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Russian Federation Military Communications – History, Current State and Future Development

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The article concerns the historical path of development of military communications in Russia since its origin to our days. It shows the contradictions between the troop command system military communications condition and modern warfare spectrum and lines of Signal corps developments in the context of the Russian Federation Armed Forces new-look formation.

Keywords: military communications, Signal corps, telegraph, automated process-control system, organization and establishment, Armed Forces.

Throughout its history military communications went a long and complicated path of development: from simple sound and visual means for transmitting signals and command of execution to the battlefield to modern multifunctional automated systems, capable of providing almost unlimited in range communication for both immobile and moving land-based, afloat, under water, air and space objects.

The variety of communication means such as voice face to face communication, signaling system and courier communication appeared concurrently with the origin of human society. Initially it had peaceful application only. Usage of communication in military arts began in times of tribal wars with the subsequent using in the slaveholding society wars.

The appearanceas a result of social and military reform of the Athenian army in ancient Greece at the turn of VI – V centuries BC, The Great Wall of Chinese construction in IV – III centuries BC, where outpost support and fortress garrisons used smoke and flash signals to provide communication, creation in 312 BC of Rome – Brundizy and Rome – Ancona – Arimini in 220 BC mail routes to communicate with troops on the march and on the battlefield, usage of pigeons, walkers, outrunners and variety of means of reports, messages and orders encryption as usage of variety of other communication means evidently represent slow, but the greatest possible for that time, development of military communication as to the most demanded as it provided safety of the state and success in both defensive, and aggressive wars.

With the formation of Eastern-Slavic tribes the rise of original Russian military art started which has received development in victorious wars with Byzantium in VI – VII centuries [1, p. 7]. Nevertheless, in spite of the occurrence of the first organizational and tactical forms of the battle

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and new ways of troops control – communication facilities used for military purposes, were, as a matter of fact, the same as they were a lot of centuries back, maybe, only with the differences considering features of district and climate.

The most ancient Russian annals which have reached up to now and the images concerning the time of Kievan Rus (IX – XII centuries) testify to an independent way of development of a communication facility and the signal system, providing troops control [2, p. 5 – 11].

Transfering of military and state messages for a broad spectrum of the population of cities was carried out, as a rule, through special persons – «Biriuchi» (heralds). To apply the population to gathering armies the cymbal, bell, drums and pipes were used. On greater distances (for communication of boundary cities (fortresses) and the watchtowers with Kiev, and also with an army which is being a campaign) first of all fires and marks were used. They enabled the transferring of prearranged signals consistently from one post to another, forming a line of alarm communication along the border and the interior of the state. For the first time the «povoz» was applied (the kind of horse post), which provided delivery of princely decrees and military messages. For communication with an army and between posts along the border pigeons, messengers on skis, horses and on boats were widely used also. Delivery of especially important messages and their preservation were as fiduciary carried out especially by authorized representatives, thus the maintenance of a message either was learnt, or various ways of coding were applied. Directly on the battlefield the following methods of command were widely used: the personal contact, a personal example of the commander and his clothes, banners, the dismount warrior, arrows, pipes and its variations, a voice, position of hands and subjects (the weapon of the commander) were widely applied.[3. V. 1, p. 47 – 51].

In wars of Russian people against German dog-knights (1240-1242) development of the military communications was expressed in expansion of a scope of mobile means. Horse and dismount warrior began to be used for communication of the commander with subordinates directly on a battlefield that facilitated troops control at the changed ways of the armed struggle.

During the struggle against the Tartar Mongol hordes in Russia (XIII-XIV centuries) for the first time in the history of military art communication on a campaign was provided by specially organized line of military «flying» riding mail. Reports from armies to grand prince Dmitry Donskoy or voevodes (battlemasters) were delivered not directly, but through a number of already established intermediate posts that provided greater speed of delivery of reports [4, p. 9].

The history of the Signal Corps originates since the time of creation of the regular Russian army and navy by progressive state and military figure Peter I. Having created regiments, brigades and divisions in army and squadrons, and naval divisions and groups, Peter I understood the importance of the organization of management of these structures in a peacetime and during operations, paying considerable attention to a question of use of a communications means.

For the first time in the book «Kniga Ustav Voinskiy» (Military Regulations), published on April, 12th, 1716, questions of troops control and communication were addressed in special chapters which defined and legