Portonenko, "The decisions of the 25th CPSU Congress on the development of railroad, water and air transportation in the Tenth Five-Year Plan and their significance in strengthening the country's defensive capability."

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[38]Golubkov, B., Colonel-Engineering and Krylov, G., Major Engineer, "The Leaning Toward Creativeness," Tyl, January 1977, p. 87.

On the more technical side, we find these officers designing devices to mechanize and automate the control process over repair "production," or the development of a transducer and a device for remote determination of the place and time of damage to pipelines.[39]

The research appears to be economic and technical with heavy emphasis on the "applied" rather than basic research. To bear this point out further, much of the "diploma project" (dissertation) work at the Academy is done on the basis of requests from the military districts and fleets--rear services problem-solving, very practical and down-to-earth, and certainly closely tied to the troops.[40] A great deal of research rests too on the student translations of foreign scientific and technical articles, on developing new visual aids to assist the officers to succeed in transmitting to their future commands the technology of advanced weaponry, developing modern instruments and training films, and organizing new laboratory research.[41] In 1971, for instance, "the offices for technical command and control means were fitted out with better equipment" with the participation and involvement of the Academy's officer students.[42]

Nor does the Academy work in a vacuum.

> ...the Academy is taking measures [1971] to broaden and strengthen its creative ties with the troops, scientific research institutions, industrial, and transportation enterprises. Experienced production workers and representatives of scientific institutions and military chast' participate in the work of the student military-scientific society circles. They regularly give reports and scientific commentaries to the students. And the members of the Society's circle, in their turn, deliver scientific reports and commentaries during their tours with troops and periods of practical work in production... .[43]

The Lenin Academy of Rear Services and Transportation, the major rear services institution serving as the primary officer-cadre training institution for all rear services of all armed forces, sits at the top of a structure of 14 specialized higher military educational institutions, institutes, and special faculties--reflective of the broad diversity and intense specialization of the unified rear services which characterize the Soviet military system. Some of these institutions may reasonably be located under the aegis of some of the major directorates of Rear Services as illustrated in the Chart on the next page. Others may be located directly under the Academy itself.

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[39] Ibid., p. 88.

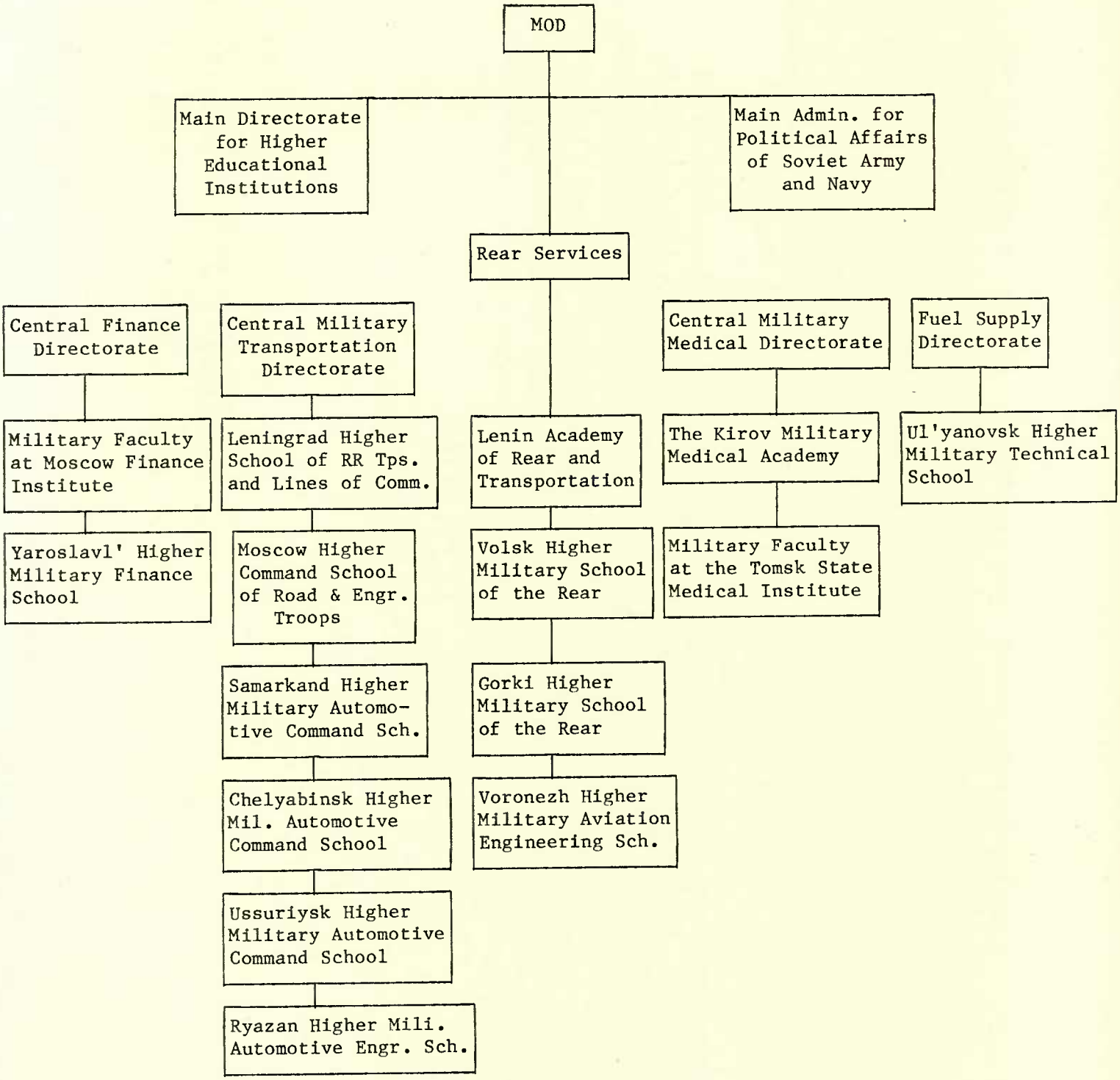
[40] Ibid., p. 88.

[41] Smirnov, N., Colonel, and Kuzharov, P., Lt. Colonel, "Military Scientific Work by Students," Tyl, June 1972, pp. 61-65.

[42] Ibid., p. 64.

[43] Ibid., p. 65.

REAR SERVICES ACADEMIES and SCHOOLS



What follows is a brief discussion of these groupings of academies, schools, institutes and faculties under these Rear Service Directorates.

Higher Specialized Commissioning Schools Under the Lenin Academy

Four schools may be listed in this category: Vol'sk Higher Military School of the Rear, Gor'koyskoye Higher Military School of the Rear (Gor'ki), Ul'yanovsk Higher Military Technical School, and Voronezh Higher Military Aviation Engineering School.

Vol'sk and Gor'ki produce lieutenants with the "qualifications" of engineer-economist in a four-year program of study for Soviet Army field troop command and service on naval ships and shore installations.

Ul'yanovsk is more specialized, producing engineers for combat vehicle maintenance and supply, and specialists in the storage and transportation of fuel. Programs are of four and five-year duration depending upon the specialty selected--the four-year graduates receiving commission as lieutenants with the "qualification" of engineer in the operation and repair of technical facilities for storage and in the use of fuel. Five-year students are graduated as lieutenants with two "qualifications" military-engineer mechanic or military engineer technologist.[44]

The Voronezh Higher Military Aviation Engineering School is a rear services school preparing officers for aviation rear services. Again, it maintains four and five-year specializations with the latter (five-year) applying only to the meterology specialization. The four-year programs include a number of specializations. All graduate as lieutenants or lieutenant engineers.[45]

These four schools are listed under the Lenin Academy for the Rear Services and Transportation primarily because they don't so clearly align themselves with the other Rear schools which can be logically placed under the Rear Services Central Finance Directorate, the Central Military Transportation Directorate, and the Central Medical Directorate. For higher command positions, except possibly graduates of the Kirov Medical Academy, after field service, officers from the other schools may move through the Lenin Academy of the Rear Services and Transportation, and thereafter possibly through the General Staff Academy.

These four schools, too, maintain close attachments to the Lenin Academy of the Rear particularly for the upgrading of their faculties. Finally, they are categorized

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[44]"On the Entry Conditions Into Military Rear Schools," Tyl, January 1977, pp. 147-148. See also: Radizhevskiy and Mishin, "Concerning the System for Admission to

[44](continued)Military Educational Institutions of the Rear," Tyl, February 1971, pp. 119-120.

[45]"The Voronezh Higher Military Aviation Engineering School," Tyl, June 1978, p. 55. Major General O. Mylov, School Commandant, "Give the Graduates Command Methods Skills," Tyl, June 1978, pp. 56-60.

under the Academy because each of the four represent various specialties involved in Rear Services with Voronezh and Ul'yanovsk representing schools with profiles required by the very changing nature of the post-war Soviet forces: fuel storage, supply quality, and the engineering skills for accomplishing these tasks; and, with the growth of the Soviet Air Forces, the need for aviation rear specialists of all kinds.

Vol'sk and Gor'ki. These two schools can be analyzed as one, particularly since the Gor'ki Higher Military School of the Rear was given its separate identity in 1977, after having been a branch of the Vol'sk Higher School for a number of years. Both schools include the broad specialties of rear services; both have four-year programs; and, both reflect the "practice of a complex solution by the schools' officer staffs of training educational tasks...set by the USSR Minister of Defense and the Chief of the Main Political Directorate of the Soviet Army and Navy... ."[46]

Like the Academy, these schools have "scientific circles" of students--younger cadets--also working on scientific research and innovations, but the general level of such efforts are much lower than those at the Academy level. They spend a great deal of time, for instance, building electrified displays for teaching aids illustrating problems like "The organs and installations of the food supply service," "Basic suppliers and methods of obtaining provisions," and "The daily subsistence norms."

Cadets entering these academies in their first year study "higher mathematics, physics, chemistry, the theory of probability, and statistics. In the second year they study mechanics, heat engineering, engineering graphics, and electrical engineering. During the last two years they specialize in their particular Rear Service interest." Throughout their study program, of course, they are taught the various social sciences--Marxism-Leninism, economics, military sociology, military psychology, and military science.

Again, as in the other schools reviewed thus far, the emphasis in the specialized military disciplines is on the very practical operational aspects of the particular subject matter.

> ...In recent years, the technical equipping of the food supply and clothing services has grown immeasurably; consequently, much time and attention must be given to teaching the officer candidates in the proper use, repair and storage of equipment and in the methodology for calculating its basic parameters and technical-economic evaluations... .[47]

They concentrate first on equipment, learning operating principles

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[46]Pavlov, L., Colonel, "In the Struggle for Strong Military Discipline," Tyl, April 1978, p. 70.

[47]Tolmachev, N., Colonel, School Commandant (Vol'sk), "With Respect to Modern Requirements," Tyl, September 1977, pp. 83-84.

and their technical-tactical capabilities. They listen to lectures, move into laboratories, and finally use the equipment in field exercises in doing "practical" repair work, "during which the subjects of transportation, deployment and closing down of technical facilities, preparation and issuance of food, baking of bread, bath and laundry service...are carried out."[48] All such practical training is aimed toward "combat readiness."

The Ul'yanovsk Higher Military Technical School was established in 1945 in the Ukraine and moved to Ul'yanovsk in 1960.[49] It was established as a response to the need to produce officers who know chemistry, liquid fuel technology, who could operate equipment for fuel deliveries, transfers and storage as well as know the grades of fuel and the evaluation of fuel quality. Ul'yanovsk was upgraded to a higher military school in 1969. During the period following the 24th CPSU Congress, it, along with other higher schools built what is called a material-training base and installed the most modern lecture rooms, laboratories, and the latest teaching aids. These training bases at the different schools include the various kinds of field equipment which the individual schools' specialties require in order to provide hands-on experience for the cadets in handling the arms, motorized equipment, storage facilities, pipelaying equipment, etc.--again, testimony to the very practical aspects of Soviet officer training. Like all other academies and schools the Ul'yanovsk Higher Military Technical School has a strong "political" department. Deputy school commandant Major General of Technical Troops V. Shcherbak pointed out in his article on the school in Tyl, March 1977,

> "...V.I. Lenin pointed out that the most important thing in any school is the ideological-political directivity of studies... ."[50]

This "directivity" is achieved in the school by the command and political departments selecting and assigning the "scientific-political" cadres, by "raising their political consciousness and ideological conviction, and in perfecting their military-scientific and special knowledge."[51]

One method used at this school to improve faculty quality and to raise their academic qualifications is to send instructors on leave for graduate studies in military academies, for postgraduate studies in

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[48] Ibid., p. 84. The Vol'sk Higher Military School of the Rear was established in November 1928, according to an article appearing in Tyl, September 1977.

[49] Another Soviet source indicates that the school was established in 1948. Chuguryaev, M., Colonel, "The Crucible of Cadres for the Fuel Service," Tyl, January 1978, p. 79.

[50] Shcherbak, V., Major General Technical Troops, "Quality in Teaching is the Main Thing," Tyl, March 1977, p. 89.

[51] Ibid., p. 89.

civilian higher educational institutions, for study in correspondence courses, and for advanced study in various institutes.[52] The instructors also serve with the troops, work at fuel service enterprises, and participate in combat field training exercises.

The faculty at Ul'yanovsk, as in other military schools, are recruited primarily from the troops and the problem of teaching them how to teach becomes critical to the educational process. Heavy emphasis is placed on "methods" assemblies, practice lecture sessions with young instructors, and trial exercises to perfect teaching skills. Again and again in the literature on the problems in the military schools and academies this weakness is emphasized, and, as a result, military pedagogy has assumed great importance in all of the schools.

Thus, a large bulk of what the Soviets call scientific research even in a school as technically oriented as is Ul'yanovsk deals with "teaching and educating," "scientific-methods conferences," "inter-departmental conferences," "assemblies and seminars," "sessions of the school's council,"* the councils of the school divisions and departments, and subject matter commissions--writing various training aids and lectures, and conducting instructor - methods, demonstrations and open and "trial" studies.[53] The Ul'yanovsk Military Higher Technical School is primarily a teaching rather than a research institution--as are most of the commissioning schools in the system, despite the repeated rhetoric about "scientific research" and the many "scientific" projects of the numerous "scientific circles" of cadets.

The Voronezh Higher Military Aviation Engineering School was established by Rear Services in 1950 for the purpose of training rear specialist for the Air Force squadrons and wings.[54] In 1975 it was upgraded to the "higher" level. It produces officers who are specialists in providing airfield technical support of aviation. Particular efforts are being made in the school to increase "command-methods" training. In order to develop these command qualities in the cadets,

> ...we achieve...[this] by having the officer candidates perform the duties of squad-leaders and training group leaders, assistant duty officer for the school, duty officer for the academic

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[52]Though one suspects this pragmatic flexibility in the Soviet higher military educational system, this is the first specific reference made to this practice found in the literature.

*An advisory body made up of selected party and military officials from the area--not a "governing" body in the Western sense.

[53]Ibid., p. 90.

[54]"The Voronezh Higher Military Aviation Engineering School," Tyl, May 1978, p. 55. Mylov, O., Major General Engineering, School Commandant, "Give the Graduates Commands-Methods Skills," Tyl, May 1978, pp. 56-65.

> course, and guard duty and guard detail commander; by having them conduct exercises on general military regulations and in drill and physical training in their training group; and by performing the duties of mechanic, technician, group chief, and engineer during practical work and in active duty with the troops... .[55]

Training of the cadet engineer proceeds through five "courses"--a course meaning one year. The first course inculcates basic military training skills; the second, skills of the "junior" commander; the third, skills of the officer-technician; and the fourth and fifth, skills of the officer engineer. Interestingly enough, literature and the arts play an important role in this aviation-engineering school. The first year includes the study of the Russian language and literature; the second, theatrical art; the third, music; and the fourth and fifth years "expressive" or film art.[56]

This young school, elevated by fiat to a higher level in 1975, suffers the traumas of many of the schools so raised in level in the 1960s and 1970s. Colonel-Engineer N. Samotsvet described the "bootstrap" operation quite openly.

> ...our collective has been replenished in recent years with officers from the troops who have no educational seniority as well as with Soviet Army employees, accepted through test competition, who are not acquainted with the work specifics in a military school. Only a few have come to us from higher educational institutions and scientific-research installations... .[57]

To overcome these "instructor" deficiencies, training-methods documents for the specialized disciplines were developed, faculty was borrowed from the Gagarin Military Air Academy, and other institutions, and 15 faculty members were sent for postgraduate study in the Military Air Engineering Academy imeni N. Ye Zhukovskiy and other schools, though openings for some specialties were tight.[58] The reference to the infusion of Army civilian employees selected by examination as staff and faculty is the first mention of this procedure in the many articles on the Soviet schools encountered in this research. It might be wondered whether the experimentation with the fine arts may not be attributed to these "civilian" faculty.

Rear Service Schools Under the Central Military Transportation Directorate

Although some question has been raised by some Western observ-

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[55] Ibid., p. 58.

[56] Ibid., p. 58.

[57] Samotsvet, N., Colonel-Engineer, Deputy School Commandant for training and scientific work, "Perfect Instructor Qualifications," Tyl, June 1978, p. 63.

[58] Ibid., p. 64.

ers about VOSO (the Central Military Transportation Directorate) being an administrative sub-entity of the Rear Services, for purposes of this analysis, it is assumed that it is. Evidence is very clear that the Leningrad Higher Command School of Railway Engineer Troops and Military Transportation and the Moscow Higher Command School of Road and Engineering Troops belong to Rear Services.[59] Three other Higher Military Transport Command Schools (Samarkand, Chelyabinsk, and Ussuriysk) and the Ryazan Higher Military Motor Transport Engineering School have been classified by the Scott, Shelton and Reitz Study GE77 TMP-40A, as belonging to Rear Services.[60] They have been located here directly under the Central Military Transportation Directorate of Rear Services.

Except for the Leningrad Command School of Railway Troops and Military Transportation and the Ryazan Higher Motor Transport Engineering School, the other four schools were established after World War II and/or were elevated to higher status in the 60s and 70s.

There is strong evidence that these six schools feed into the oldest of the group which may now have the status of an "Academy."[61]

Although the Academy commissions lieutenants from the command departments and graduates of the engineering departments as lieutenant-engineers, the school maintains a five year correspondence department and, most importantly, "officers who have graduated from secondary military training establishments (with a 4-year training period) may enroll in the [engineering] department."[62]

The command departments in the school produce officers for the military transport offices as well as specialists such as operations engineers and experts on water, or air transport. They start their military careers as deputies to military commandants of railroad districts and stations, river and ocean ports, and airports.

The five-year engineer departments train engineers in the construction and restoration of railroads and facilities and in the operation and repair of construction and roadbuilding equipment.

In line with the emphasis on providing training bases for the different military schools and academies, the Academy boasts of a specially equipped training center which, in addition to having demonstration pieces of equipment used by railroad forces, maintains a fully-operational circular railroad with all necessary track equipment, including a rail collection base, traffic equipment, a bridge training ground with "modern multi-ton bridge supports and spans, and an earthmoving and excavating equipment ground."[63] Graduates of the

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[59] "On Entry Conditions Into Military Rear Schools," Tyl, January 1977, p. 148.

[60] DDB-2680-52-78, DIA, pp. J3, J4, J6, J7.

[61] Kuznetsov, M., Major General Technical Forces, "The Leningrad Railroad Forces Academy, Tyl, January 1978, pp. 72-76.

[62] Ibid., p. 73.

[63] Ibid., p. 75.

Academy work on the construction of the Baikal-Amur Main railway line [BAM] and research efforts in the Academy support this and other major construction efforts.

The Moscow Higher Command School of Road and Engineering Troops was established in 1974 and its graduates do for highways and roads what the Railroad Academy does for the railroad system. This is such a young institution that little has appeared about it in the literature. It can be assumed, however, that it is undergoing the same growing pains which afflict new or newly-elevated institutions.

The last four schools to be treated briefly are also relatively new and not much discussed--three higher command motor transport schools and one higher motor transport engineering school. All produce officers qualified as engineers to operate and repair motor vehicles and/or prime movers. The Ryazan school has a five year engineering program.

These six academies and schools under the Central Military Transportation Directorate of Rear Services--if, in fact the Directorate does not have a totally separate identity--reflect the changes which are part of the technological revolution, particularly as far as the four motor transport command and engineering schools are concerned. But these officers man the rail, water, highway, and air military transportation system of the Country, and the blur between civilian and military agencies is great.

Schools of the Central Finance Directorate of Rear Services

There are two major institutions of Rear Services which produce officers for the military fiscal services for all branches of the services: 1) the Military Faculty at the Moscow Finance Institute (both an operational group and a graduate school), and, 2) the Yaroslavl' Higher Military Finance School. Although small in number, these schools make up for their numbers and size by the great importance of the roles they play in the Soviet military system.

What is now called the Military Faculty at the Moscow Finance Institute had its beginnings in October, 1920, when the Military-Administrative Academy and the Higher Military-Finance School were combined to become the "Military Administrative Academy of the RKKA (Workers' and Peasants' Army) "in which a military-economic school was established."[64]

In the early reorganization of the new "Soviet" Army, the direct ties between the civilian economy and enterprises and the military rear services was established--in fact, the 11th Congress decided to base supply for the new forces being built on "the mechanism of money circulation"--but with the difference that the finance service of rear services would be based on continuing and thorough studies of political-economic, military, and financial sciences. So, from the outset the new Academy's scope included training mainly new kinds of

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[64]Dutsov, V., Colonel General Qmc. Service, Chief of the Central Finance Directorate of the USSR Ministry of Defense, "Anniversary of the School of Military Finance," Tyl, September 1977, pp. 103-107.

specialists, producing military finance worker-economists and providing the latter with a higher education. The Academy lasted until 1925, and until 1929 military finance personnel were training in the Frunze Academy. From 1932 to 1936 they were prepared in the "military department" of the Leningrad Military-Finance Institute which proved to be too small to produce the numbers of trained officers for the growing services. So, the school moved back to the Frunze in 1934 until it was included in the newly established Military-Administrative Academy of the RKKA in Khar'kov in 1936. This school was dissolved in 1942, but between 1936 and 1941, it produced the officers who were the finance officers for all arms in the fronts, the military districts, the fleets, the forces, and the military field units.

After World War II, significant and important changes occurred in restructuring and supplying the military, in the building of new installations, improving the material support for the troops, and "along with these, expenditures increased immediately following the end of the war for combat and political training... ."[65]

The military played an extremely important role in "restoring the war-damaged national economy"--and, as Dutov observes, in its further development. Therefore, the military "school" in the Moscow Finance Institute was created in 1947.

The school has been headed by experienced generals; the first students entered training in 1948; faculty was recruited from field officers with practical and teaching experience; and the school went through the same throes observed in other new military schools in training the officers on "how to teach." Work on teaching aids, subject matter texts, etc., were developed and published as handbooks and aids for troop training--all under the name, again, of "scientific research." This does not diminish the significance of what was produced, however. Subjects included: on fiscal accounting in military chast' and soyedinaiye, on USSR Armed Forces finances, on the monetary subsistence of military personnel and wages for workers and office workers, and the textbook on Finances of the USSR Armed Forces.[66]

Defended-candidate dissertations produced a number of specialized finance studies, and between 1955 and 1970, 12 specialized studies were published. The school also acted as the center of research on the historical experiences of World War II and the history of Soviet Military Finance.[67]

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[65] Ibid., p. 104. These twin themes of combat and political training determined the pattern of the development of military higher education in the Soviet Union, accounting also for the establishment of new schools in the 60s and 70s and to the intensification of "political" emphasis in officer training.

[66] Ibid., p. 105.

[67] "The Finance Service of the USSR Armed Forces During the Period of the War," (1967); "Fifty Years of the Soviet Army and Navy Finance Service," (1968). Ibid., p. 106.

A most important and new operational responsibility was given to the school in 1954--that of financing "all types of capital construction within the USSR Ministry of Defense" which also required the development of new training profiles to produce specialists to fill this need.

The school has maintained a correspondence school for Army and Navy officers since 1950.

The school provided the instructional cadres for the Yaroslavl' Higher Military School which was elevated to a higher status in 1975 and which primarily produces officers for military units, the groups of forces, and the fleets. Yaroslavl' has taken over the production of junior finance officer and budget specialists: the military finance economic school at the Moscow Finance Institute emphasizes higher levels of training involving "contemporary economic-mathematical methods for analyzing expenditures for troop maintenance, the implementation of measures to raise their combat readiness, and for an analyses of the industrial and construction economy of the USSR Ministry of Defense."[68]

Academy and Faculty of the Central Medical Directorate of Rear Services

As with transportation, military fuel supply, military finance, and military logistics, the training of military medical personnel is also a responsibility of Rear Services at the Ministry of Defense level--again reinforcing the conclusion that Rear Services constitutes a separate branch of service, but one which penetrates all levels of the Soviet Armed Forces operations.

Not much information is available on the military faculty at the Tomsk State Medical Institute except for some open press reports about it in 1967. It may represent a method being experimented with by the Central Medical Directorate to increase the numbers of medical personnel economically and efficiently.[69]

The Military Medical Academy named in honor of S.M. Kirov is the centerpiece of Soviet military medical education. It is a multi-profile institution with advanced medical graduate study and research, with highly developed specialty departments, and with a heavy emphasis on aspects of medical matters in "modern combat." This Academy has a long and distinguished history dating back to 1798.

Since the Bolshevik revolution "the training scientific and medical work of the Academy [has been] subordinated to the interests of the medical support of the Active Army."[70]

According to the head of the Academy [1977] Lt. General of the Medical Service, N. Ivanov, the military doctor must be able to organize medical support, know the "specifics of the life of the personnel, pathogenesis, the clinical

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[68] Ibid., p. 107.

[69] DDB-2680-52-78, DIA, op. cit., p. M8.

[70] "Military Medical Order of Lenin Red Banner Academy, imeni S.M. Kirov, Tyl, May 1977, pp. 79-85; pp. 96-98.

history, prophylaxis and treatment of various injuries caused by modern weapons [emphasis added] and also diseases connected with wartime conditions...[and], the physiology and hygiene of military labor." He must also know the organization of the troop and operative rear services, and become an administrator of medical services. He should be grounded too in military tactics and operational art of warfare.[71]

Making militarily-literate men of the doctors of the Medical Service began in 1922-23, and has continued to this day--even intensifying after the "revolution in military affairs." Much of the work of the Academy is devoted to Soviet public health. The Academy produces military medical doctors for all the Armed Forces, including naval and air flight surgeons. And even the Academy has a "field training center." Its library holdings total almost 2,000,000 volumes.[72]

Rear Services Schools and Academies: A Brief Recapitulation

This brief overview of the "schools of the rear" which have been located administratively under rear services at the Ministry of Defense level rather than under the Main Directorate for Military Higher Educational Institutions lends additional emphasis to the importance of the Rear Services structure in the Soviet military system. Following on the philosophy of military education being closely tied to the troops, these officers of rear services permeate just as do the "political" graduates of the military political schools and academies all of the branches of Soviet military services.

One gets, a heightened sense of the centralization and control of the system by the Ministry of Defense and its General Staff in a presentation of this kind. The 15 academies, schools, and faculties constituting the rear service schools become in this approach extremely vital and important institutions.

Civil Defense [MOD Level]--Higher Military Academy and Higher Central Officer Courses of Civil Defense

Very little information on these two institutions appears in the open Soviet Press. The organizational structure of Civil Defense on the MOD level is quite tightly structured and includes close ties with Civil Defense staffs in the Republics, all under top-level Soviet military commanders. The role of the Moscow Higher Military Academy or School of Civil Defense is to prepare officers for junior and senior commands of the National and Republic Civil Defense Staffs which direct all civil defense efforts which are primarily a military responsibility in the Soviet Union.

The Higher Central Officers Courses of Civil Defense provide civil defense training for senior officers and civil defense workers and it may be assumed, are organized along the patterns of the

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[71] Ivanov, N., Lt. General of the Medical Service, "Training Center for Military Doctors," Tyl, June 1977, p. 80.

[72] Ibid., pp. 83-84.

famous "Vystrel" and Central Artillery Officers "Courses."[73]

Construction and Billeting of Troops [MOD Level]--Higher Technical Construction Schools

Although construction and billeting of troops in the National Foreign Assessment Centers' Directory of USSR Ministry of Defense and Armed Forces officials separates and locates these activities on the Ministry of Defense level along with Rear Services, the General Staff, the Main Political Directorate of the Soviet Army and Navy, and Civil Defense, much of what it does looks toward Rear Services (particularly to the Higher Military Finance School at the Moscow Finance Institute and to the Rear Services in general). Perhaps the magnitude of the tasks involved as well as the direct involvement in military capital construction and the problems attendant to building military housing, bases, training grounds, etc. help to explain this separate designation. It is interesting that it is not apparently one of the Directorates of Rear Services, which it would logically appear to be.[74]

Construction and billeting of troops has several major Directorates of its own (as has Rear Services). For example, there are four Directorates directly responsible for construction: (1) the Main Military Construction Directorate; (2) Materials Allocation Directorate; (3) Capital Construction Directorate (organization and plans); and (4) the Technical Directorate of Capital Construction.

The five higher military schools which have been located under the national construction and billeting of troops, appear to fall under these four sub-directorates.

All five schools were upgraded to a higher level (commissioning lieutenants) in the 1960s and 1970s. Some were changed from technical to "construction" schools--changes made after the decision to give the military schools at the Moscow Finance Institute financial operational control over all military capital investments.

This group of schools calls for more thorough investigation. The research materials available at this time virtually makes no mention of them, and the Scott, Reitz study mentions them only in passing.[75]

Summary on the Academies and Schools on the Ministry of Defense Level

Several observations should be made about the 40 institutions which have been identified in this chapter as operating under major administrative groups on the Ministry of Defense Level.

1. In all cases these schools produce officers or train experienced officers for

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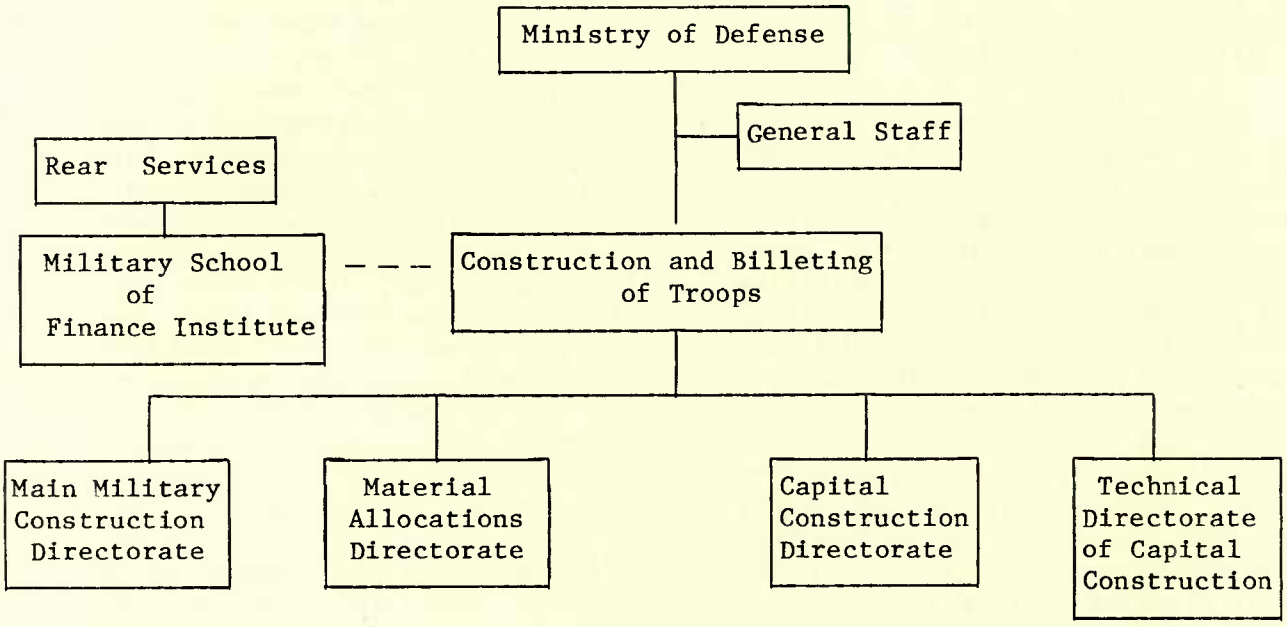
[73] op cit., p. M10 and N3. DDB-2680-52-78.

[74] CR80-11888, April 1980, op cit., p. 13.

[75] Soviet Military Schools, DIA, DDB-2680-52-78, pp. J18, 21, 22, 24, 25.

CONSTRUCTION SCHOOLS



Higher Schools

1. Leningrad Higher Military Engineering Construction School
2. Kamyshin Higher Military Construction Command School
3. Pushkin Higher Military Construction Command School
4. Novosibirsk Military Construction Technical School
5. Volga Military Construction Technical Command School

higher levels of command in military-wide responsibilities involving major political control and sensitive military functions of the forces.

2. These 40 schools look more directly to the MOD level organizations (Rear Services, Civil Defense, The Main Political Directorate of the Soviet Army and Navy, Construction and Billeting of Troops, the Military Procurator, and the General Staff) than they do to the Main Directorate for Higher Military Educational Institutions. This last Directorate appears to have the chief resonsibility for the Service-related Academies and Schools.

3. All of the major military policy decisions regarding the directions of officer preparation and development are held at the MOD level, coordination between these special agencies and their institutions is assured, and changes of direction can be immediately translated into action. The remaining 123 service-related schools can thus be allowed a certain amount of autonomy under the careful supervision of the Main Directorate for Higher Military Educational Institutions. When viewed in this manner the organizational logic of this arrangement is striking, though its effectiveness can only be estimated. If, however, the Ministry of Defense agrees to emphasize combat readiness and training, training and research programs tied to practical questions, and a close tie to the troops (of all forces), or a forces-wide reinforcement of "political orthodoxy and enthusiasm, or insist that officers be proficient in teaching their troops the efficient use of new weaponry they speak with a unified voice. This is a voice that is heard immediately through the system to the squad level. The Academies and Schools on the MOD level form important links to affecting these results.

CHAPTER III

The ARMED FORCES: ACADEMIES, SCHOOLS INSTITUTES and COURSES

As presently identified by Western military observers, the Soviets maintain six separate services: the Air Defense Forces (PVO Strany), the Air Forces (VVS), the Ground Forces (SV), the Naval Forces (VMF), the Strategic Rocket Forces (RVSN), and the Special Troops Forces.[1]* There are 123 military educational institutions which belong to these six different service arms all of which are administratively linked through the various deputy chiefs for higher military educational institutions to the Main Directorate for Higher Military Educational Institutions on the MOD level for military matters, and indirectly linked to the Main Directorate for Political Affairs of the Soviet Army and Navy for political matters.

But each of the services has its own schools, and in almost every case each has a level of commissioning schools producing junior officers topped by one or more Academies dedicated to the training of senior, experienced officers.

In this chapter, the academies and schools tied to the six services of the Soviet military system will be treated.

PVO Strany

PVO Strany, the Air Defense Force itself, has major subdivisions, some of which may be more closely identified with the specialized higher schools themselves. Aviation, Signal and Radio Technical Troops, and Surface-to-Air Missile Troops constitute these three commands. There are a total of 23 academies and higher military schools under the Air Defense Forces of the Soviet Union.

The Aviation Schools of PVO Strany number three: The Armavir Higher Military Aviation School for Pilots of the PVO, the Stavropol' Higher Military School for Pilots and Navigators of the PVO, and the Daugavpils Higher Aviation Engineering School of the PVO. All three schools were established in the 1960s, and upgraded to the higher level in the 1970s. They produce specialized officers in the piloting and operation of aircraft, in air navigation, in the use of air control facilities, and in radiotechnical and radioelectronic systems for the Air Defense Forces. They have developed sophisticated field training bases with emphasis on the mastery of equipment and its combat applications. Special electronic complexes, navigational and pilot

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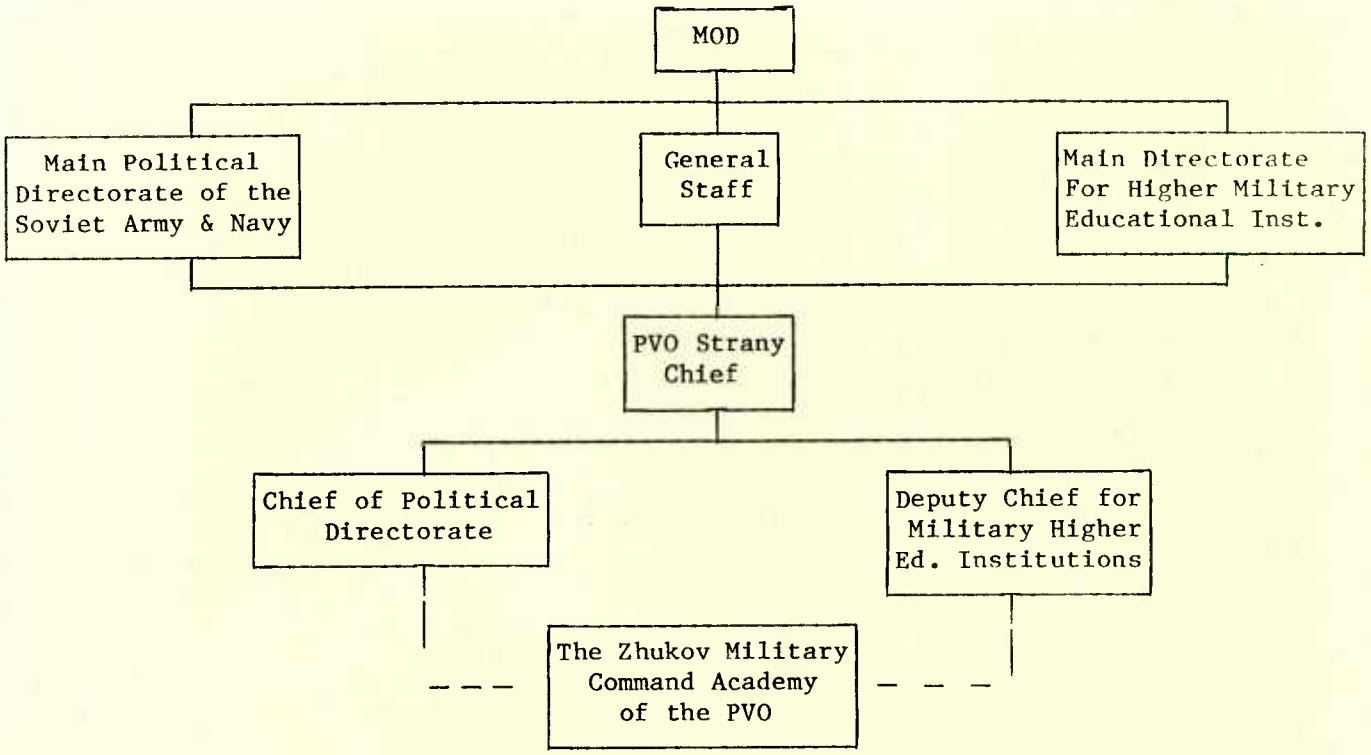
[1]CR 80-11888, op cit., pp. 19-30.

*Some students of Soviet military organization argue that Special Troops are no more a separate service than is the U.S. Marine Corps, and that to continue to treat them as such is an error. As far as the higher educational system is concerned, Special Troops appear to maintain a somewhat separate identity.



Aviation

1. Armavir Higher Mil. Aviation School for Pilots of the PVO
2. Stavropol' Higher Military School for Pilots and Navigators of the PVO
3. Daugavpils Higher Aviation Engineering School of the PVO

Signal Troops and Radio-Tech. Troops

1. Zhitomir Advanced PVO Electronics Academy
2. Krasnoyarsk Higher Command School for Radio-Electronics of the PVO
3. Pushkin Higher Command School for Radio-Electronics of the PVO
4. Vil'nius Higher Command School for Radio-Electronics of the PVO
5. Govorov Military Engr. Radio Tech. Academy of the PVO
6. Kiev Higher Engineering Radio Technical School of the PVO

Surface to Air Missile Troops

1. Military Command Academy of Air Defense Troops
2. Gor'ki Higher SAM Command School of the PVO
3. Dnepropetrovsk Higher SAM Command School of the PVO
4. Ordzkonidze Higher SAM Command School of the PVO
5. Engels' Higher SAM Command School of the PVO
6. Yaroslavl' Higher SAM Command School of the PVO
7. Opachka Higher Antiaircraft Missile Command School of Air Defense (PVO)
8. Minsk Higher SAM Engineering School of the PVO
9. Leningrad Higher Antiaircraft Missile Command School
10. Orenburg Higher Antiaircraft Missile Command School
11. Poltava Higher Antiaircraft Missile Command School
12. Smolensk Higher Antiaircraft Missile Command School
13. Kiev Higher Antiaircraft Missile Engineering School

trainers, and the latest automated teaching devices have been installed in the schools--many of which have been created by the instructors and the "scientific" circles of students in the schools.[2]

The training process and the development of the training-materiel base of these and other PVO Strany schools is described clearly by Lt. Colonel Engineer, G. Kazantsev, a candidate in the "educational sciences."

> ...the trends of development of the training-materiel base of the school are primarily determined by the training system... . Three steps lie at the organizational basis of the system of training in Air Defense schools today... [1] classes in auditoriums and laboratories, [2] classes at training sessions, and [3] troop apprenticeship... .[3]

The first two of these three steps are the primary responsibility of the higher military schools, and the problem of acquiring large quantities of specific technical knowledge in classes in auditoriums and laboratories has required the development of "modern technical means of training"--the building of automated training auditoriums and classrooms, offices and laboratories replete with the most advanced audio-visual equipment. Thus, the software becomes central to the training enterprise. Under the leadership of the faculties of the Govorov Air Defense Academy of the PVO and the Kiev Higher engineering Radiotechnical School of Air Defense, textbooks, training aids, books and brochures concentrating on the basic principles of the structure and operation of equipment and armament have been prepared.[4] The emphasis at this level of training is on practical skills and making the cadets and students technically combat ready.

> ...Classroom simulators are more and more widely used in Air Defense schools for strengthening the element of practical skills of the future military specialists. Thus, for example, classroom-simulators for the practical training of cadets for work as guidance officers have been created at the Gor'kiy Higher Antiaircraft Missile Command School of Air Defense. At the Vil'nius Higher Command School of Air Defense, radioelectronic training sessions are held at command posts and control posts... .[5]

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[2]Golodnikov, N. Major General of Aviation, Chief, "Stavropol' Higher Aviation," Technology and Armament, February 1977, pp. 52-55. This article includes a brief discussion on the Armavir and Daugavpils schools.

[3]Kazantsev, G. Lt. Colonel, "The Training-Materiel Base of the School," Antiaircraft Defense Herald, July 1977, pp. 86-87.

[4]Ibid., p. 87.

[5]Ibid., p. 88.

At the Engels Higher Antiaircraft Missile Command School of the PVO, special materials on preventive maintenance, equipment checks and repair procedures for missile complexes have been devised for cadet training. At the Krasnoyarsk Higher Command School radioelectronic devices emphasize training cadets in evaluating air situations and relaying orders to missile field units. At the Opochetsk School, students learn to operate missile guidance stations on their own, while at the Yaroslavl' school special trainers have been built providing training space for 2 to 3 cadets to learn missile guidance, control and firing systems.[6]

The training centers in the PVO schools take on special significance in training. They are the places where "classes at training sessions" take place. Work in these centers is "practical independent work of each student on combat equipment." By mid-1977, these training bases had been built at a number of schools, including the Zhukov Academy, the Kiev Higher Engineering Radiotechnical, the Yaroslavl' and the Engels Higher Command Schools, and the Vil'nius Higher Command School of Air Defense Radioelectronics.

Not all had been properly equipped at that time however in "Control-measuring" apparatus or, more significantly with the necessary computer technology--weaknesses which may well have been corrected by mid-1981. But the basic thrust of the schools is similar: "To create conditions in the schools which approximate the "real situation and life of the troops" and to provide the officers being trained with basic knowledge and the practical skills in "controlling combat technology and weapons."[7]

The six higher military schools which have been located under the Signal Troops and Radiotechnical troops of the Air Defense forces include two academies (Zhitomir Higher Command Radioelectronics Academy of Air Defense imeni the Lenin Komsomol and the Military Engineering Radiotechnical Air Defense Academy imeni Govorov) and four higher radiotechnical engineering schools: the Kiev Higher Radiotechnical Engineering School, the Vil'nius Higher Command Radioelectronics School, the Pushkin Higher Command Radioelectronics School, and the Krasnoyarsk Higher Command Radioelectronics School of Air Defense.

The oldest of these schools is the Zhitomir Academy which dates back to the Civil War when it was The Antiaircraft Artillery School. According to one Soviet artillery general it is the highest PVO Academy today, although the newer Military Command Academy of the Air Defense Troops imeni Zhukov functions for the commands of all the PVO Forces as a purely officer-cadre advanced training unit.[8] The Zhukov differs in emphasis from the

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[6] Ibid., p. 88.

[7] Ibid., p. 90.

[8] Trofimov, N., Major General Aviation, "Develop and Educate Cadres Carefully at Military Educational Institutions," Antiaircraft Defense Herald, September 1972, pp. 100-108.

Zhitomir and Govorov Academies primarily because the latter institutions deal with the technical engineering officer cadres while the Zhukov deals with the command cadres for all PVO forces.

As Major General of Artillery, M. Ionov observes in a review of N. Ya Golovanov's book on the Zhitomir Academy in an article in the Antiaircraft Defense Herald in 1978,

> ...In the 1950s, the PVO Forces were re-equipped with surface to air missiles complexes, electronic equipment, and computers. Under these conditions, the requirements for the training of officers [emphasis added] were increased and it was necessary to change both the system itself and the areas of training for cadres. The Academy became a center for giving officers electronics training... .[9]

In January 1968, the Zhitomir Academy became an advanced PVO Forces training establishment.

The Govorov Air Defense Academy was established in 1946 and given a status equivalent to the Zhitomir in 1968. Both institutions play a primary role in training technical officer cadres, and the Govorov joined the Zhitomir in developing research in the technical fields in response to the resolution adopted by the 25th CPSU Congress--"to develop scientific research in advanced educational institutions"--a resolution "fully applicable" to military educational institutions.[10]

Again, however, the research being done in these institutions may be described as practical rather than basic and always containing a heavy ideological-political emphasis.

The heavy responsibility for teaching in the institutions--a function of intricately developed training plans and programs--left little time for sustained basic research, nor could the result of research achievements be measured. As a result the Govorov Academy personnel developed a "System for Improving the Effectiveness and Quality of Scientific Work in the Academy"--a rather complicated formula described by Colonel Chelpanov.[11]

The heavy teaching load of faculty was one of the reasons, he complained, that "individual instructors and even departments frequently show passiveness in scientific research and do not strive for the development of major scientific discoveries."

Here again, scientific research had to be "tied to the troops." While the specialized de-

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[9]Ionov, M., Major General Artillery, "The Zhitomir Red Banner Academy," Antiaircraft Defense Herald, June 1978, p, 159.

[10]Chelpanov, A., Colonel Engineer, Deputy Superintendent for Training and Scientific Work of the Govorov PVO Electronic Engineering Academy, "The Effectiveness of Scientific Research in an Academy," Antiaircraft Defense Herald, June 1978, pp. 69-74.

[11]Ibid., pp. 70-71.

partments were the primary sites for research, the needs of the forces determined the value of the research--even setting "themes" for the dissertations of the graduate student officers and closely relating the research to the training process.[12]

The desire to infuse all training, including the highly technical subjects, with "partyness," a term traced back to Lenin's perception that the engineer, the agronomist, the forestry expert--in short, the specialist--all come to a Communist world view in their own way, has confusing results in differentiating Soviet military scientific research from that done in Western societies. In one instance the head of the physico-mathematics department developed a seminar on the "philosohical problems of mathematics" resulting in a series of lectures bearing wondrous titles like:

> "The Modern Scientific Technical Revolution and the Mathematization of Science;"
> "The Random and the Logical in Science;" and
> "The Role of Russian and Soviet Mathematician in the Development of the Theory of Probability."[13]

While setting as an objective the inculcation of creative thinking in the officer cadres in their advanced training, scientific research in these institutions can be characterized as being primarily related to PVO troop needs and to the improvement of teaching devices and equipment.

The other four schools in this group all date to the postwar years, three of which are higher command radioelectronics schools (Pushkin, Vil'nius, and Krasnoyarsk) and the fourth as a higher radiotechnical engineering school (Kiev). All produce officers with radioelectronic engineering specialties, and specialists in computers and automation, in electrical supply, and electrical equipment.

At each of the schools much of the cadets' time is devoted to studying radioelectronics, automation, computer theory, computer programming, and the mastery of PVO combat equipment. They are furnished with the latest laboratory equipment, including radiotechnical complexes where they study their combat operation.

The future officers study higher mathematics and physics, the theory of electronic radio circuits, fundamentals of radar and electronic countermeasures, radio transmitters and receivers, antenna systems, superhighfrequency electrodynamics and engineering, fundamentals of computer technology and programming, fundamentals of electronic resource control, and other

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[12] Ibid., p. 73. The graduate program at the Govorov Academy was established in 1948, only 2 years after the establishment of the Academy itself--a too-frequent occurrence in the Soviet Military Higher Educational System.

[13] Lykov, I., Lt. General Engineer, Deputy Chief of the Govorov Academy, "The Department Teaches and Educates," Antiaircraft Defense Herald, June 1977, p. 103.

engineering disciplines. The schools graduate commanders of radiotechnical podrazdeleniye. Cadets spend considerable time as members of command post crews and learn combat skills during this duty.[14]

The largest number of PVO (air defense) schools are the antiaircraft missile command and engineering schools--13 in all. Five of these schools have been listed by David S. Jones, ed. in the 1980 Soviet Armed Forces Review Annual under the Ground Forces rather than under PVO Strany troops.[15] Internal evidence from Soviet military literature suggests, however, that they should be classified under the PVO Strany Command. Four of the five schools converted to missile training in 1974; the fifth, Orenburg, converted to missile training in 1970. All presently carry higher antiaircraft missile designations as part of their names.[16] Actually a strong case can be made for including these schools along with the six schools discussed as part of the Signal Troops and Radiotechnical Troops Command instead of under the Surface-to-Air Missile Troops. But that all 13 belong to the PVO Strany institutions appears to be the proper classification since all of them produce specialists-lieutenants with qualifications in radio technology and electronics, specialists in radiotechnical equipment operations, radio technology, and/or electronics engineering. Their profiles, emphases, research goals and practices, electronic and computer laboratories, field training, and political indoctrination programs are all similar. The most important common feature of all 19 of these schools is that they produce missile officers or train officer cadres (two academies). Only the three Air Defense Schools dealing with PVO Aviation are clearly differentiated from these institutions.

Finally, capping the PVO higher schools and academies is the Military Academy of the Air Defense Troops imeni Zhukov. This Academy was established in 1953. Its service schools train experienced officers of their services for higher command responsibility. As primarily post World War II institutions charged with the air defense of the Soviet Union, they have

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[14]Matvyev, S., Major General, "Krasnoyarsk Radioelectronics Command School," Technology and Armament, April 1976, pp. 65-68; Gromadin, V., Major General, "Pushkin Higher School," Technology and Armament, October 1976, pp. 72-77; Linnik, A., Lt. General, "25th Anniversary of the Kiev Air Defense Force Advanced Radioengineering School (KVIRT)," April 1978, pp. 85-89, DDB-2680-52-78, op cit., p. C22.

[15]Jones, David S., Soviet Armed Forces Review, Vol. 4, op cit., p. 49.

[16]DDB-2680-52-78, op cit., pp. E7, E8, E10, E11, E12. See also: (continued)"Kiev Higher SAM Engineering School," Military Herald, May 1979, pp. 166-167; "Scientific Organization of Labor--For Use by Military Schools," Antiaircraft Defense Herald, May 1972, pp. 96-103.

played an important role in the technological revolution in weapons and technology. As Abramov, Colonel General of Aviation, Deputy Commander-in-Chief of the PVO Forces for Higher Military Educational Institutions observed in an article published in 1978,

> ...Military educational institutions are rightfully always among the first to receive new equipment and the first to master it. This is because they are the foundry for officer cadres. Today it is not easy to prepare highly-qualified specialists for the operation of modern SAM complexes, aviation, radar equipment, and automated control systems. As equipment becomes more complicated it becomes all the more hidden from the eyes and all the less accessible for study. More and more, electronics and automatics are taking over functions in the control system. However, the unchanging truth remains that equipment by itself, without man, can never reveal completely its high combat capabilities... .[17]

The Air Defense Forces higher military schools and academies are among the most technically sophisticated training schools and training centers in the Soviet military system and their proliferation, expansion, and support signifies the importance the Soviet Union places upon its territorial integrity from outside attack.

The Air Forces

The present state of knowledge about the higher military educational institutions under the Air Forces is skimpy, though the articles on the two Air Forces academies in the Soviet Military Encyclopedia are basic and useful.[18] Presently, various sources identify a total of 24 institutions in the Air Force sector, 11 of which are aviation engineering specialty schools (hence directed by the Aviation Engineering Service of the Air Forces); and 13 higher schools, falling under the Combat Training, Long-Range Aviation and Military Transport Commands of the Air Forces. The Gagarin Military Air Academy sits atop the pilot and navigator schools; the Zhukovskiy Military Aviation Engineering Academy on the aviation engineering schools.

The two academies, as with other services' academies, primarily train experienced officers (officer cadres) for higher command. Or, as General Colonel of Aviation N.M. Skomorokov put it in his article on the Gagarin Academy:

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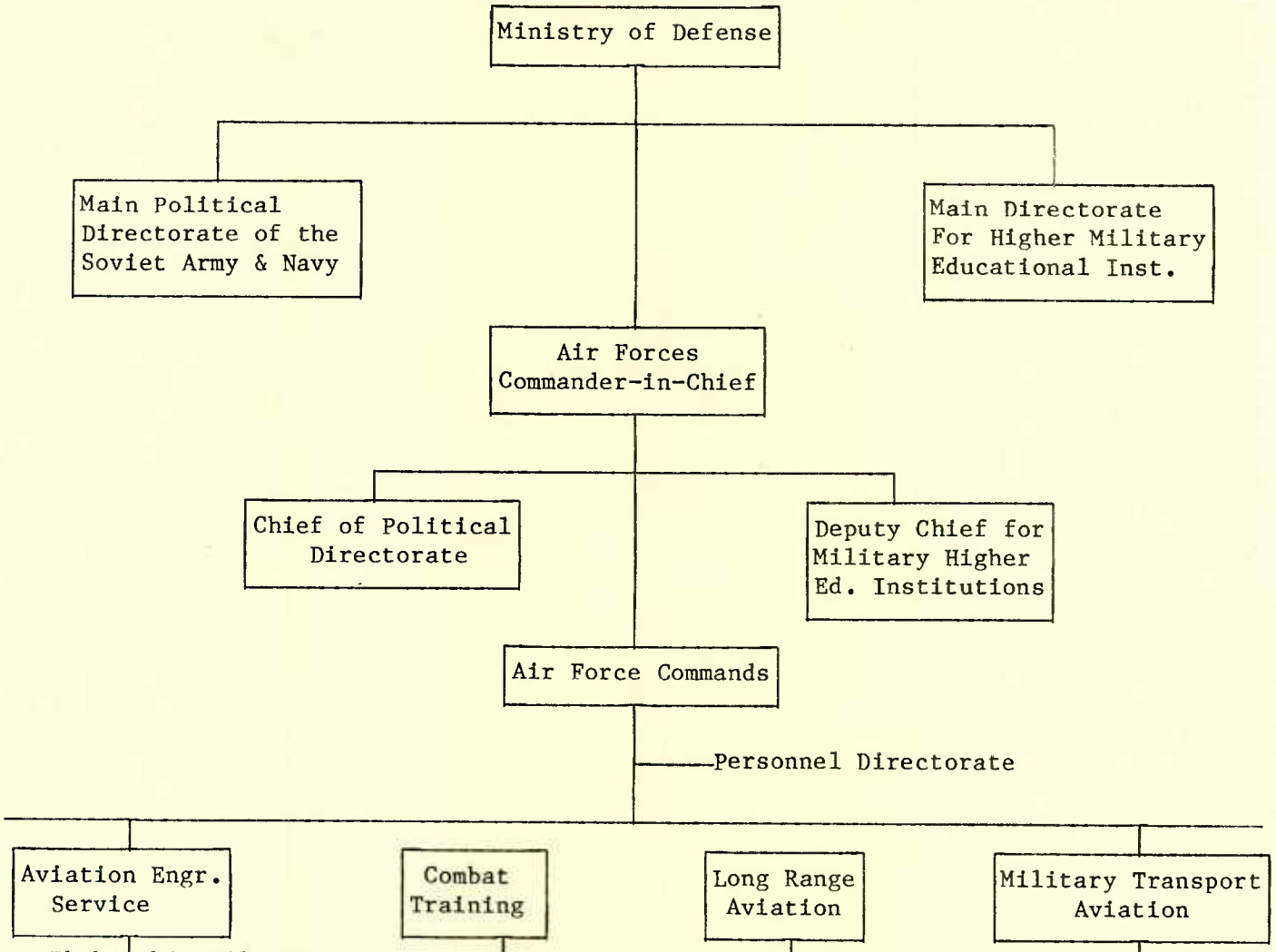
[17]Abramov, V., Colonel General of Aviation, "Commentary by the Deputy Commander-in-Chief of the PVO Forces for Academies," Antiaircraft Defense Herald, May 1978, p. 96.

[18]GE77-TMP-40A, op cit., pp. F-30-33 for the Gagarin Academy; pp. F-33-35 for the Zhukovskiy Air Engineering Academy. Translations from the Soviet Military Encyclopedia, Volume 2, 1976.

AIR FORCE ACADEMIES and SCHOOLS



1. Zhukovskiy Mil. Avn. Engr. Academy
2. Irkutsk Higher Mil. Avn. Engr. School
3. Kiev Higher Mil. Avn. Engr. School
4. Khar'kov Higher Mil. Avn. Engr. School
5. Riga Higher Mil. Avn. Engr. School
6. Tambov Higher Mil. Avn. Engr. School
7. Khar'kov Higher Avn. Command School of Signals
8. Achinsk Mil. Avn. Tech. School
9. Vasil'kov Mil. Avn. Tech. School
10. Kaliningrad Mil. Avn. Tech. School
11. Perm Mil. Avn. Tech. School

1. Gagarin Military Air Academy
2. Balashov Higher Mil. Avn. School for Pilots
3. Barnaul Higher Mil. Avn. School for Pilots
4. Borisoglebsk Higher Mil. Avn. School for Pilots
5. Chernigov Higher Mil. Avn. School for Pilots
6. Kacha Higher Military Avn. School for Pilots
7. Khar'kov Higher Mil. Avn. School for Pilots
8. Orenburg Higher Military Avn. School for Pilots
9. Syzran Higher Military Avn. School for Pilots
10. Tambov Higher Military Avn. School for Pilots
11. Yeysk Higher Military Avn. School for Pilots
12. Saratov Higher Military Aviation School for Pilots
13. Chelyabinsk Higher Mil. Avn. School for Navigators
14. Voroshilovgrad Higher Mil. Avn. School for Navigators

> ...In the training and education of students, great emphasis is placed upon enhancing their operational and tactical training, instilling command techniques and developing the ability to make decisions under any combat conditions quickly and intelligently on the basis of modern scientific methods using electronic computer equipment. During their period of study, pilots and navigators periodically participate in practice flights in modern combat aircraft (e.g., helicopters), and also systematically use different kinds of training devices for improving their flying skills... .[19]

The Gagarin was established in 1940 and built on faculty and staff transferred from the Zhukovskiy Academy which traces its origins back to the Moscow Aviatechnical School of 1919 and which for a time was the Academy of the Air Fleet (1920-1925). The Gagarin Academy also maintains a "scientific center for solving problems of operational art" for the Air Forces and for development of tactics for various branches of the Air Force and different types of aircraft in the inventory. Following World War II, it took on the task of educating the hero aviators and navigators for higher command. It produces graduates who have become cosmonauts, and test pilots, and test navigators.[20] It was also at the Gagarin that the wartime air forces combat experiences were collected and analyzed to become a basic part of the development of logistical norms and organizational bases for future combat actions of aviation subunits, squadrons, and wings.

In 1969, the Gagarin took the lead in investigating the "Scientific Organization of Labor" of its administrative, faculty, and scientific associate personnel--in Western (United States) parlance, an in-depth "faculty activity analysis." This was the most sophisticated effort of its time, was approved at the Main Directorate for Higher Military Educational Institutions level, and was initiated throughout the entire system with the Directorate's blessing and encouragement. Published results of the Gagarin investigation are revealing because they describe how faculty and staff of a major military specialized academy spent their time.[21]

The direct questionaire method was used and the analysts worked with 70,000 daily personal time budgets since the project covered a six-month period. There were 59 time expenditure record items which could be subsumed under seven broad categories. The extensiveness of the survey form can best be appreciated by seeing it directly.

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[19] Skomorokov, Ibid., p. F-32.

[20] Ibid., p. F31.

[21] Vasil'kov, G., Colonel, Perepelitskiy, S., Engineer Colonel, and Sokolkin, N., Engineer lt. Colonel, "Research on the Organization of the Teaching Staff and Scientific Associates," Voyennaya Mysl', January 1969, pp. 33-43.

Chart 1[22]

WORK TIME EXPENDITURE RECORD

Rank

Department, Scientific Research Laboratory

	Type of Work		Date of Performance 1 2 3 4 5 6 7 8 9 10 ... 31
1	Performance	Lectures	
2		Group Classes	
3		Practice sessions	
4		Consultations	
5		Individual Consultations	
6	Class Preparation		
7	Writing	Textbooks	
8		Scientific research reports	
9		Teaching Aids	
10		Articles, papers (for journals, etc.);	
11		Lectures	
12	Correcting student assignments		
13	Checking quality and condition of work, performed by	Instructors	
14		Scientific associates	
15	Preparation	Of methodogical elaborations for group exercises;	
16		Of methodological materials for industrial training;	
17		Of labor and wage records, accounts;	
18	Elaboration	Of teaching programs, plans and schedules;	
19		Of prospectuses, assignment plans and schedules for scientific research	
20	Coordination and specification of plans, assignments	Within the department	
21		Within the academy	
22		With travel to other organizations	
23	Guidance of student projects	In military science circles	
24		For course assignments	
25		For senior projects	
26	Class attendance	Inspection	
27		Demonstration	
28		Open	
29	Coordination and assignments	Specification of plans,	
30	Meetings, conferences and staff meetings	In the department (group)	
31		In the faculty	
32		In the academy	
33		In other organizations	
34	Participation in academy war games	Preparation of materials	
35		Personnel preparation	
36		Direct participation	
37	Participation in conferences and seminars	At the academy	
38		At other scientific research establishments and line units	
39	Command personnel training plan classes		
40	Perusal and study	Of special literature	
41		Of research materials and instructional documents	
42	Performance	Of theoretical research	
43		Of experiments	
44		Of computational work	
45		Of statistical analysis	
46	Technical preparation (writing in formulas, making counts, preparation of illustrations, etc.)	Of teaching-methods materials	
47		Scientific research materials	
48	Reviewing	Academy materials	Of teaching-methods materials
49			Scientific research materials
50		Materials of other organizations	Of teaching-methods materials
51			Scientific research materials
52	Work with editorial-publishing division on publications		
53	Professional travel		
54	Tour of duty in units		
55	Practical summer activities		
56	Performance of party work		
57	Participation in sports activities		
58	Leave		
59	Other types of professional time expenditures		

Notes:

1. The corresponding columns should contain only actually expended time (hours, minutes; for example, 2.30).
2. For protracted periods of performance of numbers 53-55 one indicates the specified work time for each day: for instructors six hours, for scientific associates seven hours.
3. For scientific research work one indicates in addition to time the number of completed scientific research tasks: $\frac{6621.}{4.30}$
4. Time expenditure on FIZO [physical training (?)] is indicated in the number "command personnel training."
5. Numbers 13 and 14 are filled out by department and scientific research unit heads, their deputies and scientific research laboratory chiefs.

[22] Ibid., pp. 35-37.

In the departments (or chairs) administrative personnel spent almost 60 percent of their time on teaching and research, primarily of an organizational nature; almost 15 percent on military theory and practical training; 10 percent on professional conferences and meetings; the balance was divided between scientific seminars and conferences, participation in party, civic and other professional activities. Faculty spent about 72 percent of their time on teaching and research; 11 percent on military theory and practical training; the balance on professional conferences and meetings, and other professional activities and party and civil involvement.

Personnel in the scientific research laboratories, on the other hand, both administrative and scientific personnel, spent most of their time (67.4 percent and 71.9 percent, respectively) on scientific research; 2.4 percent and 3.3 percent respectively on teaching; about 10 percent on military theory and practical training; 2 to 5 percent on scientific conferences plus an additional 5.4 and 3.2 percent on other professional conferences; the balance in party and civic activities.

The nature of the scientific research work carried on at the Gagarin is a most important point. As these authors described it in their article, it was, at least in 1969, "vital work for the air force on the combat application of various types of units, command control of air force units and large units, elaboration and incorporation of new equipment." Much "scientific research" time was spent on organization and coordination rather than on research tasks per se. The cumbersome outside review process for the publication of textbooks sometimes delayed their production by six months. Writings textbooks and manuals for teaching troops was a major "scientific" effort.[23] Again this kind of research is applied rather than basic. And the term "scientific" is applied very liberally--this Faculty Activity Analysis project constituting a scientific research project.

It was at the older Zhukovskiy Military Air Engineering Academy that the command cadres of the Air Forces were trained from 1923 to 1940, when the Gagarin Academy was established. At the present time the Air Engineering Academy has faculties of "piloted aircraft," aviation armaments, aviation radioelectronic equipment, correspondence courses and academic retraining courses for engineers and instructors. The Academy maintains a large number of study and research laboratories--research and field training bases--which include subsonic and supersonic wind tunnels, a laboratory research unit for research on turbojet engines, compressors, turbines, etc., and a practice airfield for modern combat and transport aircraft.[25] The laboratories are fully equipped with modern computers and the Academy maintains an "experimental training

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[23] Ibid., p. 40.

[25] Shtoda, A.V., "The Military Air Engineering Academy, imeni Professor N. Ye Zhukovskiy," Soviet Military Encyclopedia, Volume 2, Moscow, 1976.

Table I[24]

Percentage Time Distribution of
Administrators, Faculty, and Staff
At the Gagarin Academy in 1969

Type of Work	Departments		Scientific Research Laboratories	
	Administrative personnel	Instructors	Administrative personnel	Scientific associates
Teaching process	34.6	50.8	2.4	3.3
Scientific research work	24.7	21.4	67.4	71.9
Military theory and practical training	14.8	11.2	11.2	9.1
Participation in scientific conferences and seminars	3.6	1.5	4.8	2.5
Participation in party and civic activities	3.6	3.5	2.1	2.1
Professional conferences and meetings	10.1	5.7	5.4	3.2
Other types of professional activities	8.6	5.9	6.7	7.9
TOTAL	100	100	100	100

factory where students practice the production of scientific devices and demonstration machinery."[26]

This kind of self-contained unit within the Academy reflects the style of organizational self-sufficiently so characteristic of many of the civilian industrial enterprises. It is a pattern

[24] Ibid., p. 41.

[26] Ibid.

already observed in some of the other military academies, helping to explain the origin of so much of the technical equipment needed by the different service specializations which the academies serve. Trainers, textbooks, manuals, and other devices are then provided to the lower commissioning schools as part of the process of practical training, particularly for transferring knowledge about new weapons and/or weapons systems and new technical equipment of all kinds--again with emphasis upon combat utilization and readiness.

The Gagarin and the Zhukovskiy have libraries of 500,000 and 1,000,000 volumes respectively. Both serve as centers for technical reference and research services for the other schools and for the Air Force field commands.[27]

Below the two Air Force academies are 22 higher educational commissioning schools of which 10 are aviation engineering and 12 are pilot and/or navigator schools. Only occasional articles about these schools appear in the open Soviet Military Press. From the general information available, primarily from the DIA publication on Soviet Military Schools (DDB-2680-52-78), certain observations may prove useful. The pilot and/or navigation training commissioning schools (numbering 12) seem to have four-year programs of study and commission their graduates as pilot-engineers or navigator-engineers. Pilot and air navigators for the Navy may be trained in some of the Air Force schools. Obviously a much more intensified investigation of the Air Force commissioning schools should be undertaken.

The aviation engineering schools are quite different from the pilot/navigator schools. Although all of the 10 engineering schools commission their graduates, most of them have five-year and three-year programs of study. Five-year programs lead to lieutenant-engineer commissions; the three-year programs produce lieutenants of technical services. At the Irkutsk Higher Military Aviation Engineering School, an advanced institute and a "middle" insitute coexist--the five-year graduates coming from the advanced institute and the three-year lieutenants from the "middle" institute. The program of study at Irkutsk for cadets includes piloting, navigation, aiming complexes and systems, aviation engine control and adjustment systems, electronic equipment, computer equipment, and the electrical and instrumentation equipment of aircraft and their armament.[28] Students are encouraged in the skills of maintenance and repair of aviation equipment, and spend time with field squadrons as interns. The school, as all others, is provided a proper "materiel-training" base--in this case a training airfield complete with necessary flight equipment, technical monitoring devices, and airfield support equipment. Operational trainers abound. Students

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[27] Ibid.

[28] Kalitsov, S., Major General, Commander, "The Irkutsk Advanced Aviation Academy," Technology and Armament, June 1977, pp. 59-62.

and faculty concentrate their scientific research efforts on training devices: 2,000 methodological training aids, stands, and trainers were produced in 1975-76 alone.[29]

At the Riga Higher Military Aviation Engineering School, as another case in point, specialists in communications, electrical instrumentation, and radiotechnical equipment of aircraft and ground airborne installations are produced--graduates of the five-year program as lieutenant-engineers and of the three-year program as lieutenants of technical services. The Riga School started as a naval aviation school evolving into its present Air Force situation in 1967.[30] The training base at Riga includes laboratories equipped to study the most complicated piloting and sighting-navigation systems, the latest computer control techniques, television and other technical training devices. It has been graduating aeronautical engineers since 1972.[31] In the absence of any other evidence it may be assumed that other higher military aviation engineering schools share similar profiles with Riga and Irkutsk.

The point needs to be reiterated that more needs to be known about these important academies and schools of the Air Force.

Ground Forces

The Ground Forces of the Soviet military system is, of course, the largest of the Soviet military services. It understandably also controls the largest numbers of academies and higher military schools which can be subdivided further under the major subcommands of the Ground Forces: Air Defense Troops, Airborne Troops, Infantry-Combined Arms, Rocket and Artillery Troops, and Tank Troops. In some instances deputy commanders of these staffs are designated as Commanders for Combat Training and Higher Military Educational Institutions, suggesting again the strong emphasis in the military educational system on combat readiness.

In fact, there is a Deputy Commander-in-Chief of the Ground Forces who heads up a Directorate of Military Educational Institutions. His Directorate controls and coordinates the affairs of 32 academies and schools through the deputy commanders of each of the arms branches, and it looks to the Main Directorate for Higher Military Educational Institutions and the Main Political Directorate for the Soviet Army and Navy for guidance and direction from the Ministry of Defense level.[32] Unfortunately, the Directory referred to in footnote 32 does not identify a separate command structure for the

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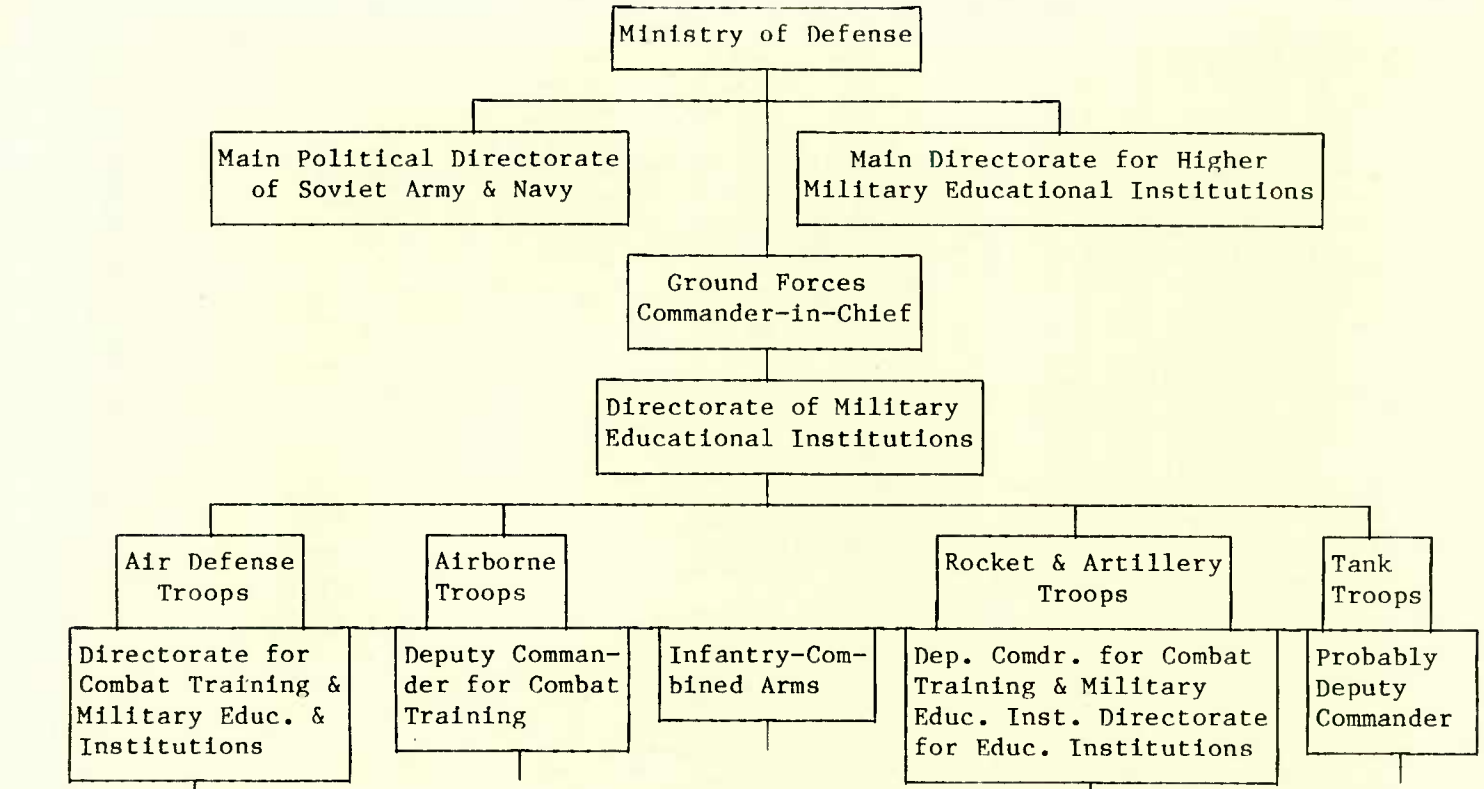
[29] Ibid., p. 60.

[30] Sukhochev, N., Engineer, Lt. General, Chief, "Riga Aviation," Technology and Armament, June 1976, pp. 60-64.

[31] Ibid., p. 61.

[32] Directory of USSR Ministry of Defense and Armed Forces Officials, a publication of the National Foreign Assessment Center, April 1980. This organizational structure is taken from CR80-11888.



1. Military Academy of Air Defense of Ground Forces

1. Ryazan Higher Airborne Command School

1. Kalinin Artillery Academy
2. Kolomna Higher Art. Comd. Sch.
3. Leningrad Higher Art. Cmd. Sch
4. Odessa Higher Art. Cmd. Sch.
5. Sumy Higher Art. Cmd. School
6. Tbilisi Higher Art. Cmd. Sch.
7. Khmal'nitskiy Higher Art. Cmd. School
8. Penza Higher Art. Cmd. Sch.
9. Tula Advanced Art. Engr. School
10. Khaborovsk Cmd. Tech. Sch. for Art. Officers
11. Vystrel' Courses

1. The Frunze Academy
2. Alma Ata Higher Combined Arms Cmd. School
3. Baku Higher Combined Arms Cmd. Sch.
4. Far Eastern Higher Combined Arms Cmd. School
5. Kiev Higher Combined Arms Cmd. School
6. Leningrad Higher Combined Arms Cmd. School
7. Moscow Higher Combined Arms Cmd. School
8. Omsk Higher Combined Arms Cmd. School
9. Ordzonikidze Higher Combined Arms Cmd. School
10. Tashkent Higher Combined Arms Cmd. Sch.
11. Saratov Higher Mil. Cmd. School
12. The Central Art. Officer, order of Lenin, Twice Red Banner Courses imeni MSU V.I. Kazakov (1918)

1. Malinovsky Mil. Aca. of Tank Troops
2. Blagoveshchensk Higher Tank Cmd. School
3. Chelyabinsk Higher Tank Cmd. School
4. Kazan Higher Tank Cmd. School
5. Khar'kov Guard Higher Tank Cmd. School
6. Tashkent Higher Tank Cmd. School
7. Ulyanovsk Guards Higher Tank Cmd. School
8. Kiev Higher Tank Engr. School
9. Omsk Higher Tank Engr. School

Soviet Infantry, creating a dilemma in trying to locate the 11 combined arms schools under a Ground Forces arm. Therefore an administrative box labelled Infantry-Combined Arms using as a justification Professor John Erickson's recently published study on Soviet Combined Arms: Past and Present[33] has been created. The troop commands identified in the Directory include: Air Defense Troops, Signal Troops, Tank Troops, Chemical Troops, and Engineering Troops. It will immediately be noticed that some of the SAM missile schools are not included under the Ground Forces Air Defense Troops, but have been shifted to the PVO Strany Forces; Signal Schools, Chemical Schools, and Engineering Troops Schools have been listed under Special Troops which are treated as a separate service, equivalent to the Ground Forces themselves. Support for these actions is partially grounded on the fact that in the Directory the signal, chemical, and engineering troops do not apparently have deputy commanders for military higher educational institutions. What remains for analysis therefore, in this section on the academies, schools, and "courses" under the purview of the Ground Force Directorate for Military Educational Institutions are those tentatively located under these designations: Air Defense Troops, Airborne Troops, Rocket and Artillery Troops, Infantry-Combined Arms, and Tank Troops. The famous "Vystrel" Courses have been located under Combined Arms, and the Central Artillery Officers' Courses under Rocket and Artillery Troops.

The queen of the Ground Forces military higher schools is the M.V. Frunze Military Academy. Although it is identified here as the premier Combined Arms institution, there is strong evidence that promising officers from other services than the Ground Forces pass through its portals from time to time. In Soviet military educational development it has played several roles, initially as the chief training ground for commanders of the Soviet General Staff, a function it performed until the creation of the General Staff Academy in 1936. It remains a "multi-profile" institution in the military educational institutional hierarchy. It has provided staff and faculty over the years for new schools. It has served as the location for specialist disciplines--witness its activities with the Military Finance School now located at the Moscow Finance Institute.[34] In many respects it serves and has served almost as a "junior" General Staff Academy, a point made more emphatic when a brief listing of Soviet Marshals who studied at the Frunze is listed: Bagramyan, Biryuzov, Budennyy, Govorov, Grechko, Yeremenko, Konev, Malinovskiy, Meretskov, Sokolovskiy, Tolubkhin, Chuykov, Voronov, and Novikov--a veritable honor roll of famous Soviet military commanders.

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[33]Erickson, John. Soviet Combined Arms: Past and Present. College Station, Texas: The Center for Strategic Technology, April 1981, 78 pp.

[34]Radziyevski, A., Army General, "imeni Frunze," The Military Herald, February 1978, pp. 52-58. See also: Radziyevski (ed.), Akademia imeni M.V. Frunze, Moscow, Voenizdat, 1972.

It was at the Frunze that many famous generals and officers taught and where combat veteran officers of World War II studied after that War. From 1945 to 1953, 332 "heroes" of the Soviet Union studied there--many of whom now are in top command posts in the Soviet military system.[35]

It was at the Frunze too that the experiences of World War II were distilled for strategic, operational, and logistic meaning and where changes in military technology and military reorganizational restructuring were studied intently and training changes made accordingly. As General Radziyevskiy observed in his article in the Military Herald in 1978,

> ...In the fifties the Soviet Armed Forces entered a new stage of development--a stage of fundamental transformations in military affairs. New means of warfare were taken into the Soviet Army's inventory. Complete motorization of troops was accomplished. A new branch of the Armed Forces appeared--the Strategic Missile Forces.
>
> All this introduced radical changes in the makeup of the combined-arms battle and operation. And, naturally, there again arose the need for realigning training programs and methodology and for broad development of scientific research work... .[36]

Thus, the Frunze took the lead in improving "the training methods, scientific research and party-political work, guided by decisions of the Communist Party and Soviet government and by orders and directives of the USSR Minister of Defense and Chief of the Main Political Directorate of the Soviet Army and Navy."[37] [emphases added] While becoming a major center for training military specialists from the armies of "fraternal countries," the Academy stressed raising the qualifications of Soviet "commanders" and the teaching qualifications of instructors of the military higher educational institutions (military pedagogy). Like other institutions, the Frunze revamped and modernized its training equipment and training center, put more emphasis on "scientific research" with 140 "science circles" of students on research themes which included subjects like "troop transition into an attack"; "questions of neutralizing the enemy by fire with consideration of possible variations by which an aggressor wages war"; "breakthrough of a defense saturated with armored targets and modern anti-tank weapons"; and "employment of combat arms and special troops in a battle or operation in various theaters of military operations." The Frunze became a veritable high-level military think-tank for tactical and strategic planning. The research also included (and may still include) continuing investigations on combat capabilities of regiments, battalions, and other field units with

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[35] Ibid., p. 54.

[36] Ibid., p. 54.

[37] Ibid., p. 55.

particular emphasis on survivability under conditions of modern warfare and their recoverability. Studies continued on experiences of World War II, on current local wars and on postwar military conflicts and exercises. And always, research to improve the forms and methods of "training and indoctrinating" students occupied a major concern in "scientific research." Ties with "external" organizations were also increased.

Special attention was also given to ensure a party spirit in the instruction of all disciplines [emphasis added] and in "scientific research."[38]

Considering the Frunze Academy then as the most important Academy for Combined Arms Command Cadres, there are 10 other combined arms schools for the production of combined arms junior officers--and the famous Vystrel' Courses for field officers to educate themselves in situ for command advancement--a total of 12 institutions in this category of "Infantry-Combined Arms."

Except for the Alma-Ata Higher Combined Arms Command School established in 1970, all the other higher schools were established before World War II. The Vystrel' Courses were established in November 1918 by Order Number 245 of the Revolutionary Military Council of the Republic as a "geniune school for training and retaining of command cadres."[39] In general, this group of military higher educational institutions has a long history--as Soviet military affairs go--seven of them tracing their origins to 1917-1919; two from 1939-1940; and Alma-Ata from 1970.

Their "profiles" resemble that of the Moscow Higher Combined Arms Command School about which some detail is known.[40]

In the post-world War II years these Combined Arms Higher Schools underwent a number of "organizational realignments" caused "by fundamental, qualitative changes in military affairs and by the appearance of new and more sophisticated types of weapons and combat equipment." All were converted to a "higher" status in the postwar period beginning with the Moscow Higher Combined Arms Command School in 1958. They concentrated on mastering new military equipment of the Motorized Rifle Troops, artillery, tanks, and other combat vehicles and equipment, and they are prepared to command field units.

Political training has become more intense and universal and the young graduating officers are expected to carry their share of political indoctrination in their commands.

The schools have technical classrooms and auditoriums, sophisticated audio-visual equipment, training, training bases with all combat equipment weapons, tactical training fields with trainers of various kinds and operationable control systems--command posts.

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[38] Ibid., p. 57.

[39] Dragunskiy, D., Colonel General Tank Troops, "Field Academy," The Military Herald, January 1978, pp. 19-25.

[40] Magonov, I., Lt. General Head, "Oldest Forge of Cadres," The Military Herald, December 1977, pp. 39-45.

The objective of the training process in these schools, as in the other officer training schools, is to produce commanders "to win victory over the enemy." In order to accomplish this, these schools spend much time on field training, psychological conditioning, in the development of "tactical thinking," independence in decision making, [emphasis added], and organization for combat. This emphasis on development of independence and initiative is system-wide and is a postwar phenomenon. How successfully the Soviets are in "teaching" this remains to be seen. But evidence in Soviet literature stresses the belief that progress is being made in this effort.

Graduates of these combined arms schools receive commissions as lieutenant-engineers and special licenses as operators of wheeled and tracked vehicles, infantry combat vehicle driver-mechanics, and as military electrical and mechanical engineers. Several of the schools have outstanding foreign language translation programs--Tashkent, Leningrad, Kiev, and Baku Combined Arms Schools.[41]

There is evidence that NCOs receive some training in some of these institutions as well. Several of the schools can count 100 graduating classes since their existence--all emerged from the Civil War days as "forges" for the production of the new Red Army commanders for a new kind of army. The complete motorization of the infantry, the expansion and refinement of combined arms strategic and tactical concepts, and the revolution in new weapons--all have caused changes described in the open Soviet Military Press.[42]

One concern nags Western observers of the Soviet Higher Military Educational System: how rigid or flexible is the system, particularly in regard to officer recruitment and advancement? While appearing to be rigid on the surface, pieces of evidence are constantly encountered which suggest a great deal of flexibility--a flexibility which finds its origins in the restructuring of the Soviet Armed Forces during the chaos of the Bolshevik revolution.

Two prime examples of this pragmatic flexibility may be found in two insitutions: the Vystrel' Courses and the Central Artillery Officers' Courses.

Since the Vystrel' Courses are combined arms/infantry officer training courses, they will be discussed here to round out this brief analysis of the combined arms schools. The discussion on the Central Artillery Officers Courses will be treated as part of the Ground Forces schools of the Rocket and Artillery Forces.

The Vystrel' Courses were established by the Revolutionary Military Council of the Republic in November 1918, with the "mission" of training infantry command personnel as battalion and company

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[41]Panov, A., "Toward More Graduates with Military Translation Skills," The Military Herald, September 1970, pp. 114-119.

[42]Magonov, op cit., pp. 39-45; "After the Jubilee Graduation," The Military Herald, December 1977, pp. 220-222; DDB-2680-52-78, op cit., pp. E28, E40, 43, 44, 46, 48, 50, 52, 53.

commanders and as chiefs of machinegun, bombthrowing, mortar and other special teams.[43] Its activities in international Communism were recognized as early as 1921 when the courses were named after the 3rd Communist International--a mission which it continues to perform today.

> ...The "Vystrel" Courses also have been given an important international mission of assisting socialist countries in training officer cadres. Today, [1978], for example, as in the years of the Great Patiotic War, Polish is again heard in the classrooms and on the training fields of the Courses...In March 1976 the "Vystrel" Courses also were awarded the military order of the German Democratic Republic "For Services to the People and Fatherland"...[for] preparing qualified officer cadres for the National Volksarmee of the GDR... .[44]

The Courses, however, have been preparing officer cadres for the Ground Forces since 1918. During the war years alone the Courses produced 20,000 officers of whom 1700 were regimental commanders. They were also given the special assignment of training 1600 reserve officers under an abbreviated program. In 1944, they trained officers for the Polish 1st Infantry Division.

Before World War II the Vystrel' Courses pioneered combined arms doctrine and tactics combining artillery and tanks with infantry. Training after World War II emphasized absorbing the experiences of the Great Patriotic War and adjusting to the new weapons in the system. Combined arms training now involves skilled use of tanks, artillery, antitank and air defense weapons, infantry combat vehicles, helicopters, and aviation. This expansion of scope increases the need for "vast technological knowledge" of the combined arms commanders reflected in an enhanced role for the courses. Programs have been realigned, training and indoctrination methods improved, student contingents broadened until the Vystrel' Courses today "are a many-sided military educational institution of the highest profile [emphasis added], where commanders, political officers, staff officers and instructors train."[45]

Training is done primarily through specially developed short courses with heavy emphasis on field training--60 percent of tactical training, for example, is in the field. Command and control procedures are taught and practiced in the courses--again with almost total emphasis on preparation or the practice for combat missions. The courses are closley "tied to the troops."

The nature of scientific work and research in the courses is like that common to the more traditionally organized military educational

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[43]Dragunskiy, D., Colonel General Tank Troops, Chief of Vystrel' Courses, "Field Academy," The Military Herald, January 1978, pp. 19-25.

[44]Ibid., p. 25.

[45]Ibid., p. 23.

institutions: the improvement of training methodology (the devising of audio visual aids and teaching software), the tactical and strategic use of weapons and combat equipment, the practice of "techniques" of combat, and the improvement of weapons. Faculty and staff write textbooks, prepare training manuals and new regulations, and produce training aids and films.[46]

The Vystrel' Courses may well have touched the individual Soviet Combined Arms officer, and foreign officers as well, more directly than any other single military institution. It is an institution for long-term and continuing refreshing of military skills, and most importantly a school for keeping reserve officers current on the latest theories and weapons of war.

According to this classification scheme, the Air Defense Troops and the Airborne Troops--subcommands of the Ground Forces--each have one higher academy and school. Some current listings maintain five of the SAM Higher Schools under the Air Defense Troops. These have been relocated under the PVO Strany Forces and the justification for that shift is made in that section of the paper. The Military Academy of Air Defense of Troops about which little is presently known was established in 1977 and is believed to have split off from the Military Artillery Academy imeni Kalinin in Leningrad. Thus, it is possible that this new Academy trains officer cadres from the Rocket and Artillery Force schools for the antiaircraft tactical support commands required by Ground Forces in combat.[47]

The Ryazan Higher Airborne Command School is also a recently established school about which little is known. Since Airborne troops are relatively small in number one specialist higher training school may fill the need for officers.[48]

The second largest category of Ground Forces schools is that which provide officers for the Rocket and Artillery Troops--10 institutions and 1 Course, "the Central Artillery Officers Courses." Eight of these artillery schools including the Central Artillery Officers "Courses" date back to Civil War days. The Military Artillery Academy imeni M.I. Kalinin in Leningrad is the officer cadre training institution for the Artillery and Rocket Forces. The Penza Higher Artillery Engineering School was established in 1962; and the Khmelnitskiy Higher Artillery Command School in 1970. The Khabarovsk Command Technical School dates back to 1941. Six of the 10 schools are "command" schools.

Graduates learn specialties in radio and electronics and electrical and mechanical engineering, specialized military engineering and technicians' qualifications and command positions of artillery and rocket arms and equipment. They are generally graduated as Lieutenant-engineers or Lieutenant-technicians. Engineering programs are of five-year duration; technicians programs, three years. The Artillery Academy's program is three

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[46] Ibid., p. 23.

[47] DDB-2680-52-78, op cit., p. 011.

[48] Ibid., p. E12.

years, and open only to experienced field officers with a higher military education.

The two Higher Artillery Engineering Schools (Penza and Tula) have similar profiles emphasizing the production of graduates capable of performing as "laboratory, design bureau or repair enterprise technical section engineers, repair podrazdeleniye commanders or podrazdeleniye technical officers."[49]

Students at these two schools must learn to operate, service, and repair the complicated artillery and rockets armaments as well as understand the principles of design of all weapons--hence the five year programs.

The engineering schools have sophisticated laboratories, with the "most modern military equipment, precise instruments, trainers and training aids." Computer equipment is used throughout the training process.

The schools maintain large training centers with "practice fields, engineering training grounds, firing positions, rifle ranges, firing ranges with automatically controlled targets, and training classrooms."[50]

"Rationalizer and inventor" work is encouraged in the schools--as in all other military higher schools and academies--and competition is encouraged to develop initiative and creativity.

Again, as in all other schools, heavy emphasis is given to learning Marxist-Leninist theory and the fundamentals of "Party Work," military psychology and pedagogy, and the governing resolutions of the Communist Party of the Soviet Union. When officers join the Artillery and Rocket Forces they must be able to teach the troops not only all technical and operational aspects of the weapons but also the basic principles of Soviet socialists' convictions. Although the Khabarovsk Command Technical School is carried on the military school inventory, little is known about it since it has not been mentioned in the open Soviet Press since 1971.[51]

The six higher artillery command schools of the Artillery and Rocket Forces (Leningrad, Tbilisi, Kolomna, Odessa, Sumy, and Khmelnitskiy) show the same training profiles, maintain four-year training programs, and produce the largest numbers of junior commanders for the forces. Five of the schools trace their origins back to the Civil War period, only Khmelnitskiy having a post-World War II date of establishment (1970). All six of these schools were either elevated to the "higher" status or designated as higher "command" schools in the 1968-1970 period.

The Command Schools, however, have much in common with the "engineering" schools. Graduates are commissioned with engineering qualifications on operation and maintenance of equipment, as artillery weapons engineers, and as engineer-technicians. They study higher mathematics, theoretical

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[49]Kulev, V., Lt. General Artillery, Superintendent, "The Tula Artillery Engineering Academy," Tyl, (Rear Services), March 1978, pp. 59-63; On Penza, see DDB-2680-52-78, op cit., E17.

[50]Kulev, V., op cit., p. 62.

[51]DDB-2680-52-78, op cit., p. L7.

mechanics, strength of materials, machine and mechanism parts, and participate in laboratory work extensively. Again, applied and specialized research rather than basic research is the norm in these schools and the level of the research may be more primitive than Western observers think. For instance, L. Kharakhanov, Chairman of Higher Mathematics and Theoretical Mechanics at the Tbilisi School plaintively observed in 1976, "Needless to say, we are not fooling ourselves into thinking it is an easy matter to develop scientific research work in a school. But it truly is important, and should be undertaken as soon as possible."[52]

In fact, the distinction between the engineering and command artillery and rocket schools grows less distinct when the physical plant similarities of the institutions are observed. Like the engineering schools, command schools have highly developed training bases, newly-outfitted (since 1975), with the primary difference being on more extensive "command and control" systems in the command school training bases. At present each of these bases include,

> ...a tactical training field, the rifle and artillery firing range, engineer training grounds and combat operations training ground ...Elements of the order of battle of the artillery podrazdeleniye have been equipped on the tactical field: firing positions, observation command posts, communications junctions, and also enemy strongpoints with active target situation and simulation means...controlled from a central panel, from remote panels or from the locations where the exercises are held... .[53]

Combat ready junior officers, skilled in the operation and maintenance of equipment and who are expected to master the "principles of the planning, design, and construction of [artillery and rocket] weapons," are produced in the six command schools. Teaching the junior officers how to teach their subordinates occupies much training time, and, while in cadet training, upperclassmen practice these skills on underclassmen.[54]

The "Central Artillery Officers' Courses" add a great deal of flexibility to the system of providing Artillery Officer Cadres for the Artillery and Rocket Forces. Like the Vystrel' Courses, the Artillery Officers' Courses trace

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[52]Karakhanov, L., "Development of Scientific Research Work in School," Technology and Armament, October 1976, p. 71.

[53]Sergiyenko, V., Colonel, "In the Name of Red October," Tyl, November 1977, pp. 94-99. This article is on the Leningrad Higher Artillery Command School but identified the other five command schools as training "similar specialists," Ibid., p. 99.

[54]Taurinskas, G., Lt. Colonel, Engineers, "Methodological Training of Students," Technology and Armament, March 1978, pp. 64-66.

their origins to the hectic Civil War days when the new Army and the new Red Army officers were being created. Its students helped to quell the Kronshtadt mutiny and the courses became the experimental brain child of the Revolutionary Military Council when they were named the "Artillery Course for Improving the RKKA [Workers' and Peasants' Army] Command Element in November 1924."[55]

During World War II, by means of specialized and shortened courses, about 10,000 artillery officers were trained in 42 specialties, and command and instructor personnel of the Courses tested new armament, instruments, and communication systems, and drafted field regulations and manuals for Soviet Artillery. Again, like the Vystrel' Courses, the Artillery Courses number among its students top Soviet military commanders like Govorov, Voronov, Nedlin, Semenov, Kariofilli, Fomin, and Blagonravov. The Courses continue to function actively in producing artillery manuals, firing rules, textbooks on firing and tactics, and other training aids. The latest models of weapons and combat equipment are used in training its officer student cadres, and electrified stands and combat trainers are widely utilized. Field training receives heavy emphasis in the Courses. These involve live firing, tactical exercises, and practice in developing "firm skills and command qualities" in controlling artillery units during a "complicated and rapidly changing modern combat situation" [against the nuclear backdrop]. The latest technological devices are used including range finders, radar and sound ranging sets, and aerial reconnaissance systems.[56]

The nine Higher Tank Academies and Schools of the Ground Forces complete this brief summary of the Ground Force Academies, Schools, and Courses. At the top of these nine schools is the Military Academy of Armored Troops (imeni Malinovskiy), and there are seven command schools and one tank engineering school.

Although the Academy has three and four year courses, the three is for Command Cadres and the four-year program is for Engineering Command Cadres. The Academy is a true research center for motorized tracked vehicles and tanks. It was one of the "new" schools created by the Revolutionary Military Council in May 1932, for the mechanization and motorization of the RKKA. Until World War II it was the central point for the production of textbooks on armored warfare, and established a pattern of scientific research in armored development, executing 500 research operations which shaped domestic tank-building and the armored and mechanized forces.[57] Among its students were Marshals Chuykov, Rotmistrov, Bogdanov, Katukov, and Poluboyarov. Soviet Army Generals who studied

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[55]Rankov, M., Colonel, "The 'Field Academy' of Artillerymen," The Military Herald, July 1978, pp. 122-127.

[56]Ibid., p. 127.

[57]The Malinovskiy Academy for Command Troops, "A Celebrated Academy," Technology and Armament, October 1970, pp. 41-42.

there include Yepishev, Sokolov, Chernyakhovskiy, Shtemenko, Getman, and Tolubko. Tank designers Kotiu and Yermalayev also studied there.[58]

Created in 1930, the Kiev Higher Tank Engineering School maintains a five-year program [since 1974], training junior engineer lieutenants with the qualifications of military mechanical and/or military electrical engineers.[59] Following its elevation to the higher level in 1974, the school created new departments and restructured its curriculum profiles to include more general science and general engineering. New laboratories were built for tank and machine unit repair, in materials resistance, in materials science, thermodynamics, physics and chemistry, projective geometry, and mechanical drawing.[60]

The refurbished training base includes a combat vehicle school where skills for service equipment and determining the technical conditions of vehicles are mastered. Teaching aids include television, motion pictures, and video tape recorders. Emphasis in this tank engineering school is on development of practical skills--even as drivers and driver mechanics of combat equipment.

The seven higher tank command schools (Ulyanovsk, Blagoveshchensk, Chelyabinsk, Kazan, Kharkov, Tashkent, and Omsk) produce junior officers "who can make effective use of the complicated combat technology...[and] who have a thorough knowledge of its construction, operation, combat use, maintenance, and repair."[61] Some warrant officers are given three-year specialist training at the Chelyabinsk Unit.[62]

The very practical nature of the training received by the cadets in these tank command schools is revealed in the titles of some of the courses offered: "Combat Vehicles and Trucks," "Electrical Equipment and Automatic Equipment," "Hydraulics," "Repair and Evacuation," "Engines," and "In the World of Words and Technical Terms." Students are given individual assignments (independent study) involving the intensity of the use of tanks by types of combat training, operating modes of tanks under various conditions, the nature of basic failures and breakdowns due to inefficiency of mechanic drivers, etc.[63]

The 32 Academies and Higher schools and the two "Courses" of the Ground Forces Directorate of Military Educational Institutions thus represent the largest of the Soviet Military Services with the largest number of schools (12) for

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[58] Ibid., p. 42.

[59] Kolesnikov, M., Major Gen. Tank Troops, Chief, "Higher Tank Engineering School," Technology and Armament, September 1976, pp. 60-64.

[60] Ibid., p. 61.

[61] Petukov, M., Lt. Colonel, "In a Purposeful, Comprehensive Manner," The Military Herald, October 1978, pp. 120-125.

[62] DDB-2680-52-78, op cit., p. E64.

[63] Petukov, op cit., pp. 124-125.

Combined Arms (Infantry), 11 for Rocket and Artillery Forces, and nine for Tank Troops. The Airborne Troops have one school, and Air Defense Troops have one. The Artillery Academies and Schools have probably been a major source of faculty for the growing PVO Strany and the Strategic Rocket Force Schools. The Ministry of Defense itself is dominated--as is the basic command structure of the Soviet military system--by the officers who have matriculated in the Ground Forces educational institutions.

The Naval Forces

There are 11 naval schools and academies under the Deputy Commander-in-Chief for Naval Educational Institutions (Vice Admiral A.M. Mikhaylovich, 1978), which are under the ultimate direction of the Main Directorate for Higher Military Educational Institutions and the Main Political Directorate at the Ministry of Defense level. Like the Ground Forces, the Naval Forces maintain a Directorate for Naval Educational Institutions. Except for the Naval Officer Cadre Training Academy [Grechko] the other ten Naval schools maintain five-year commissioning programs.

The Grechko Naval Academy has trained Warsaw Pact country naval cadres since 1962 for which it has received special recognition from Poland, Bulgaria, and the German Democratic Republic.[64] The Academy was combined with the Naval Academy of Shipbuilding in 1969 and produces officers command and engineering cadres for naval forces. The Academy offers a three-year training program. The Grechko Naval Academy is the equivalent for the naval forces of the Frunze Academy for the Soviet Ground Forces.

Five higher naval schools with similar program profiles stand apart somewhat from the Higher Naval Submarine School of the Lenin Komsomol, the three Higher Naval Engineering Schools (Dzerzhinskiy, Sevastapol, and Leningrad), and the newest Higher Naval Radioelectronics School. The five higher naval schools commission junior officers with various naval engineering specialties.

Their subjects during their 10 semesters of course work and summer cruises include: naval tactics; scientific Communism; philosophy; celestial navigation; radioelectronics; a foreign language; hydrometeorology; military pedagogics; higher mathematics; basics of ship armament; gunnery; and sports. It is estimated that these five schools average about 1000 students each, thus producing about 1000 junior officers per year for junior command posts in the naval forces.[65] Graduate studies are offered at the Frunze Higher Naval School of this group of schools to which active duty naval officers with higher military education or higher specialized training and graduates of civilian higher institutions with two years experience as officers are admitted, particularly if they can show proficiency in pedagogy or in scientific research.[66] Again, the flexibility of the system is apparent.

While there is some indication that submarine training exists in

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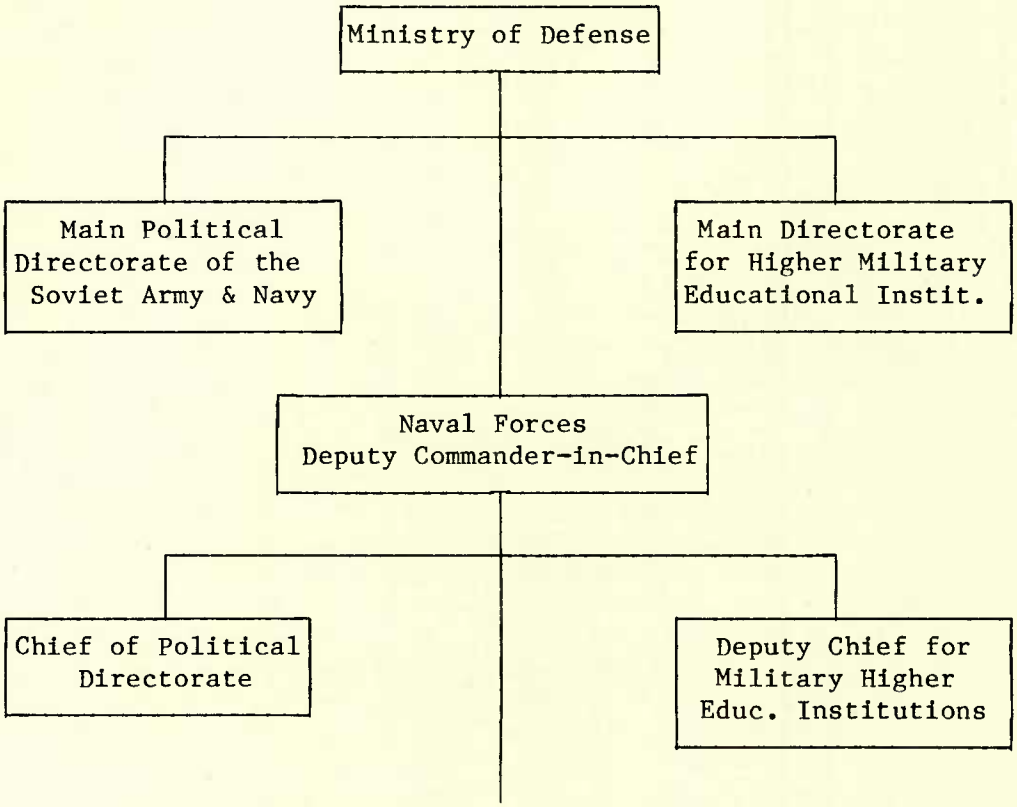
[64] DDB-2680-52-78, op cit., p. 29.

[65] Ibid., pp. H2, H5, H7, H13, H15.

[66] Ibid., p. H7.

NAVAL FORCES ACADEMIES and SCHOOLS



1. A.A. Grechko Naval Academy
2. M.V. Frunze Higher Naval School
3. Black Sea Higher Naval School
4. Kaliningrad Higher Naval School
5. Pacific Ocean Higher Naval School
6. Caspian Higher Naval School
7. Leningrad Higher Naval Engineering School
8. Sevastapol Higher Naval Engineering School
9. Dzerzhinskiy Higher Naval Engineering School
10. Lenin Komsomol Higher Naval School of Underwater Navigation
11. A.S. Popov Higher Naval School of Radio-electronics

the Pacific Ocean Higher Naval School, and perhaps in some of the other of these five schools,[67] the Soviet Naval Forces concentrate most of their submarine officer training in the Higher Naval School for Submarine Navigation named for the Lenin Komsomol and located in Leningrad.[68]

Cadet training in the submarine school concentrates on the various submarine operational and engineering specialties and on combat application of submarine weaponry and technical facilities. In addition to special training, cadets study physics, radioelectronics, mechanics, higher mathematics, and the operation of modern types of weapons and equipment. All training devices in the school are realistically devised for combat situations. Cadets rotate through the duties of each combat team member in their practical training, using electronic computers which simulate submarine conditions of submerged and surface sailing, diving and surfacing, and varying emergencies which can occur. Stress is laid on survivability training, and on psychological hardening.

The training materiel base contains complex equipment and training devices. Instructors maintain a central control panel, for instance, equipped with film and slide projectors, tape recorders, and television, from which they can simulate all sorts of combat situations involving several battle stations and command posts. The radiotechnical facilities department has devised a submarine communications training device for simulation of conditions on the latest submarines.

Actual shipboard conditions are maintained as closely as possible at all times, and the junior naval officer who has completed his five-year program of study at the submarine school can move into naval submarine commands with a high degree of confidence. According to Vice Admiral Nevolin, Chief of the submarine school, he had received positive responses on the quality of junior officers being commissioned by the school.[69]

The largest and oldest of the three naval engineering higher schools is the Advanced Naval Engineering Academy named for Dzerzhinskiy in Leningrad. In its commissioning programs, it produces lieutenant-engineers with differentiated qualifications such as engineer-mechanic, engineer-electrician, and engineer-shipbuilder. It has an enrollment capacity of about 2,300 to 2,500 cadets.[70] It traces its history back to 1798, and associates itself with the development of the Russian and Soviet navies. A pioneer of Soviet missile design, V.V. Razumov, was a 1913 naval engineer graduate of the school.[71] In 1922, it was the only school for

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[67] Ibid., p. H15.

[68] Nevolin, G. Vice Admiral, Chief, "In the School imeni Lenin Komsomol," Technology and Armament, July, 1974, pp. 48-54.

[69] Ibid., p. 54.

[70] DDB-2680-52-78, op cit., p. H16.

[71] Yegorov, N., Vice Admiral Superintendent, "The Advanced Naval Engineering Academy," Tyl, July 1978, pp. 73-77.

developing engineer cadres for surface vessels and submarines of the Soviet Navy.

Today the school is fully equipped with the most modern training devices including the latest models of naval equipment, automated exercise monitoring equipment, and special trainers for studying the mechanisms and systems of modern ships.

Research on ship power plants, ship electric drive and electrical power, on shipbuilding design, ship repair technology, materials strengths, and construction mechanics is done within the respective departments, and published textbooks and theoretical studies are produced by faculty members--A.N. Patroshev's Hydromechanics is a much-used textbook at both naval and civilian schools. There are strong and active departments of naval combat resources, naval tactics, naval history, and naval practice as well as the Marxism-Leninism, CPSU history, and party-political departments.[72]

The two other naval engineering schools are in the Baltic fleet and Black Sea fleet areas. Both were established in the 1940s after World War II, and both have five-year programs which graduate Lieutenant-engineers with the specialty of military mechanical engineers. The training profiles of these schools is similar to but less complex than that at the Dzerzhinskiy Naval School. Emphasis in both is on propulsion plants in modern combatant ships. Students study "higher mathematics, theoretical mechanics, physics, chemistry, the technology of metals, descriptive geometry, strength of materials, hydromechanics, the theoretical principles of steam and electrical engineering, automation, and special disciplines."[73]

Actual shipboard conditions are recreated in the material training base of the schools. Cadets work with propulsion plants and shipboard systems which include submarine diesel propulsion plants, steam propulsion plants, internal combustion engines and electric motors, and systems for automatic regulation and control of shipboard mechanisms. Damage control drills are frequent and important, and great stress is placed on repair. Cadets participate in actual cruises.[74]

Interestingly enough, the naval engineering schools are devoting more training time on the arts and on improving the cultural awareness of their graduates.[75]

The last of the 11 naval schools to be discussed briefly here is the Higher Naval Radioelectronics School named in honor of A.S. Popova. Very little actually is known about it from the sources

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[72]Ibid., p. 76.

[73]Lapshin, B., Engineer Rear Admiral, Superintendent, "Leningrad Higher Naval Engineer School," Technology and Armament, July 1977, pp. 43-47.

[74]Sarkisov, A., Engineer Rear Admiral, Chief, "Sevastapol Higher Naval Engineering School," Technology and Armament, July 1976, pp. 61-65.

[75]Ibid., p. 64; Lapshin, op. cit., p. 46., Yegorov, op cit., p. 77.

available in this research. It has an enrollment capacity of about 750, was established in the 60s, and maintains a five-year training program. Graduates are certified as engineers in various specialties.[76]

The Naval Forces Schools appear to be self contained as far as surface and underwater command and engineering officer training is concerned. There is some evidence in the open Soviet literature which suggests that the officers of the naval ground forces (the Soviet Marine Corps counterpart which has been a traditional part of the Russian and Soviet navies) are either trained at Combined Arms or other specialist military schools. Rear services officers for the navy train at the Rear Service Schools, and the naval aviators receive their training at Air Force Schools. Whether rocket specialist are trained at the PVO Strany or the Strategic Rocket Forces schools is an open question at this time.

Considerably more research needs to be done on the Soviet naval educational system.[77]

Strategic Rocket Forces

This identification of the six academies, institutes, and schools of the Strategic Rocket Forces rests entirely upon the listing given in the Soviet Armed Forces Review Annual, Volume 4, 1980 (SA7RA-4).[78] The Strategic Rocket Forces do maintain a Directorate of Military Educational Institutions whose Chief, Lt. Gen. N.G. Agayev, is an assistant commander-in-chief (not a deputy) of the Strategic Rocket Forces.[79]

At a recently held meeting at the USSR Defense Ministry Main Directorate for Military Educational Institutions Training Methods Council, Colonel General A. Kholopov, Chief of the Mozhayskiy Military Engineering Academy, was in attendance to hear Lt. General Engineer I. Lykov explain the actions of the 26th CPSU Congress decisions on improving military higher education.[80] Others singled out as attending included Klyuyev, Deputy Commander of the Ground Forces for Military Educational Institutions; Rear Admiral Engineer V. Yefremov, Deputy Chief of Naval Educational Institutions; Col. Gen. of Aviation N. Skomorokhov, Chief of the Gagarin Air Academy; and, Lt. Gen. Artillery Yu Kulikov, Chief of the Minsk Air Defense Higher Engineer Antiaircraft Missile School.[81]

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[76]DDB-2680-52-78, op cit., p. H10.

[77]The material on which this analysis was based did not include access to the microfiche translations of Morksoi Sbornik, the principle naval journal. The DIA study DDB-2680-52-78 and the GE77TMP-40A studies plus the articles from Tyl and Technology and Armament provided the information used here.

[78]Jones, David R., Ed., op cit., p. 46.

[79]CR80-11888, op cit., p. 29.

[80]Krasnaya Zvezda, 16 May 1981, p. 2.

[81]Ibid.

The Strategic Rocket Forces are, of course, the newest Soviet Military Service Arm and its importance cannot be exaggerated since it handles the strategic and tactical rocket systems for all of the Soviet military. It is also true that the Strategic Rocket Forces have an assistant commander-in-chief of Military Educational Institutions.

But it does not so clearly follow that the six schools listed here are the exclusive province of the Strategic Rocket Forces in the same way that the other Soviet forces have their own engineering, command, and, for that matter, political schools, and academies.

The artillery troops of the ground forces and their schools may have provided research, weapons development, and personnel for the development of the PVO Strany (Air Defense Forces) academies and schools, and in like manner may be one major source of advanced strategic and tactical nuclear rocket developments--particularly in the weapons development sense. But the famous Dzerzhinskiy Military Engineering Academy as late as 1976 was still a "multi-profile" engineering academy producing military engineering specialists for all branches of the Soviet military.[82] Other materials from the open Soviet Press corroborate Losik's position.[83] It is true that the Academy organized the first "rocket" battery of Katyushas in World War II and that it increased the "combat readiness of the Moscow air defense zone,"[84] but its graduates serve in all branches of the armed forces.

The Academy works primarily with commissioned officer cadres giving them advanced engineering skills in mechanical, electrical, construction, and radiotechnical engineering and in meteorology. Like other advanced engineering academies, it has modernized its lecture halls, research labs and computer facilities. As General Tonkikh put it,

> ...The Academy also conducts a variety of scientific research. Party-political work occupies an important place and is directed toward fulfillment of the task of preparing highly qualified officer cadres, resolving actual [emphasis added] military and unmilitary technical problems, and instilling high fighting and moral qualties in the students...[85]

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[82]Translation of Article on the Academy by Marshal of Armored Forces O.A. Losik from the Soviet Military Encyclopedia, Vol. 2, Moscow, 1976; Translation from GE77TMP-40A, 1979, pp. F18-21.

[83]Levadny, N.P., Colonel, "An Old Forge of Artillery Cadres," The Military Herald, December 1970, pp. 125-126; Karpov, L., Major General, Engineer Technical Service, "Jubilee of a Very Old Academy," Technology and Armament, December 1970, pp. 129-131.

[84]Levadny, op cit., p. 125.

[85]GE77TMP-40A, op cit., p. F17.

The other major military institute assigned to the Strategic Rocket Forces by SAFRA-4 is the Military Engineering Institute named in honor of A.F. Mazhayskiy. In 1974, its designation was changed from academy to institute, suggesting a heavier emphasis on research, perhaps in nuclear tactical and strategic rocket technical developments. But there is no direct evidence for this supposition to be found in the Soviet Military Press.[86] Apparently it still trains engineer cadres like the Dzerzhinskiy in basically the same engineering specialties and, in like manner, its officer cadres serve in all of the Soviet military forces. It may be significant that the head of the "Mazhayskiy Military Engineering Academy" was present at the May 1981 meeting on improving officer cadres training reported by Krasnaya Zvezda, already referred to. It is most interesting that the article still identifies this institution as an "academy" rather than "institute."

The four other schools identified as belonging to the Strategic Rocket Forces (Kharkov, Perm, Rostov, and Serpukhov) are all designated as "command" schools, each with five-year training program, all of which produce lieutenants with military mechanical or military electrical, military-electronics, military-radio, military power, or military radioelectronics engineering specialties.[87]

[86]DDB-2680-52-78, p. M3.

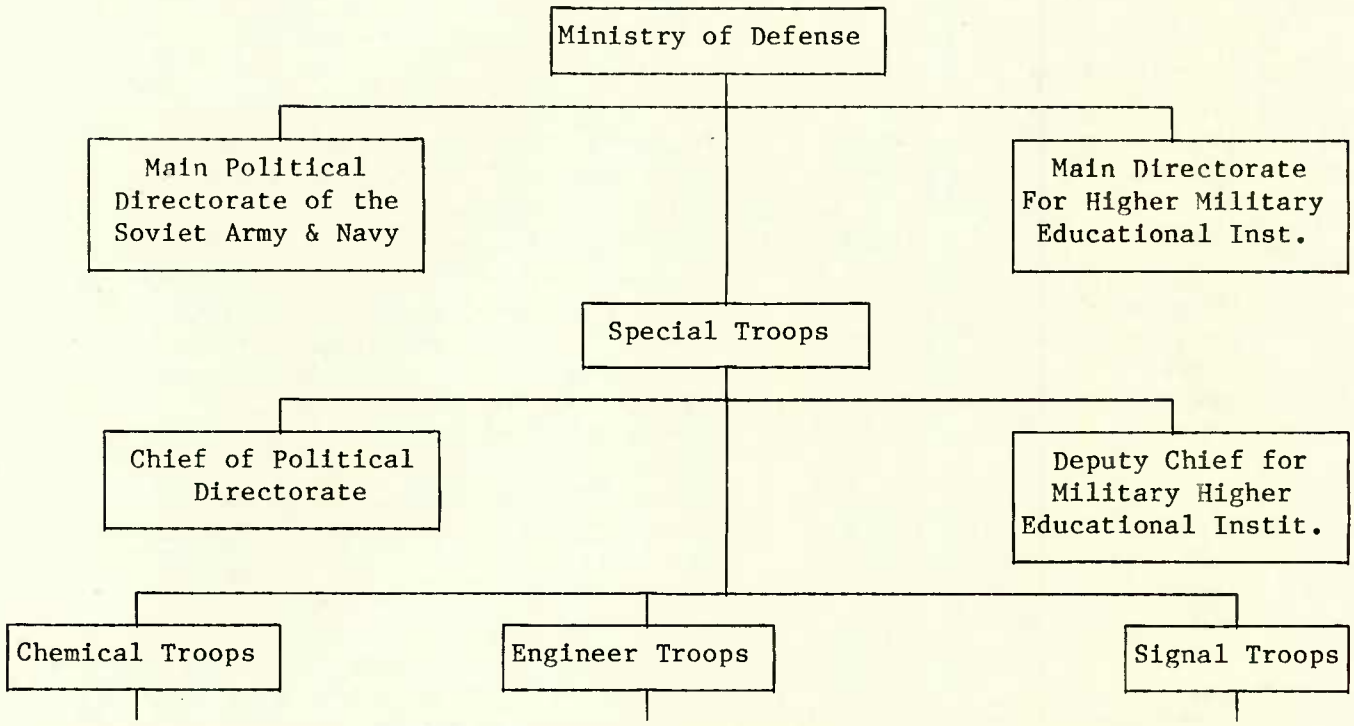
[87]Ibid., pp. L2, L3, L5, L6.

Special Troops

Special Troops in the Soviet military system constitute a separate branch of service coequal with Air Defense Forces, Air Forces, Ground Forces, etc.[88] The "Special Troops" are comprised of Chemical Engineer, Railroad, and Signal Troops. In this analysis 21 academies and schools have been assigned to Special Troops: four to the Chemical; five to the Engineer; and 12 to the Signal Troops. This classification is based upon the close "tie to the troops" principle, and requires continued monitoring to correct the structure if additional information becomes available. The SAFRA listing of higher military schools allocates 28 institutions to Special Troops, acting as a catchall category for some institutions which have been difficult to locate at the proper administrative unit. The schema proposed in this paper is certainly not perfect, being very tentative in several allocations of institutions in the Soviet military hierarchy, but it has the virtue of distinguishing between academies and schools under Ministry of Defense level administrative organs and the command structures of the various service arms. Thus, Civil Defense, Rear Services, Construction and Billeting, the Main Political Directorate, and the General Staff would appear to exercise direct influence over their own specialist schools, academies, and courses. This schema also assigns

[88]CR80-11888, op cit., p. 29.

SPECIAL TROOPS ACADEMIES and SCHOOLS



1. Timoschenko Academy of Chemical Defense
2. Saratov Higher Military Engineering School of Chemical Defense
3. Kostrama Higher Military Command School of Chemical Defense
4. Tambov Higher Military Command School of Chemical Defense

1. Kuybyshev Military Engineering Academy
2. Kaliningrad Higher Engineering School of the Engineer Troops
3. Kamenets-Podolskiy Higher Military Engineering Command School
4. Tyumen Higher Military Engineering Command School
5. Kazan Higher Military Engineering School

1. Budennyy Military Signals School
2. Orel Higher Military Command Sch. of Signals
3. Poltava Higher Military Command Sch. of Signals
4. Kemerovo Higher Military Command Sch. of Signals
5. Ulyanovsk Higher Command School of Signals
6. Ryazan Higher Military Command Sch. of Signals
7. Novocherkassk Higher Military Command School of Signals
8. Tomsk Higher Military Command Sch. of Signals
9. Stavropol' Higher Military Command Engineering School of Signals
10. Cherepovets Higher Military Command Engineering School of Signals
11. Kiev Higher Military Engineering School of Signals
12. Leningrad Higher Military Engineering School of Signals

the remaining institutions to the service arms--a total of 123 institutions of which Special Troops count 20.

Chemical Troops. There are four schools of Chemical Defense: the Academy of Chemical Defense (originally named after Voroshilov and renamed after Timoshenko in 1970), the Saratov Higher Military Engineering School of Chemical Defense, the Kostrama Higher Military Command School of Chemical Defense, and the Tambov Higher Military Command School of Chemical Defense. Three of these institutions date their establishment back to the early 1930s. The Kostrama unit was established in 1968.

As in other service academies, the Timoshenko Academy trains officer cadres for higher command including officers from the Warsaw Pact countries.[89] The training programs are four or five years in length, with particular emphasis upon troop defense from weapons of mass destruction. Its students have included many prominent scientists which, if true, suggests that this Academy may be a major factor in both offensive and defensive chemical warfare technologies and tactics.[90]

The Saratov Higher Military Engineering School is the engineering center and is involved in significant research in conjunction with Chernyshevskiy State University and the Saratov Polytechnical Institute. It also maintains close relationships with the two chemical command schools at Kostrama and Tambov.[91] The present head of the Timoshenko Academy is a graduate of the Saratov School. The cosmonaut Yuri Gagarin was a student at the Saratov Industrial Technicum. Students at the School study Marxist-Leninist theory, higher mathematics, physics, theoretical and applied mechanics, electrical engineering and radioelectronics.

> ...Study of means of providing protection against weapons of mass destruction have a special place in the curriculum as do radiation and chemical detection instruments, specially developed techniques, and flamethrowing, incendiary and smoke means... .[92]

The students serve their apprenticeships with the troops in the various military districts. Scientific work among students and staff is directed toward the development of display stands, trainers, visual aids, and training machines, many of which are entered in the annual "science fair exhibits." Combat and political training receive high priority. The program at the Saratov lasts five years, and the Lieutenant-engineers who graduate are

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[89]This conclusion is based upon the award of the East German Order in 1974. See DDB-2680-52-78, op cit., p. 018.

[90]Ibid., p. 018.

[91]Shcherbakov, N., Major General of Technical Troops, Chief, and Fedorchenko, V., Lt. Colonel, "Saratov Higher Military School for Chemical Warfare," Technology and Armament, January 1977, pp. 66-70.

[92]Ibid., pp. 68-69.

given the qualification of "military engineer chemist."

The Kostrama and Tambov Higher Military Command Schools for Chemical Warfare have four-year programs, graduating lieutenants with the specialization of engineers qualified to operate chemical troops armament and chemical warfare means.[93]

The Engineer Troops. There are five schools for the Engineer Troops, including one Academy (the Kuybyshev), two engineering command schools (Kamenets-Podol'skiy Tyumen), and two higher engineering schools (Kalingrad and Kazan).

There is some confusion about the Military Engineering Academy imeni Kuybyshev because one source in this investigation contends that prior to its renaming for Kuybyshev in 1935, it was named for Dzerzhinskiy--the Academy already discussed in this paper as the premier Academy for the Strategic Rocket Forces.[94] It may well be that two separate academies have sprung from the common root, and this analysis rests upon that assumption.

As the Academy for the Engineer Troops, the Kuybyshev, trains officers cadres for higher command with the Engineer Troops. Its curriculum includes military engineering, geodetic service, military construction, applied economics, and combat effectiveness and operational reliability of engineer equipment and facilities. It also trains military instructors.

The oldest of the schools for the Engineering Troops is the Kaliningrad Higher School which the Soviets built on the School for Engineers established in St. Petersburg in the 18th century. In 1966, it became a higher command school and in 1976 added "of Engineering Troops" to its name.[95] It shares similar educational profiles with the Tyumen and Kamenets-Podol'skiy higher command engineering schools--all commissioning lieutenants with ratings as engineer-mechanics, electricians and other engineering specialties. There is a possibility that the Moscow Higher Command School for Road and Engineer Troops should be classified with the Special Troops Schools.[96] It is located in this report with the Rear Service Schools.

Graduates of the Kaliningrad Higher Engineering Troops School include some very famous names, including Colonel General L. Kotlyar and Marshals M. Vorob'yev and A. Proshlyakov. The school over the years has moved from place to place as have so many of the Soviet higher military schools--from St. Petersburg, Petrograd, and settling finally in Kaliningrad after World War II. During the Great Patriotic War it produced over 10,000 graduates over 60 of whom received hero recognition. It was converted to a higher category in 1966 and in the 1970s the physical facilities of the school were refurbished, a new

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[93] Ibid., p. 70.

[94] DDB-2680-52-78, op cit., p. 016.

[95] Zhigaylo, V., Major General of Engineering Troops, Commandant "Kaliningrad--The Oldest Engineer School," Technology and Armament, December 1976, pp. 56-61.

[96] Ibid., p. 61.

computer center added, new classrooms built, and equipment and new laboratories with more modern equipment were provided for study and research. The scientific work of the school has primarily concentrated on building displays, working models and trainers--all to pedogogic improvement. This scientific work involves the Cadets in 45 circles of the "Military Science Society" who, in 1976 built "over 70 mockups, working models, display stands, wrote 136 abstracts, and read 185 reports on scientific and technical subjects."[97] A great deal of pioneering work in developing advanced training aids--including programs--has been done at Kaliningrad, particularly in computer based unified systems.[98] The program at Kaliningrad lasts five years.

The Kamenets-Podol'skiy and the Tyumen Schools have four-year programs and graduate lieutenants with specialties as engineers in the "use of technology."[99] Both schools were begun in the mid-60s, and, like Kaliningrad, have built very modern classrooms, laboratories, and training bases.

> ...In specialized classrooms, where operating models of engineering technology are installed along with cutaways of assemblies, subassemblies, parts and other visual aids, the cadets learn the construction and technical capability of machines and learn how to control them. In the laboratories for the repair and operation of engineering equipment machines, the future commanders study the correct method of diagnosing and repairing assemblies and subassemblies, how to restore parts, and to conduct an analysis of fuel and lubrication materials. The physical processes occuring in electrical machines and assemblies of electrical equipment of engineering technology are studied by the cadets in the laboratory of electrical machines... .[100]

In describing the "field training center"--a feature common to the different military schools--Yermakov lists various units: an equipment drome, an automobile drome, a moving line for servicing engineering equipment, a field camp, a series of engineer centers for special and tactical training, training areas, and "places to work out engineer support."[101]

> ...The cadets study by practicing the construction of bridges, the laying of various types of crossings, laying of mine fields and clear-

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[97] Ibid., p. 60.

[98] Solodov, A., Engineer-Lt. General, "Training Aids in Military Schools," Technology and Armaments, December 1976, pp. 44-52.

[99] Yermakov, V., Major General of Engineer Troops, Chief, "Kamenets-Podol'skoye Engineering," Technology and Armaments, May 1977, pp. 63-65; DDB-2680-52-78., p. E58.

[100] Yermakov, op cit., pp. 63-64.

[101] Ibid., p. 64.

> ing them, the operation of engineer roadclearing equipment, trenching, ditching and tracklaying vehicles, how to drill wells for water, and to conduct underwater operations... .[102]

Finally the Kazan Higher Military Engineering School rounds out the schools under the schools for Engineer Troops. The Kazan School specializes in military radioelectronics and military electronic engineers, according to one source, and its inclusion in the Engineering Troops School may be questioned. A deeper investigation might place it either with the Signal Troops Schools or, possibly with the Strategic Rocket School.[103]

Signal Troop Schools. There are 12 academies and schools for the Signal Troops, two of which were established in 1919--the Military Signal Academy named for Budennyy, and the Kiev Higher Military Signal Engineering School. The Kemerovo Higher Military Command Signal School was begun in 1938 as the Kemerovo Military Infantry School, becoming designated as a Command Signal School in 1968.[104] The other nine schools have been established since the early 1960s--part of the continuing technological revolution in Soviet military affairs. Three of the 12 schools have five-year programs, the Budennyy Academy, a three-year officer cadre training program for higher command, and the other eight higher military command signal schools offer four-year programs.

The Budennyy Academy has a strong program in teaching officers how to teach, emphasizes research in engineering applied problems, and offers tactical and strategic studies for its officer students.[105]

Since the "profiles" of the higher command signal schools are similar, cadets at the eight command schools study "the physical fundamentals and design of modern signal resources, their combat application, and technical operation."[106] The students undergo fire, tactical, engineering and drill training, learn military topography, the combined arms codes--and learn to drive motor vehicles.[107]

The three remaining signal troop schools are the Kiev Higher Military Signal Engineering School, the Cherepovets Higher Military Engineering School of Radioelectron-

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[102] Ibid., p. 64.

[103] DDB-2680-52-78, p. E16. Listed in this source as a Ground Force Artillery School.

[104] Ibid. p. K7.

[105] Ibid., p. 017.

[106] Polozov, A., Eng. Lt. Colonel, "Kemerovo Higher Command Signal School," Technology and Armament, August 1976, pp. 63-66.

[107] Ibid., p. 64. Although this article says that the Kharkov Higher Military Aviation Command Signals School trains specialists for the Signal Troops, it has been left with the Air Forces in this report. Ibid., p. 66.

ics,[108] and the Leningrad Higher Military Engineering School--all with five-year programs. The engineer-lieutenants who graduate from these schools receive radio communication and electric communication engineer diplomas. A large part of cadet training is very practical. They begin working with communication equipment, get practical training in a computer technology laboratory, study radio circuitry in their workshops, do equipment maintenance in the communication center (their training base), and learn to drive motor vehicles in their second year. They work with the signal troops in their last two years, servicing "communication centers of command posts at different levels" and at radio and line communication centers.[109]

Major General V.G. Filimonov has been Chief of the Directorate for Combat Training and Military Educational Institutions of the Signal Troops since 1975.[110]

This review of the 123 Higher Military Schools, Academies, Institutes, and Courses of the six separate services of the Soviet armed forces completes the analysis of military institutions under the Ministry of Defense.

There are nine other higher military schools not directly under the Ministry of Defense: the six MVD (Ministry of Internal Affairs) schools and the three KGB Border Guards Schools. They constitute separate forces in their own right, and knowledge about them in the open Soviet sources is virtually non-existent. How or whether they interact with the Main Political Directorate of the Soviet Army and Navy at the Ministry of Defense level and the Military Political School under its primary direction needs further research. It is significant, for instance, that the MVD has its own Rear Services--a curious exception to the general rule.

For the few bits of information about any of these schools, see the DIA publication Soviet Military Schools, DDB-2680-52-78. These nine schools should be high priority research objectives.

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[108]The Cherepovets Higher Military Engineering School of Radioelectronics may not belong to the Signal Troops Schools. The article by Major General of Signal Troops M. Pilipenko does not identify it as such. See Pilipenko M. Major General Signal Troops, Chief Kiev Higher Military Engineering Signal School, "Kiev Higher Military Engineering Signal School," Technology and Armament, March 1977, p. 63.

[109]Ibid., p. 61.

[110]CR80-11888, op cit., p. 30.

CHAPTER IV
DEVELOPMENT SINCE the 1960s

Higher military schools and academies in the Soviet Union are integral parts of the Soviet Armed Forces. The determination of their curricula, objectives, methods of training, kind of research, admissions procedures, qualifications of and kind of faculty, and their degree of political indoctrination are determined at the highest levels of political and military leadership. The organizational command structure of the Ministry of Defense provides for the rapid translation of the policies and programs of the top military-political "collective" of the Soviet Union into uniform changes at the school level.

The aging military-political commanders of the modern Soviet military forces bring to their policy decisions regarding the training of military officers certain basic prejudices based, naturally, on their own experiences. Colonel General V. Baskakov put it succinctly in an article in Voyennaya Mysl' in January 1972.

> ...Military training institutions train cadres for a specific type of practical activity, which dictates certain features and peculiarities of this training. The Army and Navy officer must possess various qualities, for he functions as a one-man commander and political guide, an educator-indoctrinator, a manager, and a specialist in a specific branch or arm, having mastered combat equipment and the principles of its employment in combat. (Emphasis added.) This demands extensive knowledge, solid skills, and a high degree of moral-political and psychological conditioning...[1]

As the analysis in this paper has shown, the 1960s and 1970s were decades of a major revolution in the creation of new institutions and the revitalization and upgrading of older military schools and academies. These changes, without historical parallel, brought in their train new problems and different perspectives. According to Baskakov, a deeper analysis of training requirements needed to be made, basing it upon "a profound analysis of troop requirements, consideration of future scientific and technological advances, and prediction of armed forces development into the foreseeable future." His top priority was: what to teach and how.[2] At all costs, the improvement of teaching was of paramount importance in all of the schools and academies.

The need for highly trained military "specialists" was imperative, and the content of what such specialists were taught was the

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[1]Baskakov, V., Colonel General, "Improvement of the Teaching Process at Military Training Institutions," Voyennaya Mysl', January 1972, pp. 29-39.

[2]Ibid., p. 29.

chief province of the top command echelons of the services and arms to which the officer related, although that officer should be grounded in the fundamental sciences on which his special training was based.

What was required included:

1. the determination of the content and scope of general scientific disciplines

2. the determination of curriculum cycles of the operational-tactical, general military and special disciplines and of their content and scope according to the specialization of the school or academy--taking into account future armed forces development

3. the determination of internal logical links between disciplines and their distribution by training years, employing simulation (emphasis added) of the teaching process

4. the coordination of the volume of all curricular disciplines with the time budget, and

5. the bringing into conformity of the teaching process with the training and indoctrination tasks of the Soviet service school[3]

He recognized that task as difficult. The agencies to carry it out were the Main Directorate of Military Training Institutions and the armed forces branches and/or arms. He suggested special subject-methodology commissions to resolve such questions as far as the general scientific disciplines were concerned. For the special disciplines, however, he thought such matters should be left to the "entities" to which the military training institutions were subordinated.[4]

The raising of teacher-qualifications at the Military schools had been provided for by the establishment of "permanent faculty upgrading courses in September 1971." But much remained to be done to implement the results of the findings of the faculty activity analysis done at the Gagarin Air Academy and at the Zyerzhinskiy Engineering Academy. At some institutions, Baskakov complained only 40 to 50 percent of faculty time was spent on teaching and "methodological" efforts and too much time spent on research and matters not connected with the teaching process. To him, the primary purpose of the faculty in the institutions was teaching and indoctrination. The quality of what was called research in many of the institutions he questioned:

> ...At many military training institutions almost every year a considerable number of operational-tactical problems and methodological elaborations are prepared anew, without the adoption of substantial changes. Can we permit this practice to continue? Is it dictated by necessity or is it merely a force of habit? ...The only thing definite is the fact

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[3] Ibid., pp. 30-31.

[4] Ibid., p. 34.

> that changes in the theoretical foundations of operational art and tactics are not very frequent. This means that when putting together lab manuals and workbooks, they must be of such sufficient quality and content that there will be no need to undertake major revision for at least two or three years... .[5]

It should be emphasized here that some six middle schools had been elevated to higher school status in the 1950s, 26 in the 1960s, and 39 in the 1970s. Several articles, including Baskakov's, appeared in several Soviet military journals in the early 1970s dealing with problems contingent to the upgrading of these schools. The very primitive level of some of these discussions may ring strangely on Western ears. For example, Major General of Tank Troops V. Kulikov complained in February 1972 that not enough attention was being paid to improving methods of training particularly in "those schools which relatively recently became higher schools."

> ...Teaching any subject in a higher institution of learning must be conducted at a higher level... .
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> We will explain this by using the very simple example of studying a transmission. While in the middle school the instructor could confine himself to listing the parts and to describing the functioning of the subassembly and malfunctions in it, in higher schools this is clearly inadequate. After first describing the line diagram of the subassembly, the instructor must concentrate the attention of the trainees on general peculiarities characteristic of all transmissions. In other words, teaching in a higher school is based on generalization... .[6]

Hence, the emphasis on teaching how and what to teach.

The actions of the 24th CPSU Congress in 1970 set in motion the renewed efforts in the higher military schools as well as in higher education institutions, in general, to improve teaching and research. For the military schools with all the new schedules and programs, the revised curricula, the newly elevated higher schools, introduction of sophisticated teaching devices, creation of new training bases, the continuing development of new weapons and weapons systems, and the need for better system-wide administration, mechanisms and procedures was at once apparent.

As Colonel General F. Tonkikh described it, "higher educational institutions are presently going through a new stage of development, connected with intensification of

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[5] Ibid., p. 35.

[6] Kulikov, V., Major General Tank Troops, "At the Level of the Demands of a Higher School," The Military Herald, February 1972, pp. 82-86.

the teaching process and incorporation of the principles of scientific organization of labor (faculty activity), which requires a new approach to solving the problems of management and administration of higher educational institutions."[7]

Data on students alone in each institution totaled several million data items for each school, making the manual processing system obsolete. The need to establish automated processes for processing and retrieval of technological and scientific information to support the increasing scientific research needs of the faculties and students of the military schools was essential, he thought, in order to incease the "effectiveness of utilizing the knowledge accumulated by mankind."[8]

The automated Management Information System which Tonkikh envisaged included subsystems such as Secondary School Graduate, Students, Staff, Scientific Research, Scientific-Technical Information, and Supply and Facilities. A brief explantion of each of these subsystems illustrates the breadth and scope of the automated system being planned for installation in the military higher education system in the 1970s.[9]

Secondary School Graduate Subsystem: this subsystem would contain data on all secondary school graduates including the results of their qualifying examinations, their origin, background, and other information based on "specified parameters," selection and ranking of students, and printouts of "various data on the new student acceptance process."

Student Subsystem: this would handle demographic data on students, records of their prior training, current and past performance, disciplinary actions, civic and scientific activities, individual-psychological features, physiological status, and physical development.

Staff Subsystem: this would be similar in data items on staff to the student subsystem, but would also contain information on employment, qualification upgrading, scientific and scholarly advance, and other personnel information.

Scientific Research Subsystem: this would solve problems of verification, analysis, and record keeping on the performance of scientific research, efficiency innovation and invention activities, appraisal of their effectiveness, and printouts to all concerned officials of results.

Scientific and Technical Information Susbsystem: this would permit processing of all incoming scientific and technical literature, preparation and distribution of computer-prepared annotated topic indexes, and bibliographic computer support for individual requestors. The content of scientific documents could be included in such a system.

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[7]Tonkikh, F., Colonel General, "Automated Information System of the Higher Military Training Institutions," Voyennaya Mysl', March 1972, pp. 103-110.

[8]Ibid., p. 104.

[9]Ibid. p. 106.

Supply and Facilities Subsystem: this would monitor the utilization of allocated finances, maintain supply records, monitor response to supply requests, keep track of the condition and use of classrooms, laboratory and housing facilities, and solve problems related to continuous improvement and use of facilities.

In order to achieve this automated Management Information System, each institution would need a data computer center using the Minsk-23, Minsk-32, and the M-222 and improved computers as developed and made available. Tonkikh suggested further that the system should interface with the insitutions and the central ministries at some point and should operate on a time-sharing basis. Because creation of such a system would require numerous specially-trained personnel to develop, he recommended establishment of a special laboratory subunit at each higher educational institution. The state of the art at the time of his writing in 1972 was comparable to that which several unnamed military higher educational institutions had already developed, particularly on the Secondary School Graduate, the Student, and Scientific-Technical Information.[10] Evidence of the development of this automated Management Information System outlined by General Tonkikh in the schools and academies during the 1970s may be found in the Soviet military journals published in that decade.

Automated management systems might solve some of the problems of the newly-expanded military educational system, but the basic question of personnel selection of teachers, students, and administrators would continue to be troublesome. At annual meetings between the chiefs of military educational institutions, the chiefs of military school personnel agencies, and the field commanders, discussions centered on improving work with military cadres--"work" here meaning selecting field officers for graduate study, selecting candidates for officer training, selecting field officers to teach in the military schools, and improving the system of cadre training.[11]

> ...The constant development of equipment for carrying on war, the increased demands of party-political work in the Army and Navy, and the increasingly broad range of complex missions accomplished by the Armed Forces steadily raise the roles of cadres in the Army and Navy. The combat readiness and fighting capability of the Army depends to a crucial degree on the level of training of military cadres and their ideological tampering and professional maturity... .[12]

As Trofimov observed, a large majority of the secondary military

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[10] Ibid., p. 109.

[11] Trofimov, N., Major General of Aviation, "Develop and Educate Cadres Carefully at Military Educational Institutions," Antiaircraft Defense Herald, September 1972, p. 106.

[12] Ibid., p. 100.

educational institutions had recently been coverted into "higher command" schools, which required staffing with large numbers of officers from the troops to teaching positions. Such officers would have to learn how to teach. The selection of officers to teach was not a simple matter, and Trofimov complained that troop commanders too often recommended officers of low moral qualities who were ineffective in teaching the troops, or too advanced in age to become effective faculty before they had to retire from active service. Further, some commanders and chiefs were reluctant to nominate young and promising officers. A major source of qualified faculty was from the graduate programs, academies and higher schools.[13] Establishing their own training graduate programs at the military schools in order to upgrade the academic credentials of faculty and staff is a pervasive phenomenon of Soviet higher military education. How such graduate programs compared to Soviet civilian higher educational institutions remains to be determined. They are self-serving because they prepare the officers to teach (military pedagogy) thus, most often they turn into programs on military educational theory, methodology, and practice. Heavy rhetorical stress is laid on "scientific" work at the schools and academies with programs leading to the production of "doctors of sciences." The limited nature of this concept of scientific work is illustrated by Trofimov:

> ...The growth in the number of learned specialist and the rise in the scientific and pedagogical qualifications of teachers and professors have, in their turn, created favorable conditions for more extensive development at military educational institutions of scientific research work to further improve methods of using weapons and military equipment in battle and to improve organization of the educational process... . (Emphasis added.)[14]

Reference has already been made at the opening of this chapter to the heavy emphasis placed upon practical activity by Soviet military leaders. Such emphasis takes its clearest form in the intensive weapons study in the military schools--study which involves not only operational matters but repair and servicing of all units of equipment as well. Beyond this intense "hands on" learning is the basic goal of officer and cadet training: combat readiness and proficiency. Whatever the branch or specialist arm, their schools and academies concentrate their efforts on producing officers to win battles--with the additional surety of producing officers politically loyal in every respect and in all situations to the Party and Leninist Communist Socialist principles.

In order to achieve such results, in the 1970s field training bases were built at the school to

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[13] Ibid., pp. 102-103.

[14] Ibid., p. 103.

perfect officer and cadet proficiency in combat skills. Complaints regarding the slowness with which combat training results were being achieved in some schools, particularly in the newly-elevated schools, appeared in several articles in the military journals during this period. Lt. General G. Golofast, Chief of Military Higher Education Directorate for the Ground Forces in 1973, described this shift to field training quite graphically.

> ...Existing plans and programs...have been worked out on the basis of thorough analysis of the activity of young officers in chast', obtained from replies of graduates of the schools and the results of scientific research work done at many military educational institutions, and take into consideration changes in the technical equipment of the troops. In them (the plans and programs) questions of field training have been stressed. It is very important that the management of the schools, department heads, instructors and commanders of podrazdeleiyne firmly understand this and direct all efforts toward its elevation. Tactical training must occupy the main place, and all other military and military technical disciplines should be subordinate primarily to its interests... .[15]

In the Air Defense Schools, as in the Ground Force Schools, training models had been completed for all majors and specialties by 1973--all based upon the "basic methodological concept of teaching what is required in war and what produces victory in combat.[16] Even diploma projects were linked to "requirements of improving combat readiness of the troops." Such subjects included studying the algorithm of target allocation and the process of controlling fire of antiaircraft missile complexes under combat conditions.[17]

A bibliograhic analysis of articles appearing in five major Soviet military journals from 1970 to 1979 shows that 1,040 articles were authored by current top Soviet military commanders during this period of time. Of these articles, over 130 had as their main subject Combat Readiness and Combat Training. The fact that the 176 military schools, academies, institutes, and courses are the primary places where such training begins underlines the enhanced role of the military educational system. It helps us to understand the different emphases in the educational process upon the mastery of weapons and weapons systems, on close ties with troops, and in the specializations of these numerous schools. Officer training at the cadet level or at the middle and senior officer levels in the Soviet Union has one repeated major goal: to prepare military leadership to win victory in war with whatever weapons are at hand. In the 1960s and 1970s, then, it may not be an exaggeration

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[15]Golofast, G., Lt. Gen., "Great Tasks of the Higher Military School," The Military Herald, September 1973, p. 2.

[17]Ibid., p. 113.

to say that the Soviets began their practical preparation for war in the schools and academies of the Soviet Union--creating new schools, reorganizing existing ones, and elevating lower schools to a higher status, revising curricula, standardizing administrative procedures and practices, improving facilities and developing field training bases, encouraging research and approaches to "create" initiative, infusing the system with greatly increased political indoctrination and control, and making of the officer cadres the principle instrument for teaching the troops the use of weapons developed by modern technology. The interaction of technological advances in weaponry and combat readiness became the driving force of Soviet military higher education.[18]

Colonel General M. Povaliy describes this period of Soviet military development in an article appearing in the Antiaircraft Defense Herald in August 1975:

> ...Profound qualitative changes in the organization and equipment of troops of all branches of the armed forces have occurred and are occurring under the effect of modern scientific-technical progress. Their combat capacities have significantly increased. Modern troops have become dissimilar to those of the World War II period. Certain of them, such as the Strategic Rocket Forces, the Nuclear Submarine Troops and all branches of aviation, the Air Defense means of the Ground Forces have been created for the first time or are developing on a new technical basis. The development of each Branch of Arms in all of the Branches of the Armed Forces occurred and continues to follow the line of reinforcing the strike and fire power and rapidity of actions, particularly of those troops who are armed with missile and nuclear weapons, of an increase in the range and accuracy of fire at any time of year or days, of mobility and maneuverability, of increasing flexibility of control as a result of adopting the latest technical means, including automated control systems...

The qualitative transformations of the Soviet Armed Forces and their vast reinforcement of combat might have caused new forms and methods of their strategic, operational, and tactical utilization, and consequently have revolutionized military

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[18]Cross, Jack L., Ed., Current Soviet Military Commanders' Articles on Military Affairs, 1964-1979. The Center for Strategic Technology, College Station, Texas, 1981. 151 pp. The five journals referred to are: 1) Voyennaya Mysl' 2) Voyennyy Vestnik, 3) Vestnik Protivovozdushnoy Oborony, 4) Tekhnika i Voorunzheniye, and 5) Tyl i Snabzheniye Sovetskikh Vooruzhennyikh Sil.

art as a whole and of each branch individually... .[19]

General Povaliy concludes this paragraph with a quotation from L.I. Brezhnev, "The appearance of the nuclear missile weapon and other of the latest types of equipment have entailed fundamental changes in the strategy and tactics...in methods of training and educating personnel."[20] (Emphasis added.)

That the military schools and academies had responded to the demands made by Brezhnev and others in adapting training to the new military situation by 1975, is verified by Lt. General of Artillery Boris Stol'nikov's article on "Means to Intensify the Schooling Process."[21] There was a greater sense of urgency to master larger quantities of information in a shorter period of time, all of which led to the introduction of what he called the "technical means of teaching."

> ...These are technical devices, machines, and complexes which are not the objects of study but which provide the opportunity to solve the task of teaching by using methods--teaching materials especially developed for them...under mass teaching conditions...to economize training time at limited periods of schooling... .
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> ...There is not a single academy or school at the present time in which diafilm and movie projectors, sound recorders, and sound reproducers are not used and some have closed educational television, and video tape recorders... .[22]

Tests were machine-given and machine-graded for large groups; and software systems for practical, laboratory, general educational, general engineering, military special and technical disciplines had been developed and stocked in many schools. Training devices which modeled the work of actual facilities and/or weapons systems simulating combat conditions were widely used by 1975. Even tactical training classrooms were built for the "Vystrel" courses utilizing combat and communications equipment under simulated combat situations.[23] The system had progressed very far since the rather gruff debates carried on between General Rotmistrov and his colleagues regarding the traditional lecture method of teaching versus the automated systems supporters in the

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[19]Povaliy, M., Colonel General, "Scientific-Technical Progress and Military Art," Antiaircraft Defense Herald, August 1975, pp. 30-31.

[20]Quoted from L.I. Brezhnev, The Leninist Course, Vol. 2, Moscow: Politizdat, 1974, p. 254.

[21]Stol'nikov, Boris, Lt. General, "Means to Intensify the Schooling Process," Technology and Armament, October 1971, pp. 56-64. General Stol'nikov is one of the First Deputy Chiefs of the Main Directorate for Higher Military Education at the MOD level.

[22]Ibid., p. 57.

[23]Ibid., pp. 60-61.

mid-1960s. The traditional approach had surrendered to the modern, machine, automated systems using the very latest audio-visual and computer-assisted systems.

By 1975, and for the meeting of the 25th CPSU Congress, the essential elements of the "revolutionized" higher military educational system were in place. Intensification, improvement, and a more rapid movement toward quality of training occupied the "heated" discussions which transpired at a reception hosted by Brezhnev and others at the Kremlin in June of 1976, for graduates of the military academies.[24] But the basic purpose of training remained steady: "military-educational institutions...are called upon to structure their work so that the graduates of our academies and schools have the necessary volume of knowledge and skills for the successful accomplishment of combat missions."[25] The post of "senior scientific associate" was devised to expedite the production of doctors of science, for writing dissertations, and for raising the academic credentials of officers on faculties. Under prodding, younger "scientists" were being promoted to posts of department heads in the institutions. Officers from the troops were still being rotated into teaching but under more highly selective procedures. A new set of standards for measuring the quality of graduate dissertation writing began to be openly discussed in the literature, timed almost to coincide with the growing insistence upon the development of initiative in the military commander. Col. Gen. V. Abramov observed that in the "formal" dissertation review process, more attention needed to be given to the evaluation of the quality of the work, its reality, innovation, the personal contribution of the author to science, the practical value of the work, and the use of the findings in the training process in the school and with the troops.[26] He cited the demand by the 25th Congress for creating a creative atmosphere in scientific work,[27] and that the training of future officers be organized upon the latest achievements of science and technology.[28]

To issue a resolution to encourage the development of "creativity" is one thing; how to accomplish it is another. Under the prodding of the 25th Congress, however, the Deputy Commanders of the various service/arm schools were wrestling with this new problem. General Fominskiy, Deputy Chief for the PVO Strany Schools, met the issue frontally:

> ...Practical classes and laboratory work are actively

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[24]Abromov, V., Col. Gen. of Aviation, "Carefully Rear Scientific-Educational Cadre," Antiaircraft Defense Herald, August 1976, p. 84.

[25]Ibid., p. 84.

[26]Ibid., p. 90.

[27]Ibid., p. 90.

[28]Fominskiy, M., Major-General Engineer, Dep. Chief of Military Educational Institutions, PVO Strany, "The Combined Solution of Problems of Training, Educational, and Scientific Work," Antiaircraft Defense Herald, January 1977, pp. 86-87.

used in many schools. Classes where cadets or students (read officers here) are required to analyze a decision they have made and to back up the results of a laboratory investigation provide a good effect in developing skills of independent research and thinking. The successes that have been attained are only a beginning, only the approaches to the educational aspects of educating creativity (emphasis added). Unfortunately, it presently has a traditional, and to our view, fragmentary character. The time has come immediately to take up the creation of the proper theoretical foundation of this trend in school education, to take up the creation of a general methodology and the method of cadet creativity, to study the learning capabilities of every cadet and student. Not only the technical, scientific-educational departments, but also the instructors of all of the social disciplines are called upon to participate in the development of this problem... .[29]

Individualization and personalization of the educational process in the military educational system were now not only to be encouraged but to be accomplished--a most significant development, the results of which call for a continuing evaluation. While Fominskiy was speaking primarily for the Air Defense schools, this new emphasis on the development of creativity applied to all schools and academies because that is the Soviet way. Within groupings of specialists' schools, particular institutions pioneer approaches and programs which, when succesful, are then adopted by other schools within the system. Concern for the cadet and the officer, regard for his individual capacities and capabilities, and even a deeper interest in his living and working conditions is expressed in an increasing volume of articles in the military journals published from 1975 to 1979. Colonel V. Strezhnev, for instance, in a typical article of this kind which appeared in Tyl (Rear Services) in 1977, observed that "Life teaches us that this is attained most successfully through an individual approach."[30]

"Work" in the Soviet military schools and academies is standardized and unified--all kinds of work: didactic, research, theoretical, practical, political, technical, scientific, and internship with the forces. General Stol'nikov could observe in 1977, that "Problems in standardization and unification are solved at military educational institutions both by standardizing all training and scientific work, and in the process of teaching these disciplines to

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[29] Ibid., p. 94.

[30] Strezhnev, V., Colonel, "An Individual Approval to Teaching and Educating," Tyl, March 1977, p. 72; Dubinin, Yu, Colonel, "Concern for the Officer Candidates of Naval Schools," Tyl, April 1977, pp. 52-54.

students and cadets."[31] Stol'nikov's article is an important one because it emphasizes the fact that there is "a single system for training commanders, political workers, and engineers in academies and higher institutions of military education for all services of the Armed Forces."[32]

By 1977, Stol'nikov could report that the ideas suggested by Baskakov and Tonkikh in Voyennaya Mysl' in 1972, had been put into place; methodological commissions had developed the collective criteria for the evaluation of student and faculty performance and standards had been developed and published regulating training, teaching, scientific research, and educational work at all the service schools. A Management Information System had been developed based upon computers and was functioning in several of the major schools. The systems made it possible to do what Tonkikh had proposed: "Facilitate the writing of plans, scheduling of lessons, distribution of lecture halls and classrooms, accumulating statistics on every student (officer) and cadet for the entire course of training in a computer memory, maintaining dynamic records of the most important parameters of the training process, and evaluating its effectiveness."[33]

The question of standardization and metrology of technical and scientific measurements was being coordinated between the Main Directorate for Higher Educational Institutions and the USSR Gosstandart agencies. The USSR Gosstandart had approved metrology standards as early as 1961 in GOST 9867-61 on "The International System of Units" based on six units: the meter, the kilogram, the second, the ampere, the degree Kelvin, and the candle. The military schools, Stol'kinov felt, had a most important role in translating all scientific and measuring systems into the academic and technical disciplines in the schools, particularly in courses in the academies on military scientific research, armament design and testing, and in courses on weapon and military equipment operation.[34] This conversion was particularly important in published training manuals--a voluminous output of many of the schools and academies, but many of which had not yet been converted to the international standards.

> ...During their training, future military specialist become accustomed to not using the technical descriptions written at the plants in compliance with the requirements of the (YeSKD) standard on documentary texts, but rather the training aids on the material written by instructors. As a rule, such manuals are versions of plant documentation

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[31] Stol'nikov, Boris, Lt. Gen. Artillery, 1st Dep. Chief of the Main Directorate of Military Educational Institutions, "Standardization and Metrology in Educational Institutions," Technology and Armament, March 1977, pp. 53-59.

[32] Ibid., p. 53.

[33] Ibid., p. 54.

[34] Ibid., p. 55, p. 57.

> that are significantly revised for educational purposes... We should note that cadets and students must know how to read design documents and work with them competently... .[35]

By 1978, the system of military higher education was basically in place, its purposes defined, its methodologies determined, and its directions approved by agreement of the highest political and military authorities in the Soviet Union. What exists now is a very effective, complex, and sophisticated system of some 170-odd institutions dedicated not only to the output of junior officers for the armed forces, but to the training of field officers and commanders--a constant upgrading of theory and practice. And, all in the context of the practical preparation of all officers for the winning of battles.

Lt. General S. Golikov's article in Technology and Armament in March 1978, becomes all the more important as a summary of the accomplishments of the military higher educational system since 1970. What he says here should sober all Western observers:

> ...The development of military education has been closely connected with equipping educational institutes with modern facilities and constantly perfecting their training equipment, the composition of which depends on the goals and purposes of instruction, which in turn has a direct influence on the organization of exercises, instruction methodology and the quality of training. The main criterion for training equipment is its conformity with the program of instruction.

All military training establishments have material training resources which include objects of study (military equipment, weaponry and materiel), laboratory and productive facilities, training equipment, visual aides, training literature, auxiliary and training installations and also a complex of specially equipped sections of terrain and fortifications (training grounds, firing ranges, etc.).

According to their didactic purpose, all of these elements may be divided into training resources and training support resources and be located both in the area of the permanent educational facility and in a training center. Training resources are used directly in the training process. The students use them to acquire and consolidate the knowledge, ability and skill provided for by the training program. Support resources make it possible to organize exercises on a high qualitative level and to efficiently use training resources.

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[35] Ibid., p. 58. Such "work" is classified as scientific research work in the Soviet military academies and schools.

The constant perfection of training equipment is due to the fact that, under conditions of scientific and technological progress, armament and equipment are being constantly modernized and methods of conducting combat operations are being changed. Much has been done in this area in recent years.

Major attention is devoted to supplying training institutes with all necessary models of military equipment. They are the basic object of study, as well as being resources which the trainees use to acquire technical knowledge, ability and skill. It is especially important to support all practical exercises with a sufficient quantity of equipment. Such exercises are more effective when each trainee is able to lead a podrazdeleniye in practice or independently carry out a mission on the operation, maintenance and repair of equipment. Of course, it is impossible to supply a separate sample of armament to each trainee or set aside a podrazdeleniye for him. Neither is this necessary. The quantity of training and training combat equipment possessed by the institutes is sufficient for instruction if there is a correct planning... .

In certain institutes, systems of interconnected automated training command posts at various levels have been set up. At such posts, gaming methods are used to deal with complex training problems and multi-stage command-staff exercises are conducted.

In the institutes, great attention is devoted to perfecting laboratories. The stage of development of a given field of science or technology is especially clearly reflected in laboratory equipment. It is modernized continually and at a faster rate than all other elements of training resources. Each year, new laboratory units which help to conduct experiments with a greater degree of precision and help to give high technological training to the student are being created. The simulation of physical processes using computers and ultrasonic units is being widely used.

As is well known, it is recommended that theoretical material be firmly consolidated immediately after it is studied by performing laboratory work with all students. This requires a vast amount of laboratory equipment, but this requirement may be lessened by using universal laboratory units produced on the basis of previously proven designs from standard elements and parts. Such units, each of which makes it possible to perform 8-10 or more laboratory operations, have already been successfully used for many years in electronics laboratories... .

The students are those who participate most directly in the perfection of training equipment in a number of institutes. This is especially true in institutes for the radiotechnical profession, where students assemble new laboratory units developed by them under guidance of the instructors.

The thematic exhibits which are conducted at the Exhibition of the Achievements of the National Economy of the USSR at the "National Education" pavilion promote the wide participation of instructors, engineers and students in the development of training equipment. The number of military educational establishments participating in these exhibitions increases from year to year. While previously the displays were primarily from engineering institutes, at present command and political academies and institutes are producing more samples.

The training center occupies an important place in the training resources of an institute. This is generally a complex of specially equipped sections of terrain and objectives designed to help the students acquire and perfect field, naval and air skills.

Exercises in training centers are conducted under conditions which simulate real conditions as closely as possible. This makes it possible for the trainee to acquire skills in leading forces, organizing all types of combat support and servicing and operating equipment. It also helps him to acquire moral and psychological fortitude and develop will power.

The composition of a training center is determined by the speciality of the institute. However, many of these are identical for all academies and institutes due to the common missions for the training of officers of the Soviet Armed Forces. Such common elements may include tactical training grounds, firing ranges, garages, chemical and engineering ranges, installations for missions for moral-psychological training, areas for the study of methods for combatting tanks and low-flying aerial targets, athletic fields and drill areas.

As a rule, modern training centers are completely mechanized and electrified, and some of them are automated. Remote-controlled training targets, simulation resources, automated monitoring of the actions of the trainees and automatic evaluation of exercises all make it possible to create a quickly changing situation and increase the efficiency and instructiveness of field exercises.

Naturally, the electrification, mechanization and automation of training centers

> requires major expenditures of materiel. However, these are accompanied by high quality in the training of specialists and the acquisition of firm practical skills... .
>
> The military academies and institutes of the Ministry of Defense of the USSR have everything that is necessary for high-quality organization of the training process. The skillful combination of first class training equipment, the skill and experience of the instructors, the thirst for military knowledge and the enthusiasm and shock labor of the students is the key to solving problems for the training of highly qualified officer cadres for our Armed Forces... . [36]

There is a direct correlation--as troublesome as this fact may be to many Western observers--between the "revolution in the Soviet military higher educational system" and the new Soviet Armed Forces which confront the West in the 1980s. We can almost date the beginning of the massive changes by looking at the reorganizations, upgrading, and the changes which have occurred in the last 15 to 20 years in Soviet higher education. Sorting out these changes, placing them in time sequences, locating the institutions in a rational organization structure, and identifying the driving forces (the objectives) behind the education of junior officers, the training and re-training of senior officers, and comprehending the ways in which these schools and academies have converted and built fully-equipped facilities for training--all of these developments testify to the depth and breadth of this "revolution" in military higher education.

Certainly it tracks the technological revolution in post World War II in Soviet military affairs. As far as this statement goes, it is a rather innocuous conclusion. If we look more deeply, however, we can see that, in many ways, the old guard has changed. The resolutions pertaining to military education adopted by the 24th and 25th Congresses of the CPSU, particularly, may turn out to have been signals of these changes. These resolutions need deeper analysis in view of the findings in this paper. That the changes required new executors to achieve them is supported by the fact that most of the top bureaucratic personnel of the Main Directorate for Military Educational Institutions--the Deputy Commanders for Military Educational Institutions of the Forces, the Deputy Chiefs for Military Educational Institutions of the 16 military districts, and the heads of the 138 of the 172 higher military schools, academies, courses, and institutes used in this analysis (a total number of 203 individuals) have changed since 1971. In fact, approximately 85 percent of these identified individuals have taken over their commands of the Soviet

---

[36]Golikov, S., Lt. General, Chief of the Program Methodological Directorate of Higher Educational Institutions, "Instructional Equipment in Training Institutes," Technology and Armament, March 1978, pp. 53-58.

military higher educational system since 1971; at the very top level the Ministry of Defense Main Directorate for Military Higher Educational Institutions, 85 percent of the command changes have occurred since 1976--on the heels of the 25th party Congress. At the military district command level, 15 of the 16 deputy chiefs for military educational institutions have been replaced since 1974. About 60 percent of the known institutional heads have been at their posts only since 1976.

The findings in this study are based primarily on the several articles from the Soviet military journals cited in the bibliography--to which should be added three other major sources: the SAFRA 4 publication, David R. Jones, Ed., Soviet Armed Forces Review Annual 4, Academic International Press, Gulf Breeze: Florida, 1980; the DIA study on Soviet Military Schools (DDB-2680-52-78); and the study prepared for the Director of Net Assessment by Harriet Fast Scott, Christina F. Shelton, and James T. Reitz entitled Soviet Defense Manpower Associated with Commissioning Schools and Higher Training for Soviet Officers, GE27 TMO-40A.

Some Tentative Conclusions:

1. The Bolsheviks rebuilt the Soviet military educational system after the Revolution which contained certain basic features and/or principles:

    a. to produce a "new" Soviet Army for specific purposes--to fight and win

    b. to develop military leaders from the workers and peasants who "won" the revolution using carefully selected and loyal imperial officers

    c. to teach and train officers the most practical aspects of military life, use and maintenance of weapons, and theory and skills of their combat applications

    d. to educate field officers in the military science of operational art; to teach officers how to teach their military experiences--military pedagogy

    e. to place the burden of teaching subordinates the care, use, and repair of weapons; and instilling political ideology among the troops

    f. to organize and develop schools, academies, programs, and courses for the necessary military specialties sufficiently diverse to produce the kinds and numbers of specialists required by the Force

    g. to tie the schools and academies tightly to the branches and arms of service to which they belonged as well as to the service-wide agencies at the M.O.D. level which have service-wide responsibilities--(Civil Defense, Rear Services, etc.)

h. to sponsor "scientific research" on a broad range of matters in the schools primarily on training and education aids; in the academies and with senior officers, on the experiences of World War II; in Social Science Departments, on Marxist-Leninist principles; and in technical and engineering departments, on simulators, trainers, weapons use and modification, handbooks, textbooks, and technical manuals. The development of teaching students and cadets how to research was begun in the early 1960s and has shown a steady growth of sophistication, although of questionable depth or significance by Western standards. Recent evidences since 1965 of a growing emphasis on the part or combat officers showing "initiative" and the newer efforts to "teach creativity" to cadets and students is an important development--one which calls for closer analysis

i. to maintain a flexible system of training which permits credentialing of political types but which provides them with basic military training and experience

j. to tie the training of the officers to the troops.

2. The establishment and/or upgrading of Soviet military schools in the 1960s and 1970s is unprecedented in modern history. The investment of money, time, and imagination in providing automated teaching equipment and sophisticated training bases, computer centers, management information systems, and represents some very basic and important decisions on the part of the political-military decision makers of the Soviet Union.

3. The major structure of the Soviet military higher educational system is basically in place, although changes of the kind reported in this analysis will continue and intensify. While we can identify 176 higher institutions today, we may well be dealing with another 20 or so for each decade--certainly with numbers of schools being upgraded to a higher level--again, guided by perceived needs by the Soviet military and political leadership.

Several additional observations should be made in concluding this study. The intensification of training in computer hardware and software systems in the higher military schools and academies evidences a significant shift toward automated command and control systems--toward modern management techniques--a process observable in all of the schools reviewed here. Obviously, too, the military schools have grown increasingly aware of the need to prepare both junior and senior officers for "higher command," but it is in the

commissioning schools that the theoretical groundwork is laid, and in the later career movement of officers that this kind of education occurs. The building of training fields, the constant emphasis upon inculcating initiative and "one-man" command capability, the concentration upon the mastery of military equipment, and the rotation between field command and increasing levels of education in the specialized technical and/or command schools, and the increasing use of field exercises--all these things testify to the fact that the Soviet military command is wrestling with the same dilemma facing their Western counterparts. How does a military system educate, train, and produce good battlefield commanders? The recent selection of Army General Alaksandr Mikhailoviche Maiorov as First Deputy Commander in Chief of the Soviet Ground Forces in December 1978, in charge of Combat Training among other duties, may well be a signal that the new man - management techniques, a more sophisticated man-machine mix, and a greater emphasis on modern Command and Control Systems holds sway in the Soviet Ministry of Defense.

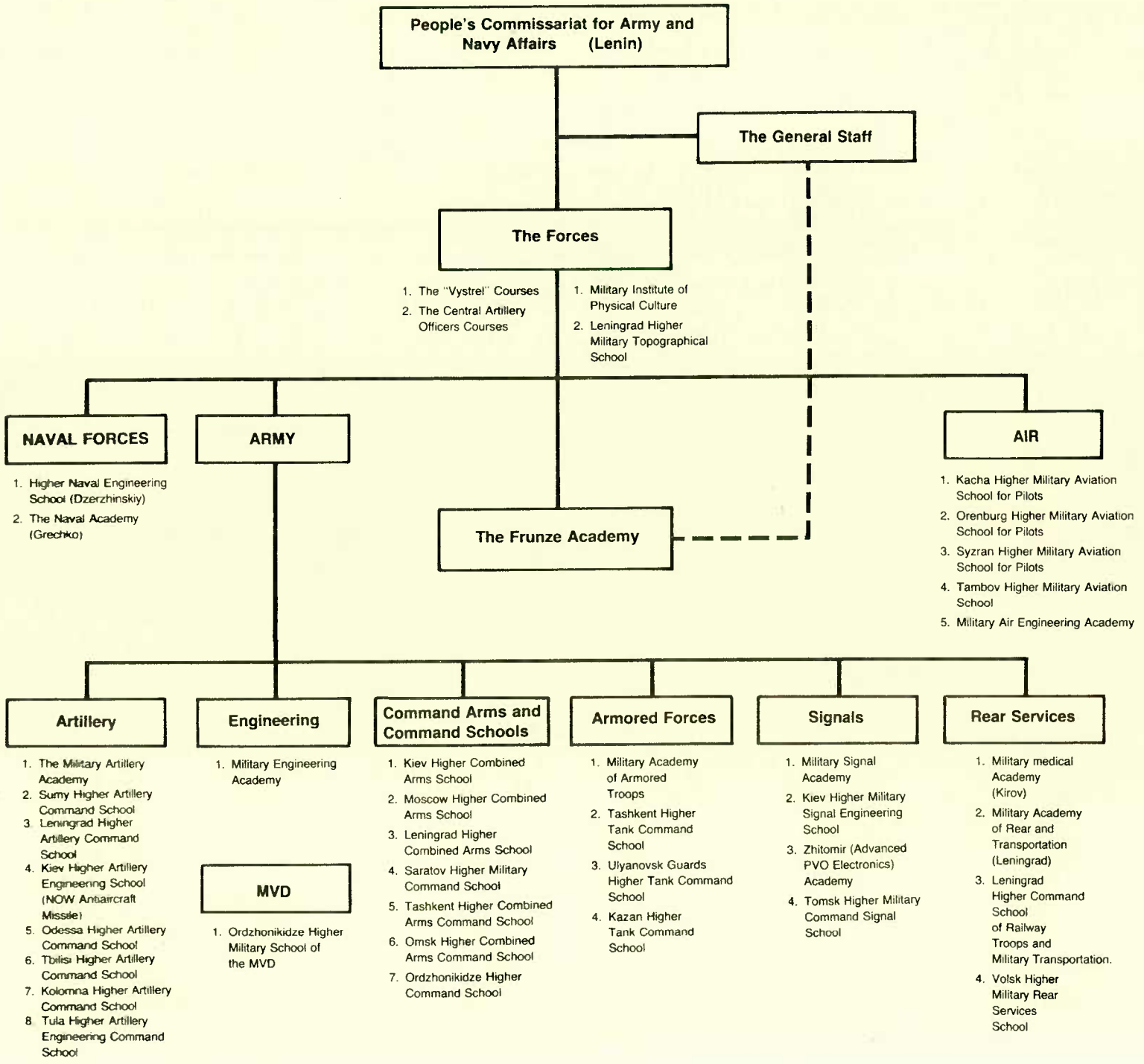
Soviet military writers continue to stress the need for improved performance in all levels of the Soviet military system. These findings suggest that in part, at least, the higher military schools and academies in the Soviet Union are marching to this different drummer. Despite their basic conservatism in holding to older revolutionary slogans or to the traditions of the "Great Patriotic War" and despite the advanced age of some of their top military leadership, these Soviet military and Naval forces are indeed unlike their predecessors. In large measure, the reorganized and revamped older and newer higher military schools and academies have contributed to making them so.

APPENDICES

APPENDIX A

SOVIET HIGHER EDUCATIONAL MILITARY INSTITUTIONS ESTABLISHED 1917-1929

1917-1929


People's Commissariat for Army and Navy Affairs (Lenin)
The General Staff
The Forces
1. The "Vystrel" Courses
2. The Central Artillery Officers Courses
1. Military Institute of Physical Culture
2. Leningrad Higher Military Topographical School
NAVAL FORCES
1. Higher Naval Engineering School (Dzerzhinskiy)
2. The Naval Academy (Grechko)
ARMY
The Frunze Academy
AIR
1. Kacha Higher Military Aviation School for Pilots
2. Orenburg Higher Military Aviation School for Pilots
3. Syzran Higher Military Aviation School for Pilots
4. Tambov Higher Military Aviation School
5. Military Air Engineering Academy
Artillery
1. The Military Artillery Academy
2. Sumy Higher Artillery Command School
3. Leningrad Higher Artillery Command School
4. Kiev Higher Artillery Engineering School (NOW Antiaircraft Missile)
5. Odessa Higher Artillery Command School
6. Tbilisi Higher Artillery Command School
7. Kolomna Higher Artillery Command School
8. Tula Higher Artillery Engineering Command School
Engineering
1. Military Engineering Academy
MVD
1. Ordzhonikidze Higher Military School of the MVD
Command Arms and Command Schools
1. Kiev Higher Combined Arms School
2. Moscow Higher Combined Arms School
3. Leningrad Higher Combined Arms School
4. Saratov Higher Military Command School
5. Tashkent Higher Combined Arms Command School
6. Omsk Higher Combined Arms Command School
7. Ordzhonikidze Higher Command School
Armored Forces
1. Military Academy of Armored Troops
2. Tashkent Higher Tank Command School
3. Ulyanovsk Guards Higher Tank Command School
4. Kazan Higher Tank Command School
Signals
1. Military Signal Academy
2. Kiev Higher Military Signal Engineering School
3. Zhitomir (Advanced PVO Electronics) Academy
4. Tomsk Higher Military Command Signal School
Rear Services
1. Military medical Academy (Kirov)
2. Military Academy of Rear and Transportation (Leningrad)
3. Leningrad Higher Command School of Railway Troops and Military Transportation.
4. Volsk Higher Military Rear Services School

SOVIET HIGHER EDUCATIONAL MILITARY
INSTITUTIONS ESTABLISHED 1917-1929

1. Kacha Higher Military Aviation Order of Lenin Red Banner School for Pilots, imeni, A.F. Myasnikov, Volgograd, 1917.*

2. Higher (advanced) Naval Engineering Order of Lenin School, imeni F.E. Dzerzhinskiy, 1917.

3. Military Order of Lenin, Red Banner and Order of Suvorov Academy, imeni M.V. Frunze, 1918.

4. The Military Medical Order of Lenin, Red Banner Academy, imeni S.M. Kirov, 1918.*

5. Kiev Higher Combined Armed Command Twice Red Banner School, imeni M.V. Frunze, 1918*

6. Military Twice Red Banner Institute of Physical Culture, imeni P.F. Lesgaft (Leningrad), 1918.*

7. Military Order of Lenin, Red Banner Academy of Armored Troops, imeni MSU R. Ya Malinovskiy, 1918.*

8. Military Order of Lenin Red Banner Signal Academy, imeni S.M. Budennyy, 1919.*

9. Naval Orders of Lenin, Ushakov, and the October Revolution Academy, imeni MSU A. Grechko, 1919.*

10. Military Air Engineering Order of Lenin and the October Revolution Red Banner Academy, imeni Professor N. Ye. Zhukovskiy, 1920.*

11. Military Orders of Lenin, Suvorov, and the October Revolution Engineering Academy, imeni F.E. Dzerzhinskiy (Moscow), 1925.*

12. Moscow Higher Combined Arms Command School, 1917.

13. Leningrad Higher Combined Arms Command School, 1918.

14. The Military Artillery Academy, imeni Kalinin, 1918.

15. Military Academy of Rear and Transportation (Leningrad), 1918.

16. Saratov Higher Military Command School, 1918.

17. Sumy Higher Artillery Command School, 1918.

18. Tashkent Higher Combined Arms Command School, 1918.

19. Tashkent Higher Tank Command School, 1918.

20. Ulyanovsk Guards Higher Tank Command School, 1918.

21. Leningrad Higher Artillery Command School, 1918.

22. Kiev Higher [Artillery] Antiaircraft Missile Engineering School, 1919.

*Also manages correspondense courses.

23. Odessa Higher Artillery Command School, 1919.

24. Omsk Higher Combined Arms Command School, 1919.

25. Kazan Higher Tank Command School, 1919.

26. Leningrad Higher Military Topographical Command School, 1919.

27. Kiev Higher Military Signal Engineering School, 1919.

28. Tbilisi Higher Artillery Command School, 1920.

29. Orenburg Higher Military Aviation School for Pilots, 1921.

30. Syzran Higher Military Aviation School for Pilots, 1927.

31. Kolomna Higher Artillery Command School, 1918.

32. Ordzhonikidze Higher Command School, 1918.

33. Leningrad Higher Command School of Railway Troops and Military Transportation, 1918.

34. Zhitomir Advanced PVO Electronics Academy, 1919.

35. Tambov Higher Military Aviation Engineering School, 1919.

36. Tula Higher Artillery Engineering Command School, 1919.

37. Volsk Higher Military Rear Service School, 1919.

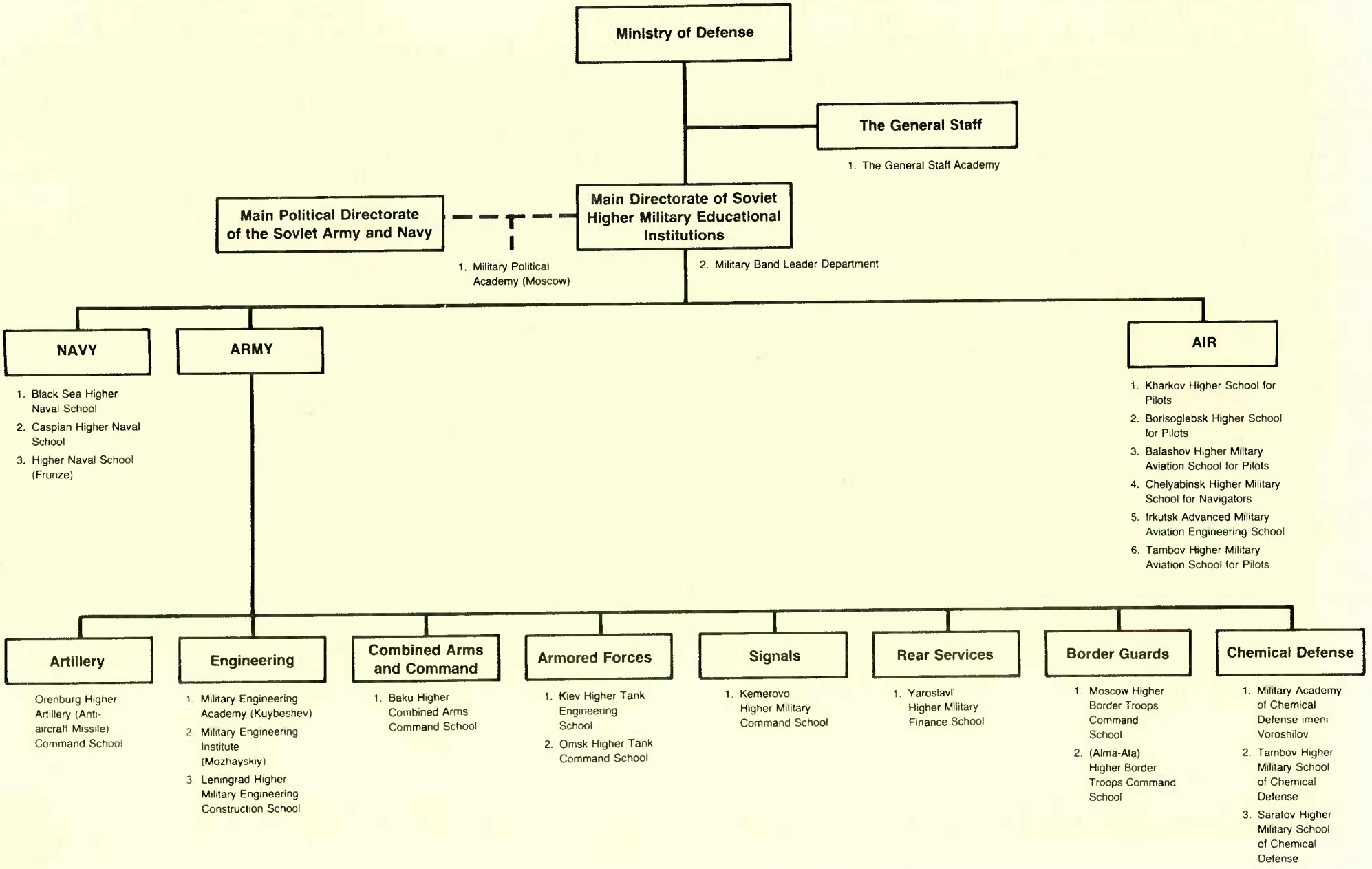
38. Tomsk Higher Military Command Signal School, 1920.

39. Ordzhonikidze Higher Military Command School of the MVD of USSR, 1917-1920.

APPENDIX B

SOVIET MILITARY HIGHER EDUCATIONAL INSTITUTIONS ESTABLISHED in the 1930s

SOVIET MILITARY HIGHER EDUCATIONAL INSTITUTIONS ESTABLISHED IN THE 1930's



SOVIET MILITARY HIGHER EDUCATIONAL
INSTITUTIONS ESTABLISHED in the 1930s

1. Kharkov Higher Military Aviation Order of the Red Star School for Pilots, imeni Twice Hero of the S.U.S.I. Gritsevts, 1930.

2. Borisoglebsk Higher Military Order of the Lenin, Red Banner School for Pilots, imeni V.P. Chalov, 1930 (?), Perhaps earlier--"Order of Lenin."

3. Military Academy of Chemical Defense, imeni Voroshilov, 1932.

4. Military Engineering Order of Lenin, Red Banner Academy, imeni V.V. Kuybyshev, 1932.

5. Military Political Order of Lenin Red Banner Academy, imeni V.I. Lenin (Moscow), 1933.

6. Military Band Leader Department of the Moscow Twice Order of Lenin State Conservatory, imeni P.I. Tchaikovskiy, 1936.*

7. Military Orders of Lenin and Suvorov Academy of the General Staff of the Armed Forces of the USSR, imeni K. Ye. Voroshilov, 1936.

8. Balashov Higher Military Aviation School for Pilots, imeni Twice Hero of the S.U. Chief Marshal of Aviation A.A. Novikov, 1937.

9. Black Sea Higher Naval Order of the Red Star School, imeni P.S. Nashimov, 1937.*

10. Baku Higher Combined Arms Command School, imeni Supreme Soviet of the Azerbaydzhan SSR., 1939.

11. Caspian Higher Naval Red Banner School, imeni S.M. Kirov, 1939.*

12. Higher Naval Order of Lenin, Red Banner Order of Ushakov School, imeni M.V. Frunze, 1939.*

13. Chelyabinsk Higher Military School for Navigators, 1936.

14. Tambov Higher Military Command School of Chemical Defense, 1932.

15. Saratov Higher Military Engineering School of Chemical Defense, 1933.

16. Orenburg Higher [artillery] Antiaircraft Missile Command School, 1934.

17. Kemerovo Higher Military Command Signal School, 1938.

18. Kiev Higher Tank Engineering School, 1930.

19. Irkutsk Advanced Military Aviation Engineering Academy, 1931.

20. Tambov Higher Military Aviation School for Pilots, 1931-32.

21. Moscow Higher Border Troops Command School, 1931-32.

22. Higher Border Troops Command School (Alma-Ata), 1932.

23. Yaroslavl' Higher Military Finance School, 1936.

24. Militry Engineering Institute (Mozhayskiy), 1936.

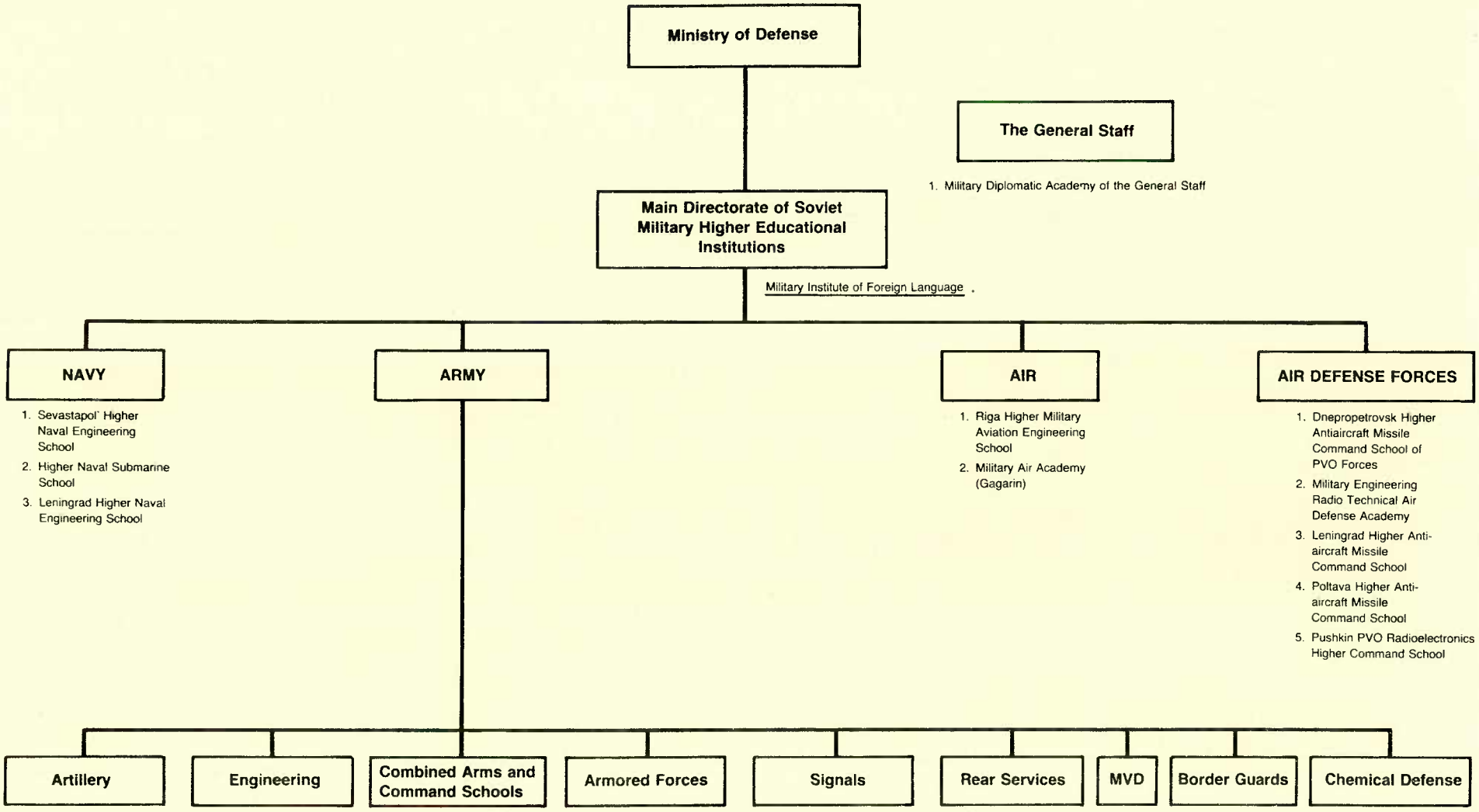
25. Omsk Higher Tank Command School, 1939.

26. Leningrad Higher Military Engineering Construction School, 1939.

APPENDIX C

SOVIET MILITARY HIGHER EDUCATIONAL SCHOOLS ESTABLISHED in the 1940s

SOVIET HIGHER MILITARY EDUCATIONAL INSTITUTIONS ESTABLISHED IN THE 1940's[1]



1. During the 1940's a new kind of military school emerged in reaction to military manpower needs. The Suvarov Military Schools, 10 in number

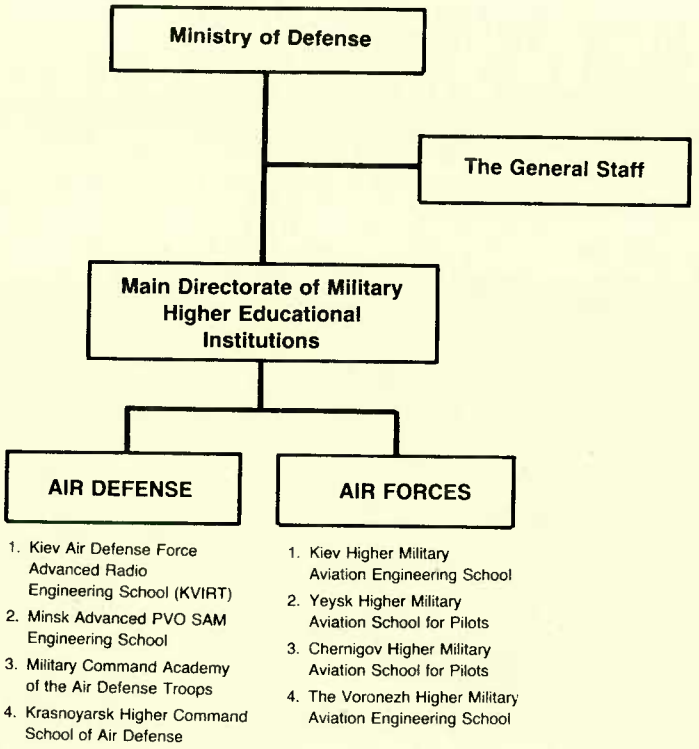
SOVIET MILITARY HIGHER EDUCATIONAL SCHOOLS
ESTABLISHED in the 1940's

1. Sevastopol Higher Naval Engineering School, 1940.*
2. Military Air Red Banner, Order of Kutuzov Academy, imeni, Yu. A. Gagarin, 1940 (named in 1968.)
3. Military Diplomatic Academy of the General Staff of the Red Army, 1940.
4. Khabarovsk Command Technical School for Artillery Officers, 1941, 3 yr. program.
5. Military Institute of Foreign Languages (Moscow), 1942.
6. Higher Naval Submarine School, imeni Lenin Komsomol, 1948.*
7. Leningrad Higher Naval Engineering School, imeni V.I. Lenin, 1948.*
8. Dnepropetrovsk Higher Antiaircraft Missile Command School of the PVO Forces [1 September 1949].
9. Military School at the Moscow Finance Institute.
10. Far East Combined Arms Command School.
11. Serpukhov Higher Military Command School.
12. Kharkov Guards Higher Tank Command School.
13. Military Engineering Radio Technical Air Defense Academy.
14. Riga Higher Military Aviation Engineering School.
15. Chelyabinsk Higher Military Motor Transport Command School.
16. Ulyanovosk Higher Military Technical School.
17. Leningrad Higher Antiaircraft Missile [Artillery] Command School.
18. Poltava Higher Antiaircraft Missile Command School.
19. Pushkin PVO Radioelectronics Higher Command School.
20. Ryazan Higher Military Motor Transport Engineering School.

APPENDIX D

SOVIET MILITARY HIGHER EDUCATIONAL INSTITUTIONS ESTABLISHED or "UPGRADED" DURING the 1950s

SOVIET MILITARY HIGHER EDUCATIONAL INSTITUTIONS ESTABLISHED IN THE 1950's[1]



[1]In this immediate post World War II period, while only creating the eight "new" institutions listed here, the Soviets upgraded six institutions of earlier vintage, introducing "graduate" work, for example, at the Military School of Moscow Finance Institute while at the same time designating that institution to handle all military capital construction projects — a most significant change.

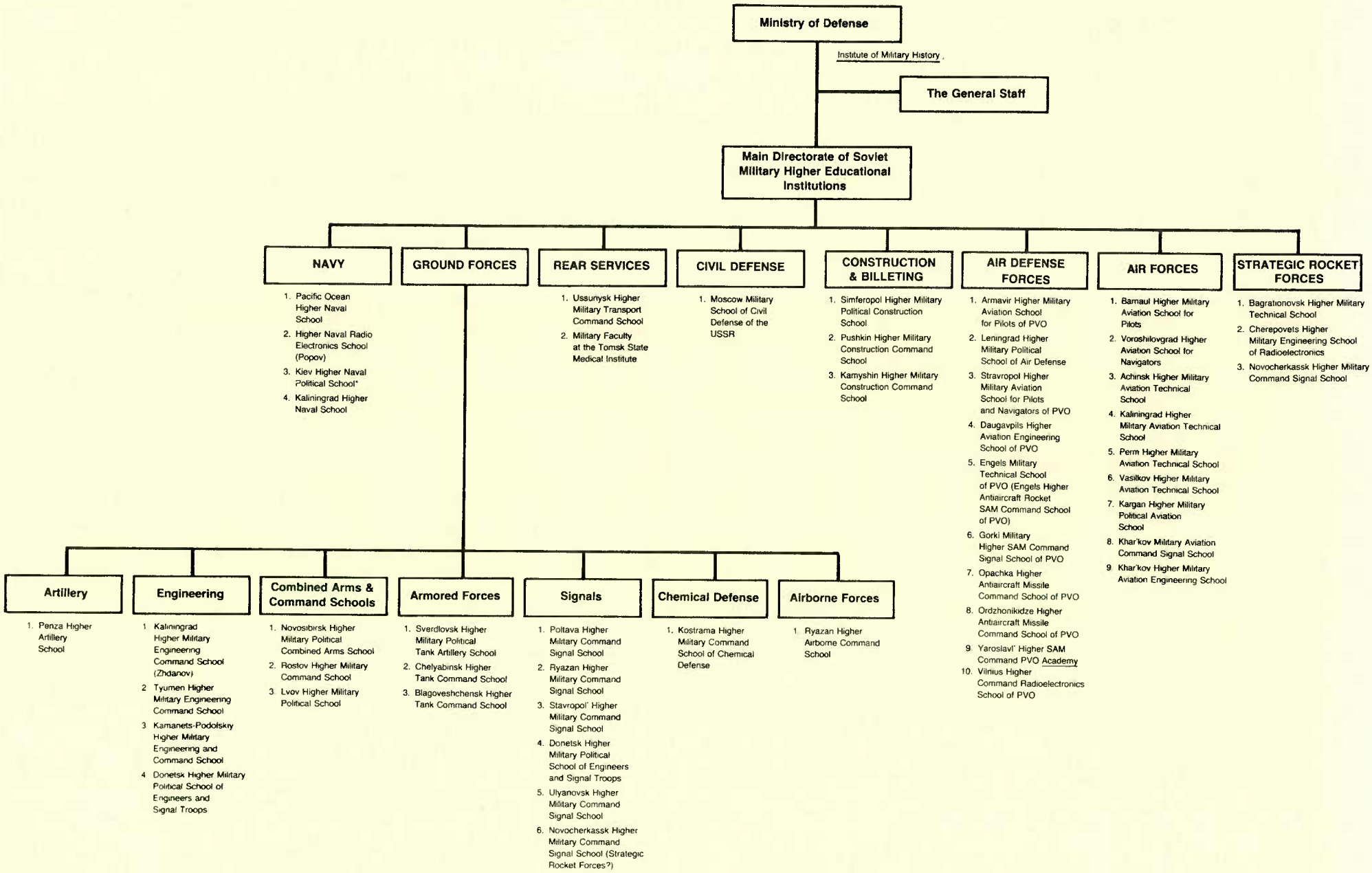
SOVIET MILITARY HIGHER EDUCATIONAL INSTITUTIONS
ESTABLISHED or "UPGRADED" DURING the 1950's

1. Kiev Higher Military Aviation Engineering School, 1951.*
2. Kiev Air Defense Force Advanced Radio Engineering School (KVIRT), 1953.
3. Minsk Advanced PVO SAM Engineering School, 1953.
4. Yeysk Higher Military Aviation Order of Lenin School for Pilots, imeni Twice Hero of the S.U. Pilot Cosmonaut of the USSR V.M. Komarov, 1957, (possibly earlier).*
5. Military Command Academy of the Air Defense Troops imeni MSU G.K. Zhukov, 1957.
6. Chernigov Higher Military Aviation School for Pilots, imeni Lenin Komsomol, 1959.*
7. The Voronezh Higher Military Aviation Engineering School.
8. Krasnoyarsk Higher Command Radioelectronics School of Air Defense.

APPENDIX E

SOVIET MILITARY HIGHER EDUCATIONAL SCHOOLS ESTABLISHED or "UPGRADED" in the 1960s

SOVIET MILITARY HIGHER EDUCATIONAL INSTITUTIONS ESTABLISHED IN THE 1960's



SOVIET MILITARY HIGHER EDUCATIONAL SCHOOLS
ESTABLISHED or UPGRADED in the 1960's

1. Penza Higher Artillery Engineering Order of the Red Star School, imeni Chief Marshal of Artillery N.N. Voronov, 1962.*

2. Rostov Higher Military Command School [name change in 1974], imeni Chief Marshal of Artillery M.U. Nedlin, 1963.

3. Barnaul Higher Military Aviation School for Pilots, imeni Chief Marshal of Aviation K.A. Vershini, 1963-1966?

4. Voroshilovgrad Higher Aviation School for Navigators, imeni the Donbas Proletariat, 1968.

5. Achinsk Higher Military Aviation Technical School, 1960's.

6. Kaliningrad Higher Military Aviation Technical School, 1960's.

7. Perm Higher Military Aviation Technical School, 1960's.*

8. Vasilkov Higher Military Aviation Military School, imeni 50th Anniversary of the Lenin Komsomol of the Ukraine, 1960's.

9. Ryazan Higher Airborne Command Twice Red Banner School, imeni Lenin Komsomol, 1960's.

10. Tyumen Higher Military Engineering Command School, imeni Marshal of Engineering Troops, A.I. Proshlyakov, 1968, (Upgraded).

11. Ryazan Higher Military Command Signal School, imeni MSU M.V. Zakharov, 1969, (Upgraded).

12. Stavropol' Higher Military Command Signal School, 1968, (Upgraded).

13. Ulyanovsk Higher Military Command Signal School, imeni G.K. Ordzhonikidze, 1969, (Upgraded).

14. Bagrationovsk Higher Military Technical School, 1960's, (all-union diplomas).

15. Institute of Military History of the MOD of the USSR, 1966.

16. Blagoveshchensk Higher Tank Command Red Banner School, imeni Marshal of the S.U., K.A. Meretskov, (est. long before initially as 2nd Gorki Proskevrov Tank School, 1966.*

17. Pacific Ocean Higher Naval School, imeni S.O. Makarov Higher Naval Submarine School at Vladivostok, part of the School, 1966.*

18. Lvov Higher Military Political Order of the Red Star School, 1966.

19. Ussuriysk Higher Military Motor Transport Command School, 1966. (Elevated to a higher command school in 1969).

20. Military Faculty at the Tomsk State Medical Institute, 1967.

21. Moscow Military School of Civil Defense of the USSR, 1967 (Civil Defense Academy).

22. Armavir Higher Military Aviation School for Pilots of Air Defense Troops of the Country, 1967. Name changed to Armavir Higher Military Aviation Red Banner School for Pilots of Air Defense in 1970.*

23. Kamenets-Podol'skoye Higher Military Engineering and Command School, imeni Marshal of Engineering Troops, V.K. Kharchenko, 1967, (see Tyumen, Kaliningrad, Donetsk).

24. Higher Naval Radioelectronics School, imeni A.S. Popov, 1967, (name changed from communications to radioelectronics in 1967).

25. Donetsk Higher Military Political School of Engineer and Signal Troops, 1967.*

26. Kiev Higher Naval Political School, 1967.*

27. Kurgan Higher Military Political Aviation School, 1967.

28. Leningrad Higher Military Political School of Air Defense, 1967.

29. Novosibirsk Higher Military Political Combined Arms School, 1967.*

30. Simferopol Higher Military Political Construction School, 1967. (1965-A Technical Construction School; 1967-4yr. higher Political Construction School).*

31. Sverdlovsk Higher Military Political Tank Artillery School, 1967.*

32. Stravropol' Higher Military Political Tank Artillery School, 1967.*

33. Chelyabinsk Higher Tank Command School, imeni 50th Anniversary of the Great October, (earlier name imeni Lenin Komsomol) before 1969.*

34. Kaliningrad Higher Naval School, 1969.

35. Poltava Higher Military Command Signal School, 1969.

36. Kaliningrad Military Technical School, 1969, (possibly Kaliningrad Higher Military-Engineering Command School, imeni A.A. Zhdanov).

37. Daugavpils Higher Aviation Engineering School of Air Defense.

38. Engels Military Technical School of Air Defense Troops [Engels Higher Antiaircraft Rocket SAM Command School of the PVO].

39. Gorki Military Higher SAM Command Signal School. [Gorki Higher SAM Command School of the PVO].

40. Baltic Higher Military Antiaircraft Missile School of Air Defense. [Opachka Higher Antiaircraft Missile Command School of Air Defense].

41. Ordzhonikidze Higher Antiaircraft Missile Command School of Air Defense.

42. Yaroslavl' Higher SAM Command Air Defense Academy.

43. Kharkov Military Aviation Command Signal School.

44. Vilnius Higher Command Radioelectronics School of Air Defense.

45. Kharkov Higher Military Aviation Engineering School.

46. Pushkin Higher Military Construction Command School.

47. Cherepovets Higher Military Engineering School of Radioelectronics.

48. Gorki Higher Military Rear Services Command School.

49. Novocherkassk Higher Military Command Signal School.

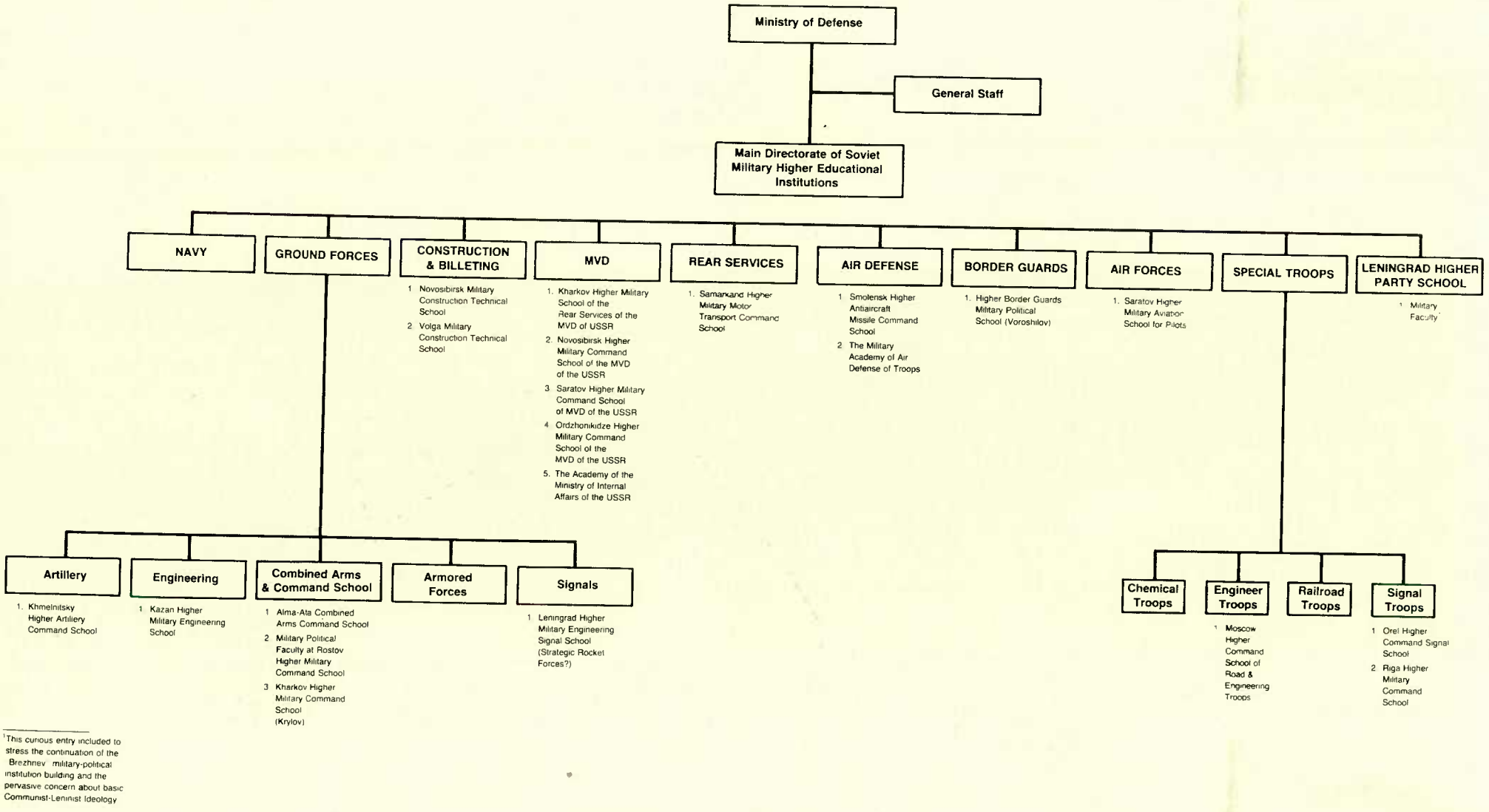
50. Kamyshin Higher Military Construction Command School.

51. Kostrama Higher Military Command School of Chemical Defense.

APPENDIX F

SOVIET MILITARY HIGHER EDUCATIONAL INSTITUTIONS ESTABLISHED or "UPGRADED" in the 1970s

SOVIET MILITARY HIGHER EDUCATIONAL INSTITUTIONS ESTABLISHED IN THE 1970's



[1] This curious entry included to stress the continuation of the Brezhnev military-political institution building and the pervasive concern about basic Communist-Leninist ideology

SOVIET MILITARY HIGHER EDUCATIONAL INSTITUTIONS
ESTABLISHED or "UPGRADED" in the 1970's

1. Smolensk Higher Antiaircraft Missile Command School, 1970, (a 1974 missile school).

2. Khmel'nitskiy Higher Artillery Command School, 1970.

3. Alma-Ata Higher Combined Arms Command School, imeni Marshal of the Soviet Union I.S. Konev, 1970.*

4. Kharkov Higher Military School of the Rear Service of the Ministry of Internal Affairs of the USSR, 1970, (Elevated in mid-70's).

5. Novosibirsk Higher Military Command School of the Ministry of Internal Affairs of the USSR, 1970-72, (1973 elevated to Higher Command School).

6. Kazan Higher Military Engineering School, 1970, (5-yr. program).

7. Samarkand Higher Military Motor Transport Command School, 1970, (1974 converted to command status).

8. Novosibirsk Military Construction Technical School, 1970, 3 yr. course.

9. Saratov Higher Military Aviation School for Pilots, 1970, (1974 upgraded; 1975 downgraded to a warrant officer's school, [4-yr program]).

10. Military Political Faculty at the Rostov Higher Military Command School, imeni Chief Marshal of Artillery M.I. Nedelin, 1971.

11. Orel Higher Military Command Signal School, imeni M.I. Kalinin, 1972.

12. Riga Higher Military Command Red Banner School, imeni MSU S.S. Biryuzov, 1972, (1972 elevated to command school).

13. Saratov Higher Military Command School, imeni F.E. Dzerzhinskiy of the Ministry of Internal Affairs of the USSR, 1973.

14. Volga Military Construction Technical School, 1973, (3 yr. course).

15. Ordzhonikidze Higher Military Command Red Banner, imeni S.M. Kirov School of the Ministry of Internal Affairs of the USSR, 1974, (oldest school in Caucasus). Abolished in 1917-1920.

16. Higher Border Military Political Red Banner School, imeni K. Ye. Voroshilov, 1974.

17. Moscow Higher Command School of Road and Engineering Troops, 1974.

18. Leningrad Higher Military Engineering Signal School, 1974, (5 yr. program).

19. Kharkov Higher Military Command School, imeni MSU N.I. Krylov, 1974. (Obviously established much earlier-1974 was year of upgrading).

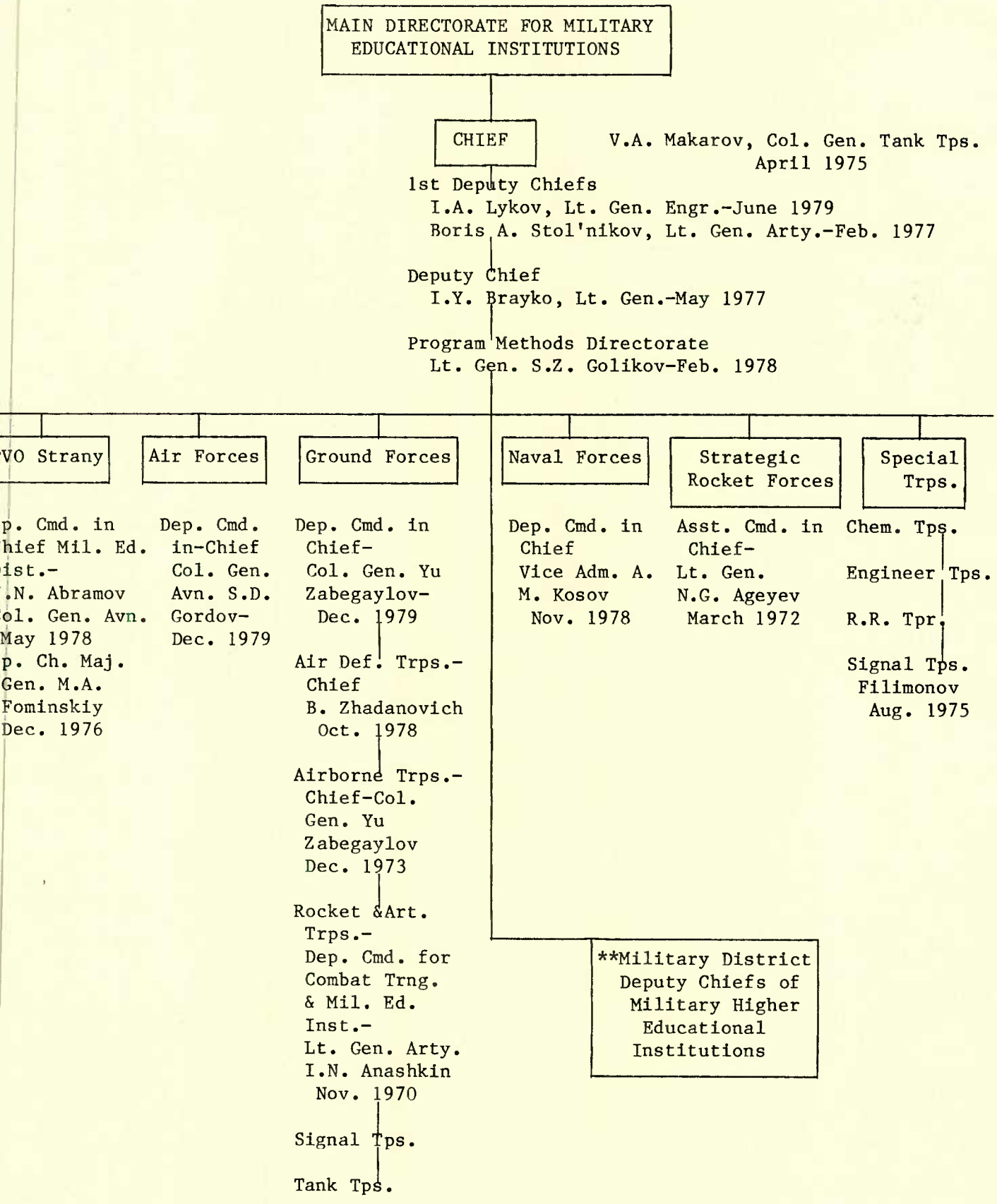
20. Academy of the Ministry of Internal Affairs of the USSR., 1974, (Possibly listed as "Higher Political School of the MVD").

21. Military Faculty at the Leningrad Higher Party School, 1975.

22. Military Academy of Air Defense of Troops (Formerly Branch of the Air Defense of Troops of the Military Artillery Academy imeni M.I. Kalinin), 1977.

APPENDIX G

THE HIGHER EDUCATIONAL SYSTEM BUREAUCRACY


MAIN DIRECTORATE FOR MILITARY EDUCATIONAL INSTITUTIONS
CHIEF
V.A. Makarov, Col. Gen. Tank Tps. April 1975
1st Deputy Chiefs
I.A. Lykov, Lt. Gen. Engr.-June 1979
Boris A. Stol'nikov, Lt. Gen. Arty.-Feb. 1977
Deputy Chief
I.Y. Brayko, Lt. Gen.-May 1977
Program Methods Directorate
Lt. Gen. S.Z. Golikov-Feb. 1978
VO Strany
p. Cmd. in hief Mil. Ed. ist.- .N. Abramov ol. Gen. Avn. May 1978 p. Ch. Maj. Gen. M.A. Fominskiy Dec. 1976
Air Forces
Dep. Cmd. in-Chief Col. Gen. Avn. S.D. Gordov- Dec. 1979
Ground Forces
Dep. Cmd. in Chief- Col. Gen. Yu Zabegaylov- Dec. 1979
Air Def. Trps.- Chief B. Zhadanovich Oct. 1978
Airborne Trps.- Chief-Col. Gen. Yu Zabegaylov Dec. 1973
Rocket &Art. Trps.- Dep. Cmd. for Combat Trng. & Mil. Ed. Inst.- Lt. Gen. Arty. I.N. Anashkin Nov. 1970
Signal Tps.
Tank Tps.
Naval Forces
Dep. Cmd. in Chief Vice Adm. A. M. Kosov Nov. 1978
Strategic Rocket Forces
Asst. Cmd. in Chief- Lt. Gen. N.G. Ageyev March 1972
Special Trps.
Chem. Tps.
Engineer Tps.
R.R. Tpr.
Signal Tps. Filimonov Aug. 1975
**Military District Deputy Chiefs of Military Higher Educational Institutions

LIST OF DEPUTY COMMANDERS for MILITARY HIGHER EDUCATIONAL INSTITUTIONS in the MILITARY DISTRICTS**

Baltic--Dep. Cmdr. Major Gen. Tank Troops F.I. Segal', 1977

Belorussian--Dep. Cmdr. Maj. Gen. L. K. Polozhentsev, July 1975

Carpathian--Dep. Cmdr. Lt. Gen. P. Makarchuk, July 1978

Central Asian--Asst. Cmdr. Maj. Gen. Tank Troops K. Y. Tyukachev, 1974

Far East--Maj. Gen. V. Masenko, 1977

Kiev--Maj. Gen. V. I. Noskov, December 1975

Leningrad--Maj. Gen. M.A. Baytuganov, December 1974

Moscow--Lt. Gen. N.A. Neyelov, September 1974

North Caucasus--Asst. Cmdr. Lt. Gen. I.N. Idenko, May 1977, and Chief Engineer Col. Engr. V. Krivokonev, March 1975

Odessa--Undesignated

Siberian--Maj. Gen. Arty. N.P. Konstantinov, September 1974

Transbaykal--Asst. Cmdr. for Military Educational Institutions, Maj. Gen. A. Kalinichenko, 1978

Transcaucasus--Asst. Cmdr. for Military Educational Institutions, Maj. Gen. Yu I. Samsonov, January 1976

Turkestan--Asst. Cmdr. Maj. Gen. G.P. Strel'tsov, December 1978

Ural--Asst. Cmdr. Maj. Gen. A. Chashchegorov, December 1976

Volga--Asst. Cmdr. Maj. Gen. Yu Ivanov, 1980

HEADS OF MILITARY HIGHER EDUCATION INSTITUTIONS*

Ministry of Defense All Service Institutes and Schools

1. Leningrad Higher Military Topographical Command School, Major General Technical Troops, V. Baranov, [Dec. 1977]

2. Military Band Leader Department of the State Conservatory, Moscow [N.A]

3. Institute of Military History of the Ministry of Defense of USSR Lt. General P.A. Zhilin [Nov. 1971]

4. Military Institute of Foreign Languages, Colonel General I.S. Katyshkin, [Oct. 1974]

5. Military Institute of Physical Culture, Leningrad, Major General M.V. Greshkov, [Dec. 1978]

General Staff Schools

6. The General Staff Academy, Army General M.M. Kozlov, [Apr. 1979]

7. Military Diplomatic Academy of the General Staff of Red Army, Major General Artillery, V.Y. Khlopov [1953]

Ground Forces

8. The Frunze Military Academy, Colonel General P.V. Mel'nikov [July 1978]

Combined Arms Schools

9. Alma-Ata Higher Combined Arms Command School [N.A.]

10. Baku Higher Combined Arms Command School, Major General V.E. Barshatly [Jan. 1978]

11. Far East Higher Combined Arms Command School, Major General Baranov [1968]

12. Kiev Higher Combined Arms Command School, Major General V.I. Lyasko [1973]

13. Leningrad Higher Combined Arms Command School, Major General V. Belt'yukov [December 1972]

14. Moscow Higher Combined Arms Command School, Major General Tank Troops I.A. Magonov [March 1970]

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*This listing of the most current chiefs of higher military education schools and academies is an amalgam of information from SAFRA 4; pages 46-56; from GE77TMP-40A, pp. C-11 to C-16; from DDB-2680-52-78; and from research in the five Soviet military journals used in this research. I have used the most recent date of appointment in collating the lists to determine the current head, according to our last best information.

15. Omsk Higher Combined Arms Command School, Major General S. Martsenyuk [1977]

16. Ordzhonikidze Higher Combined Arms Command School, Major General B. Ul'yanov [1976]

17. Saratov Higher Military Command School [tank], Major General Artillery A. Kobzap' [March 1978]

18 Tashkent Higher Combined Arms Command School, Major General A. Zadorin [1965]

Ground Forces Air Defense of Troops Schools

19. Military Academy of Air Defense of Troops, Lt. General Artillery A. Kozhevnikov [Sept. 1977]

Ground Forces Antiaircraft Missile Troops Schools

20. Leningrad Higher Antiaircraft Missile Command School, Major General Artillery Ye. Kraskevich [1968]

21. Orenburg Higher Antiaircraft Missile Command School, Major General Artillery A. Khayov [1974]

22. Poltava Higher Antiaircraft Missile Command School, Major General Artillery V. Obraz [1968]

23. Smolensk Higher Antiaricraft Missile Command School, Colonel A. Ganzha [1971]

24. Kiev Higher Antiaircraft Missile Engineering School, Lt. General A. Linnik [April 1978]

Ground Forces Airborne Troops School

25. Ryazan Higher Airborne Command School, Major General A. Chikrizov [Jan. 1977]

Ground Forces Artillery Troops Schools

26. The Military Artillery Academy [Leningrad] imeni Kalinin Colonel General Artillery P.F. Slipchenko [Dec. 1976]

27. Kolomna Higher Artillery Command School, Major General Artillery A. Baysara [1975]

28. Leningrad Higher Artillery Command School, Colonel V. Segiyenko, [Nov. 1977]

29. Odessa Higher Artillery Command School, Major General Artillery S.A. Malakyan [Apr. 1973]

30. Sumy Higher Artillery Command School, Major General Artillery A. Morozov [1976]

31. Tbilisi Higher Artillery Command School, Possibly, M. Alekseyev, [July 1974]

32. Khmel'nitskiy Higher Artillery Command School [N.A.]

Ground Forces Artillery Engineering Schools

33. Penza Higher Artillery Engineering School, Major General Artillery A.A. Ignat'yev [1970]

34. Tula Higher Artillery Engineering School, Major General Artillery V. Lutsenko [1969]

35. Central Artillery Officers Courses, Chief of Courses: Lt. General A.M. Sapozhnikov [July 1978]

36. Khabarovsk Command Technical School [N.A.]

Ground Forces Signal Troops School

37. The Military Signal Academy [Leningrad] imeni Budennyy, Colonel General of Signal Troops A.A. Frolov [Jan. 1972]

Ground Forces Tank Troops Schools

38. The Military Academy of Armored Troops - Malinovskiy Marshal of Tank Troops O.A. Losik [Aug. 1977]

39. Blagoveshchensk Higher Tank Command School, Major General Tank Troops M.Z. Luk'yanov [March 1970]

40. Chelyabinsk Higher Tank Command School, Major General Tank Troops V. Tereshenko [1976]

41. Kazan Higher Tank Command School, Major General Tank Troops I. G. Kobyakov [1970]

42. Kharkov Guards Higher Tank Command School, Major General Tank Troops Yu. Kutenkov [1976]

43. Tashkent Higher Tank Command School, Major General A. Romashkin [1972]

44. Ulyanovsk Guards Higher Tank Command School, Major General Tank Troops V. Tabakin [Feb. 1976]

45. Omsk Higher Tank Command School, Major General V. Gromov [Feb. 1972]

46. Kiev Higher Tank Engineering School, Major General Tank Troops M. Kolesnikov [Sept. 1976]

Ground Forces Chemical Troops School

47. Military Academy of Chemical Defense [Timoshenko], Lt. General Technical Troops V. Myasnikov [May 1974]

Ground Forces Engineering Troops School

48. Military Engineering Academy [Kuybyshev] Moscow, Lt. General Engineering Troops V.Y. Uporov [Dec. 1975]

49. Kazan Higher Military Engineering School, Major General A. Romashkin [1972]

50. Higher Officers Courses "Vystrel", Colonel General Tank Troops D.A. Dragunskiy [Dec. 1975]

PVO (Strany) Air Defense Forces

51. Armavir Higher Military Aviation School for Pilots, Major General Aviation I.M. Somov [1968]

52. Stavropol Higher Military Aviation School for Pilots and Navigators, Major General

Aviation N. Golodnikov [1972]

PVO Aviation Engineering School

53. Daugavpils Higher Aviation Engineering School of Air Defense [N.A.]

PVO Engineering Radio Technical School

54. The Govorov Military Engineering Radiotechnical Air Defense Academy Colonel General Artillery V. Kubarev [Mar. 1976]

55. Krasnoyarsk Higher Command Radioelectronics School of Air Defense Major General S. Matveyev [April 1976]

56. Pushkin Higher Command Radioelectronics School of Air Defense Major General Artillery V. Gromadin [Oct. 1976]

57. Vilnius Higher Command Radioelectronics School of Air Defense Major General K. Logvinovskiy [Oct. 1971]

58. Zhitomir Higher Command Radioelectronics School of Air Defense Major General Aviation Ye. Ye. Poluyektov [Dec. 1969]

59. Kiev Higher Radiotechnical Engineering School of Air Defense, Lt. General A. Linnik [April 1978]

PVO Command Academies

60. Zhukov Military Command Academy of the PVO.

61. Military Command Academy of Air Defense Troops (Moscow) Marshal of Aviation V. G. Zimin [June 1975]

62. Gorki Higher Antiaircraft Missile Command School of Air Defense, Major General Artillery V. Vunder [1976]

63. Dnepropetrovsk Higher Antiaircraft Missile Command School of Air Defense, Major General Artillery Yu Goncherenko [Aug. 1969]

64. Ordzonikidze Higher Antiaircraft Missile Command School of Air Defense, Major General Artillery S. Terekov [June 1976]

65. Engels Higher Antiaircraft Missile Command School of Air Defense, Major General Engineering D. Smilevets [1968]

66. Yaroslavl' Higher Antiaircraft Missile Command School of Air Defense, Major General Artillery Ye. Orel [1975]

PVO Missile Engineering Schools

67. Opachka Higher Antiaircraft Missile Command School of Air Defense Major General Artillery G. Kiselev [1976]

68. Minsk Advanced PVO SAM Engineering School, Lt. General Artillery Yu Kulikov [May 1968]

Air Forces

Engineering Schools

69. Military Air Engineering Academy (Zhukovskiy), Colonel General Engineering V. Filippov, [June 1977]

70. Irkutsk Higher Military Aviation Engineering School, Major General S. Kalitsov, [June 1977]

71. Kiev Higher Military Aviation Engineering School, Major General N.A. Maksimov [1965]

72. Kharkov Higher Military Aviation Engineering School, Major General I. Shestitko [1968]

73. Riga Higher Military Aviation Engineering School, Major General N.P. Sukhochev [June 1974]

74. Tambov Higher Military Aviation Engineering School [N.A.]

75. Voronezh Higher Military Aviation Engineering School, Major General Engineering O. Mylov [1976]

Aviation Command Signals School

76. Kharkov Military Aviation Command Signal School [N.A.]

Aviation Technical Schools

77. Achinsk Military Aviation Technical School, Major General Engineering P. Pozdnyak [1975]

78. Vasilkov Military Aviation Technical School [N.A]

79. Kaliningrad Military Aviation Technical School, Major General Engineering V. Stotskiy [1976]

80. Perm Military Aviation Technical School [N.A.]

The Air Force Academy

81. Military Air Academy (imeni Gagarin) Moscow, Colonel General Aviation N.M Skomorokhov [Dec. 1976].

Pilot School

82. Balashov Higher Military Aviation School for Pilots, Major General Aviation V. Gorbachev [1972]

83. Barnaul Higher Military Aviation School for Pilots, Major General Aviation A. Parfenov [1974]

84. Borisoglebsk Higher Military Aviation School for Pilots [N.A.]

85. Chernigov Higher Military Aviation School for Pilots [N.A.]

86. Kacha Higher Military Aviation School for Pilots, V.A. Maleyev [1972]

87. Kharkov Higher Military Aviation School for Pilots, Colonel Yu. Utkin [1975]

88. Orenburg Higher Military Aviation School for Pilots, Colonel M. Vasil'yev [Aug. 1971]

89. Syzran Higher Military Aviation School for Pilots, Major General Aviation B. Matosov [1972]

90. Tambov Higher Military Aviation School for Pilots, Colonel of Aviation Yu. A. Yeremeyev [October 1975]

91. Yeysk Higher Military Aviation School for Pilots, Major General Aviation N. Laptev [1973]

Navigators Schools

92. Chelyabinsk Higher Military Aviation School for Navigators, Major General Aviation G.S. Bel'tov [June 1971]

93. Voroshilovgrad Higher Military Aviation School for Navigators, Major General Aviation M. Matrosov [1976]

Strategic Rocket Forces

94. The Military Engineering Academy (Moscow, Dzerzhinskiy), Colonel General F.M. Tonkikh [March 1974]

95. The Military Engineering Institute (Leningrad, Mozhayskiy), Lt. General N. Bereznyak [Aug. 1975]

96. Kharkov Higher Military Command School, [N.A.]

97. Perm Higher Military Command School, Major General B. Barmas [April 1967]

98. Rostov Higher Military Command School, Major General B.A. Akimov [1972]

99. Serpukhov Higher Military Command School, [N.A.]

Main Political Directorate of Army and Navy

100. Lenin Military Political Academy (Moscow), Army General Ye. Ye. Mal'tsev [Mar. 1977]

101. Donetsk Higher Military Political School of Engineer and Signal Troops, Colonel V. Bespalov [Sept. 1977]

102. Kurgan Higher Military Political Aviation School, Major General Aviation V. Tostanovskiy [Aug. 1971]

103. Leningrad Higher Military Political School of Air Defense, Major General P. Stukalov [1971]

104. Lvov Higher Military Political School, Major General V. Novikov [1973]

105. Novosibirsk Higher Military Political Combined Arms School, Colonel V. Volkov [Apr. 1974]

106. Simferopol Higher Military Political Construction School, Major General A. Averin [Oct. 1972]

107. Sverdlovsk Higher Military Political Tank Artillery School, Major General A. Korostylenko [1976]

108. Kiev Higher Naval Political School, Rear Admiral N. Kaplunov [May 1974]

109. Riga Higher Military Political Command School, Major General A. Glushchenko [1976]

110. Military Political Faculty at the Rostov Higher Military Command School [Nedelin] [N.A.]

111. The Advanced Central Courses for Political Personnel, Colonel M. Krechetov [Dec. 1976]

The Naval Forces

112. The Naval Academy (Grechko) Leningrad, Admiral V. Sysoyev [Aug. 1974]

113. Higher Naval School--imeni Frunze, Rear Admiral V. Platonov [Aug. 1976]

114. Black Sea Higher Naval School, Vice Admiral Engineering S.S. Sokolan [Nov. 1973]

115. Caspian Higher Naval School, Rear Admiral V.A. Arkhipov [June 1976]

116. Kaliningrad Higher Naval School, Rear Admiral V.S. Pilipenko [Oct. 1972]

117. Pacific Ocean Higher Naval School (Vladivostok), Vice Admiral Potekhin [Nov. 1974]

Naval Engineering Schools

118. Higher Naval Engineering School (Dzerzhinskiy), Vice Admiral N. Yegorov [May 1975]

119. Sevastopol Higher Naval Engineering School, Rear Admiral Engineering A. Sarkisov [July 1976]

120. Leningrad Higher Naval Engineering School, Rear Admiral Engineering B. Lapshin [July 1976]

121. Higher Naval Submarine School (Leningrad), Vice Admiral G.L. Nevolin [July 1974]

Naval Radioelectronics School

122. Higher Naval Radioelectronics School (Petrodvorets), Vice Admiral A.A. Rulyuk [Sept. 1975]

Rear Services [National]

Central Finance Directorate

123. Military Faculty at the Moscow Finance Institute, Colonel General Quartermaster Services, V. Dutov [Sept. 1977]

124. Yaroslavl' Higher Military Finance School, Major General I. Rosschupkin [1976]

Military Motor Transportation Engineering and Command Schools

125. Ryazan Higher Military Motor Transport Engineering School, Major General Engineering V. Pavlov [June 1977]

126. Samarkand Higher Military Motor Transport Command School [N.A.]

127. Chelyabinsk Higher Military Motor Transport Command School, Major General V. Zyubko [Dec. 1970]

128. Ussuriysk Higher Military Motor Transport Command School, Possibly, Shumayev [Aug. 1973]

129. Military Academy of Rear Services and Transportation (Leningrad), Colonel General K.N. Abramov [May 1975]

130. Ulyanovsk Higher Military Technical School, Major General V. Turchinskiy [Feb. 1971]

131. Gorki Higher Military Rear Services School, Major General Yu. Kirilyuk [1977]

132. Volsk Higher Military Rear Services School, Major General V. Tolmachev, [Sept. 1977]

Medical

133. Military Medical Academy - Kirov, Lt. General of Medical Services N.G. Ivanov [Dec. 1973]

134. Military Faculty at the Tomsk State Medical Institute [N.A.]

Construction & Billeting (National-Ministry of Defense Level)

135. Novosibirsk Military Construction Technical School [N.A.]

136. Pushkin Higher Military Construction Command School [N.A.]

137. Volga Military Construction Technical School [N.A.]

138. Kamyshin Higher Military Construction Command School, Major General Engineering S. Petukov [Mar. 1977]

139. Leningrad Higher Military Engineering Construction School, Major General Engineering L. Shevyakov [1970]

Special Troops - Ministry of Defense (MOD) Level

Chemical Troops

140. Saratov Higher Military Engineering School of Chemical Defense, Major General of Technical Troops, N. Shcherbakov [Jan. 1977]

141. Kostromo Higher Military Command School of Chemical Defense [N.A.]

142. Tambov Higher Military Command School of Chemical Defense, Major General A.F. Sereda [July 1971]

Engineering Troops

143. Moscow Higher Command School of Road and Engineering Troops, Major General P. Kosenko [N.A.]

144. Kaliningrad Higher Engineering School of Engineering Troops, Major General Engineering Troops V. Zhigaylo [1976]

145. Kamenets-Podolskiy Higher Military Engineering Command School of Engineering Troops, Major General V.I. Yerakov [Aug. 1969]

146. Tyumen Military Engineering Command School of Engineering Troops, Major General of Engineering Troops, P. Sharovarov [March 1976]

Railroad Troops

147. Leningrad Higher Command School of Railway Engineering Troops and Military Transportation, Major General Technical Forces, M. Kuznetsov [Jan. 1978]

Signal Troops

148. Orel Higher Military Command Signal School [N.A.]

149. Poltava Higher Military Command Signal School [N.A.]

150. Kemerovo Higher Military Command Signal School, Major General V. Timofeyev [Aug. 1971]

151. Ulyanovsk Higher Military Command Signal School, Major General Signal Troops R. Malinovskiy [Dec. 1967]

152. Ryazan Higher Military Command Signal School, Major General Signals N. Naumenko [1974]

153. Novocherkassk Higher Military Command Signal School, Major General Signal Troops N.D. Bykov [1968]

154. Tomsk Higher Military Command Signal School, Major General A. Kramarenko [1968]

155. Stavropol Higher Military Command Signal School, Major General Signal Troops K. Kosterin [May 1972]

Signals Engineering Schools

156. Kiev Higher Military Signal Engineering School, Major General Signal Troops M. Philipenko [July 1977]

157. Cherepovets Higher Military Engineering School of Radioelectronics, Major General Signal Troops V. Turkin [June 1970]

158. Leningrad Higher Military Engineering Signal School [N.A.]

Civil Defense - Ministry of Defense (Mod) Level

159. Moscow Military Academy of Civil Defense, Major General R. Kozenko [Dec. 1972]

160. Higher Central Officer Courses of Civil Defense (Moscow) [N.A.]

Internal Affairs (MVD)

161. Leningrad Higher Political School of the MVD of the USSR, Major General I. Orlov [July 1974]

162. Novosibirsk Higher Military Command School of the MVD of the USSR [N.A.]

163. Ordzhonikidze Higher Military Command School of the MVD of the USSR, Major General N. Sarypin [June 1971]

164. Saratov Higher Military Command School of the MVD of the USSR [N.A.]

165. Kharkov Higher Military School of the Rear Services of the MVD of the USSR [N.A.]

166. The Academy of the MVD of the USSR, Lt. General Internal Affairs S.M. Krylov [Sept. 1975]

Border Guards (KGB)

167. [Alma-Ata] Higher Border Troops Command School, Major General G.M. Zbolotnyy [May 1972]

168. Voroshilov Higher Border Guards Military Political School [N.A.]

169. Moscow Higher Border Guards School, Major General G. Aleynikov [June 1974]

Miscellaneous*

170. Saratov Military Aviation School for Pilots [N.A.]

171 Bagrationovsk Military Technical School [N.A.]

172. Kaliningrad Military Technical School [N.A.]

173. Military Faculty at the Leningrad Higher Party School [N.A.]

174. Tallin Higher Military-Political Construction School [N.A.]

175. Minsk Higher Military-Political Combined Arms School [N.A.]

176. The Red Army Juridical Academy [N.A.]

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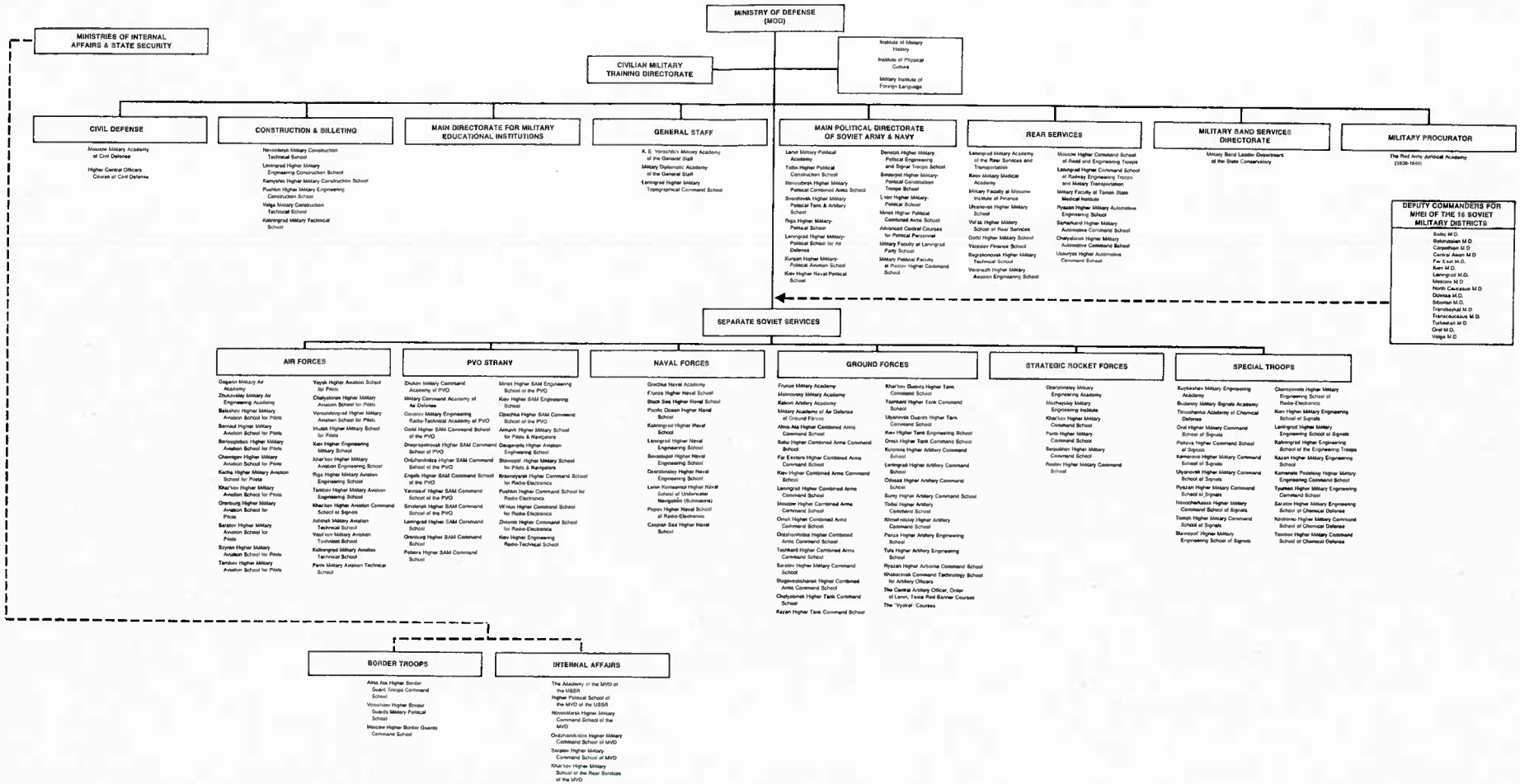
*These schools were added as the existence of the schools was made clear in the research.

APPENDIX H

THE STRUCTURE of the SOVIET MILITARY HIGHER EDUCATIONAL SYSTEM


MINISTRIES OF INTERNAL AFFAIRS & STATE SECURITY
MINISTRY OF DEFENSE (MOD)
CIVILIAN MILITARY TRAINING DIRECTORATE
Institute of Military History
Institute of Physical Culture
Military Institute of Foreign Language
CIVIL DEFENSE
Moscow Military Academy of Civil Defense
Higher Central Officers Course of Civil Defense
CONSTRUCTION & BILLETING
Novosibirsk Military Construction Technical School
Leningrad Higher Military Engineering Construction School
Kamyshin Higher Military Construction School
Pushkin Higher Military Engineering Construction School
Volga Military Construction Technical School
Kaliningrad Military Technical School
MAIN DIRECTORATE FOR MILITARY EDUCATIONAL INSTITUTIONS
GENERAL STAFF
K. E. Voroshilov Military Academy of the General Staff
Military Diplomatic Academy of the General Staff
Leningrad Higher Military Topographical Command School
MAIN POLITICAL DIRECTORATE OF SOVIET ARMY & NAVY
Lenin Military Political Academy
Tallin Higher Political Construction School
Novosibirsk Higher Military Political Combined Arms School
Sverdlovsk Higher Military Political Tank & Artillery School
Riga Higher Military-Political School
Leningrad Higher Military-Political School for Air Defence
Kurgan Higher Military-Political Aviation School
Kiev Higher Naval Political School
Donetsk Higher Military Political Engineering and Signal Troops School
Belotserkovsk Higher Military-Political Construction Troops School
Lvov Higher Military-Political School
Minsk Higher Political Combined Arms School
Advanced Central Courses for Political Personnel
Military Faculty at Leningrad Party School
Military Political Faculty at Rostov Higher Command School
REAR SERVICES
Leningrad Military Academy of the Rear Services and Transportation
Kiev Military Medical Academy
Military Faculty at Moscow Institute of Finance
Ulyanovsk Higher Military School
Vitsk Higher Military School of Rear Services
Gorki Higher Military School
Yaroslav Finance School
Bagrationovsk Higher Military Technical School
Voronezh Higher Military Aviation Engineering School
Moscow Higher Command School of Road and Engineering Troops
Leningrad Higher Command School of Railway Engineering Troops and Military Transportation
Military Faculty at Tomsk State Medical Institute
Ryazan Higher Military Automotive Engineering School
Saratov and Higher Military Automotive Command School
Chelyabinsk Higher Military Automotive Command School
Ussuriysk Higher Automotive Command School
MILITARY BAND SERVICES DIRECTORATE
Military Band Leader Department of the State Conservatory
MILITARY PROCURATOR
The Red Army Judicial Academy (1939-1946)
DEPUTY COMMANDERS FOR MHEI OF THE 16 SOVIET MILITARY DISTRICTS
Baltic M.D.
Belorussian M.D.
Carpathian M.D.
Central Asian M.D.
Far East M.D.
Kiev M.D.
Leningrad M.D.
Moscow M.D.
North Caucasus M.D.
Odessa M.D.
Siberian M.D.
Transbaykal M.D.
Transcaucasus M.D.
Turkestan M.D.
Ural M.D.
Volga M.D.
SEPARATE SOVIET SERVICES
AIR FORCES
Gagarin Military Air Academy
Zhukovsky Military Air Engineering Academy
Balashov Higher Military Aviation School for Pilots
Barnaul Higher Military Aviation School for Pilots
Borisoglebsk Higher Military Aviation School for Pilots
Chernigov Higher Military Aviation School for Pilots
Kacha Higher Military Aviation School for Pilots
Kharkov Higher Military Aviation School for Pilots
Orenburg Higher Military Aviation School for Pilots
Saratov Higher Military Aviation School for Pilots
Stavropol Higher Military Aviation School for Pilots
Tambov Higher Military Aviation School for Pilots
Yeysk Higher Aviation School for Pilots
Chelyabinsk Higher Military Aviation School for Pilots
Voroshilovgrad Higher Military Aviation School for Pilots
Irkutsk Higher Military School for Pilots
Kiev Higher Engineering Military School
Kharkov Higher Military Aviation Engineering School
Riga Higher Military Aviation Engineering School
Tambov Higher Military Aviation Engineering School
Kharkov Higher Aviation Command School of Signals
Ashkhabad Military Aviation Technical School
Vitebsk Military Aviation Technical School
Kaliningrad Military Aviation Technical School
Perm Military Aviation Technical School
PVO STRANY
Zhukov Military Command Academy of PVO
Military Command Academy of Air Defense
Gaidarov Military Engineering Radio-Technical Academy of PVO
Gorki Higher SAM Command School of the PVO
Dnepropetrovsk Higher SAM Command School of PVO
Ordzhonikidze Higher SAM Command School of the PVO
Engels Higher SAM Command School of the PVO
Yaroslavl Higher SAM Command School of the PVO
Smolensk Higher SAM Command School of the PVO
Leningrad Higher SAM Command School
Orenburg Higher SAM Command School
Poltava Higher SAM Command School
Minsk Higher SAM Engineering School of the PVO
Kiev Higher SAM Engineering School
Opochka Higher SAM Command School of the PVO
Armavir Higher Military School for Pilots & Navigators
Daugavpils Higher Aviation Engineering School
Stavropol Higher Military School for Pilots & Navigators
Krasnoyarsk Higher Command School for Radio-Electronics
Pushkin Higher Command School for Radio-Electronics
Vilnius Higher Command School for Radio-Electronics
Zhitomir Higher Command School for Radio-Electronics
Kiev Higher Engineering Radio-Technical School
NAVAL FORCES
Grechko Naval Academy
Frunze Higher Naval School
Black Sea Higher Naval School
Pacific Ocean Higher Naval School
Kaliningrad Higher Naval School
Leningrad Higher Naval Engineering School
Sevastopol Higher Naval Engineering School
Dzerzhinsky Higher Naval Engineering School
Lenin Komsomol Higher Naval School of Underwater Navigation (Submarine)
Pepper Higher Naval School of Radio-Electronics
Caspian Sea Higher Naval School
GROUND FORCES
Frunze Military Academy
Malinovsky Military Academy
Kalinin Artillery Academy
Military Academy of Air Defense of Ground Forces
Alma-Ata Higher Combined Arms Command School
Baku Higher Combined Arms Command School
Far Eastern Higher Combined Arms Command School
Kiev Higher Combined Arms Command School
Leningrad Higher Combined Arms Command School
Moscow Higher Combined Arms Command School
Omsk Higher Combined Arms Command School
Ordzhonikidze Higher Combined Arms Command School
Tashkent Higher Combined Arms Command School
Saratov Higher Military Command School
Sverdlovsk Higher Combined Arms Command School
Chelyabinsk Higher Tank Command School
Kazan Higher Tank Command School
Kharkov Guards Higher Tank Command School
Tashkent Higher Tank Command School
Ulyanovsk Guards Higher Tank Command School
Kiev Higher Tank Engineering School
Omsk Higher Tank Command School
Kolomna Higher Artillery Command School
Leningrad Higher Artillery Command School
Odessa Higher Artillery Command School
Sumy Higher Artillery Command School
Tbilisi Higher Artillery Command School
Khmelnitsky Higher Artillery Command School
Penza Higher Artillery Engineering School
Tula Higher Artillery Engineering School
Ryazan Higher Airborne Command School
Khabarovsk Command Technology School for Artillery Officers
The Central Artillery Officer, Order of Lenin, Twice Red Banner Courses
The "Vystrel" Courses
STRATEGIC ROCKET FORCES
Dzerzhinsky Military Engineering Academy
Mozhaysky Military Engineering Institute
Kharkov Higher Military Command School
Perm Higher Military Command School
Serpukhov Higher Military Command School
Rostov Higher Military Command School
SPECIAL TROOPS
Kuybyshev Military Engineering Academy
Budenny Military Signals Academy
Timoshenko Academy of Chemical Defense
Orel Higher Military Command School of Signals
Poltava Higher Command School of Signals
Kemerovo Higher Military Command School of Signals
Ulyanovsk Higher Military Command School of Signals
Ryazan Higher Military Command School of Signals
Novocherkassk Higher Military Command School of Signals
Tomsk Higher Military Command School of Signals
Stavropol Higher Military Engineering School of Signals
Chernigovsk Higher Military Engineering School of Radio-Electronics
Kiev Higher Military Engineering School of Signals
Leningrad Higher Military Engineering School of Signals
Kalininград Higher Engineering School at the Engineering Troops
Kazan Higher Military Engineering School
Kamenets-Podolsky Higher Military Engineering Command School
Tyumen Higher Military Engineering Command School
Saratov Higher Military Engineering School of Chemical Defense
Kostroma Higher Military Command School of Chemical Defense
Tambov Higher Military Command School of Chemical Defense
BORDER TROOPS
Alma-Ata Higher Border Guard Troops Command School
Voroshilov Higher Border Guards Military-Political School
Moscow Higher Border Guards Command School
INTERNAL AFFAIRS
The Academy of the MVD of the USSR
Higher Political School of the MVD of the USSR
Novosibirsk Higher Military Command School of the MVD
Ordzhonikidze Higher Military Command School of MVD
Saratov Higher Military Command School of MVD
Kharkov Higher Military School of the Rear Services of the MVD

APPENDIX I

LISTING of SOVIET HIGHER MILITARY EDUCATIONAL COMMISSIONING INSTITUTIONS from Krasnaya Zvezda, 17 April 1981

LISTING of SOVIET HIGHER MILITARY EDUCATIONAL COMMISSIONING INSTITUTIONS from: Krasnaya Zhvezda, 17 April 1981

Military Political Schools

1. Riga Higher Military Political School, imeni S.S. Birzyov
2. Novosibirsk Higher Military Political School, imeni 60th Anniversary of the October Revolution
3. Minsk Higher Military Political Combined Arms School
4. Sverdlovsk Higher Military Political Tank and Artillery School
5. Leningrad Higher Military Political School PVO Strany
6. Kurgan Higher Military Political Aviation School
7. Kiev Higher Military Naval Political School
8. Donetsk Higher Military Political Engineering and Signals School
9. Simferopol Higher Military Political Construction Troops School
10. Tallin Higher Military Political Construction School
11. Lvov Higher Military Political Order of the Red Banner School (Lvov)

Combined Arms and Tank School

1. Alma Ata Higher Combined Arms Command School, imeni MSU I.C. Koriev
2. Baku Higher Combined Arms Command School, imeni Supreme Soviet of the Aezerbaryan SSR (Baku)
3. [Dalinevost] Far Eastern Higher Combined Arms Command School, imeni MSU K R Rokosovskiy (Blagoveschensk-Amur Oblast)
4. Kiev Higher Combined Arms Command Twice Order of the Red Star School, imeni M.V. Frunze. (Kiev)
5. Leningrad Higher Combined Arms Command Twice Order of the Red Star School, imeni S.M. Kirov.
6. Moscow Higher Combined Arms Command Order of Lenin, October Revolution, Red Banner School, imeni Leadership of RSFSR Soviet
7. Omsk Higher Combined Arms Command Twice Red Banner School, imeni M.V. Frunze (Omsk)
8. Ordzhonikidze Higher Combined Arms Command Twice Red Banner School, imeni MSU A.I. Yeremko [Ordzhonikikidze]
9. Tashkent Higher Combined Arms Command Order of the Red Star School, imeni V.I. Lenin

10. Balgoveskhevsk Higher Tank Command Red Star School, imeni K A Merestahkova

11. Kazalsk Higher Tank Command Red Banner School, imeni Presidium of Tatar Soviet (Kazan)

12. Tashkent Higher Tank Command Order of Lenin School, imeni Twice Hero of S.U. Marshal of Tank Forces P.S. Ribalko

13. Ulyanovsk Guards Higher Tank Command Twice Red Banner, Order of the Red Star School, imeni V.I. Lenin

14. Kharkov Guards Higher Tank Command Order of the Red Star School, imeni Soviet Leadership of the Ukrainian SSR

15. Chelyabinsk Higher Tank Command School imeni 50th Anniversary of the Great October

16. Kiev Higher Tank Engineering Twice Order of the Red Star School, imeni MSU I.S. Yakubvoskiy. (Kiev)

17. Omsk Higher Tank Engineering Twice Order of the Red Star School imeni MSU P.K. Koshevoga.

Aviation

1. Kachinsk Higher Military Aviation, Order of Lenin Red Banner Flying School--imeni A.F. Myachiskova (Volgorad)

2. Yesk Higher Military Aviation Order of Lenin Flying School--imeni Twice Hero of SU Flying Cosmonaut of USSR V.M. Komarova

3. Armavir Higher Military Aviation Red Star School for Pilots [Aramavir]

4. Chernigov Higher Military Aviation School for Pilots, imeni Lenin Komsomol

5. Kharkov Higher Military Aviation Twice Order of the Red Star School for Pilots, imeni Twice Hero SU S.I. Grichevech.

6. Borisoglev Higher Military Aviation Order of Lenin Red Banner School for Pilots, imeni V.P. Chkalova

7. Tambov Higher Military Aviation School for Pilots, imeni M.M. Raskovoiy

8. Orenburgh Higher Military Aviation Red Star School for Pilots, imeni I.S. Polbin

9. Barnaul Higher Military Aviation School for Pilots, imeni Chief Marshall Aviation K.A. Vershinin

10. Balashov Higher Military Aviation School for Pilots, imeni Chief Marshall of Aviation A.A. Novikov

11. Syzran Higher Military Aviation School for Pilots

12. Saratov Higher Military Aviation School for Pilots

13. Voroshilovgrad Higher Military Aviation School for Navigators, imeni Dombas Proletariat

14. Chelyabinsk Higher Military Red Banner School for Navigators, imeni 50th Anniversary VLKSM. Chelyabinsk

15. Kiev Higher Military Aviation Engineering School.

16. Riga Higher Military Aviation Engineering School, imeni Yakova Alksnisa

17. Voronezh Higher Military Aviation Engineering School

18 Irkutsk Higher Military Aviation Engineering Twice Order of the Red Star School, imeni 50th Anniversary VLKSM.

19. Daugavpil Higher Military Aviation Engineering School, imeni Yana Fabrichousa

20. Tambov Higher Military Aviation Engineering, Order of Lenin, Red Banner School, imeni F.E. Dzerzinskiy. Tambov.

21. Kharkov Higher Military Aviation Engineering Red Banner School

22. Kharkov Higher Military Aviation Signal School, imeni Leninist Komsomol Ukraniy

23. Kaliningrad Higher Military Aviation Technical School

24. Vasilkov Higher Military Aviation-Technical School, imeni 50th Anniversary Leninist Komsomol of the Ukraine

25. Perm Higher Military Aviation-Technical School, imeni Lenin Komsomol

26. Achinsk Higher Military Aviation-Technical School, imeni 60th Anniversary of VLKSM

27. Kirov Military Aviation Technical School [higher not part of title]

Artillery

1. Penza Higher Artillery Engineering, Twice Order of the Red Star School, imeni Chief Marshall of Artillery N.N. Voronova

2. Tula Higher Artillery Engineering Order of Lenin and the October Revolution School, imeni Tukskoga Proletariat. Tula

3. Kazan Higher Military Engineering School, imeni Marshal of Artillery M.N. Chistyakova Kazan.

4. Saratov Higher Military Command Red Banner Order of the Red Star School, imeni Hero General Major A.I. Lyzhukova

5. Kolomna Higher Artillery Command Order of Lenin Red Banner School, imeni October Revolution

6. Leningrad Higher Artillery Command Order of Lenin, Red Banner School, imeni Red October

7. Odessa Higher Artillery Command Order of Lenin School, imeni M.V. Frunze

8. Sumy [Sumi] Higher Artillery Command School, imeni M.V. Frunze (Sumy)

9. Tbilisi Higher Artillery Command Red Banner Order of Red Star School, imeni 26 Baku Commissors [Tblisi]

10. Khemel'nitksiy Higher Artillery Command School (Khel'mitskiy)

Naval Schools

1. Higher Military Naval Order of Lenin Red Banner Order of Ushakov School, imeni M.V. Frunze

2. Higher Military Naval School for Submarine Navigation, imeni Leningrad Komsomol [Leningrad]

3. Pacific Ocean Higher Military Naval School, imeni S.O. Makarov (Vladivostok)

4. Caspian Sea Higher Military Naval Red Banner School, imeni S.M. Kirova.

5. Kalingrad Higher Military Naval School

6. Black Sea Higher Military Naval School [Order of the Red Star], imeni P.S. Naklinsov.

7. Higher Military Naval Radio Electronics School, imeni A.S. Popov

8. Higher Military Engineering Order of Lenin School, imeni F.E. Dzerzhinskiy. (Leningrad)

9. Leningrad Higher Military Naval Engineering School, imeni V.I. Lenin

Sevastapol Higher Military Naval Engineering School (Sevastapol)

PVO Strany School

1. Stavropol Higher Military Aviation School for Pilots and Navigators of the PVO Forces.

2. Gorkiy Higher Antiaircraft Rocket Command School for the PVO

3. Dnepropetrovsk Higher Antiaircraft Rocket Command School for the PVO.

4. Leningrad Higher Antiaircraft Rocket Command Red Star School, imeni 60th Anniversary of the Great October.

5. Ordzhonikidze Higher Antiaircraft Rocket Command School of the PVO, imeni Army General I.A. Pliyeva

6. Orenburgh Higher Antiaircraft Rocket Command School, imeni G.K. Ordzhonikidze.

7. Poltava Higher Antiaircraft Rocket Command Red Banner School, imeni General of the Army N.I. Vagutin

8. Engels Higher Antiaircraft Rocket Command School of the PVO (Saratov Oblast)

9. Yaroslav' Higher Antiaircraft Rocket Command School School of the PVO, imeni 60th Anniversary of the Great October.

10. Kiev Higher Engineering Radio Technical School of the PVO Forces.

11. Minsk Higher Engineering Antiaircraft Rocket School of the PVO.

12. Kiev Higher Antiaircraft Rocket Engineering Order of Lenin Red Banner School, imeni S M Kirov

13. Smolensk Higher Antiaircraft Rocket Engineering School

14. Vil'nius Higher Command School for Radioelectronics of the PVO.

15. Krasnayarsk Higher Command School for Radioelectonics of the PVO.

16. Zhitomir Higher Order of the October Revolution Red Banner School for Radioelectronics of the PVO.

17. Pushkin Higher Order of the Red Star School for Radioelectonics of the PVO

18. Cherepovets Higher Military Engineering School for Radioelectronics.

Signals

1. Kemerov Higher Military Command School for Signals

2. Novosirbirsk [Novocherkassk] Higher Military Command Red Banner School for Signals, imeni Marshal Soviet Union V.D. Sokolovskiy

3. Poltava Higher Military Command School for Signals.

4. Ryazan Higher Military Command School for Signals, imeni MSU M.V. Sakharov

5. Tomsk Higher Military Command Order Red Star School for Signals

6. Ulyanovsk Higher Military Command Schools for Signals, imeni G.K. Ordzhonikidze.

7. Orlov Higher Military Command School for Signals, imeni M.I. Kalinin.

8. Kiev Higher Military Engineering Twice Red Banner School for Signals, imeni M.I. Kalinin

9. Leningrad Higher Military Engineering School for Signals, imeni Lensoveta

10. Stavropol Higher Military Engineering School for Signals, imeni 60th Anniversary of the Great October

Command Schools

1. Perm Higher Military Command School

2. Rostov Higher Military School, imeni Chief Marshal Artillery M.I. Nedelin

3. Serpukhov Higher Military Command School, imeni Lenin Komsomol

4. Kharkov Higher Military Command School, imeni MSU I.N. Krilov.

Military Engineering

1. Kaliningrad Higher Engineering Order of Lenin, Red Banner School for Military Engineers, imeni A.A. Zdhanov

2. Kamenets-Podolskiy Higher Military Engineering Command School, imeni Marshal of Military Engineers V.K. Harchenko

3. Tyumen Higher Military Engineering Command School, imeni Marshal Military Engineers A.I. Proshlyakova.

Rear Services

1. Volsk Higher Military Order Red Star School for Rear Services, imeni Lenin Komsomol.

2. Gorkiy Higher Military School for Rear Services

3. Ulyanovsk Higher Military Technical School, imeni Bogdan Shmelnitsckovv.

4. Moscow Higher Command School for Road and Engineering Troops.

5. Yaroslav Higher Military Finance Order Red Star School, imeni General of the Army A.V. Shrulev.

6. Leningrad Higher Order of Lenin, Red Banner School for Military Railroads and Military Communications, imeni M.V. Frunze

Construction

1. Leningrad Higher Military Engineering Construction Red Banner School, imeni General of Army A.N. Kamarovsk[ovo]

2. Pushkin Higher Military Engineering Construction School [Leningrad]

3. Kamyshin Higher Military Construction Command School

4. Gor'kov Higher Military Construction Command School

5. Tolyatinsk Higher Military Construction Command School [Tol y ati] GSP681

6. Volsk Military Technical Construction School (Dubna) Moscow Oblast

Automobile

1. Ryazan Higher Military Automotive Engineering Order of Red Star School

2. Chelabinsk Higher Military Automotive Engineering School

3. Samarkand Higher Military Automotive Command School, imeni Bershovnogo Soviet Uzbek SSR

4. Ussuriysk Higher Military Automotive Command School

Chemical Troops [Warfare]

1. Tambov Higher Military Command Red Banner School for Chemical Defense

2. Kostromo Higher Military Command School for Chemical Defense.

3. Saratov Higher Military Engineering School for Chemical Defense.

1. Leningrad Higher Military Topographic Command Red Banner Order of the Red Star School, imeni General of the Army A.I. Antonova

2. Ryazan Higher Airborne Command Twice Red Banner School, imeni Lenin Komsomol

Military Institutes

1. Military Engineering Red Banner Institute, imeni A.F. Mozhaisky [Leningrad]

2. Military Red Banner Institute - Moscow

3. Military Twice Red Banner Institute of Physical Culture. Leningrad

4. Military-Band Director's Institute - Moscow.

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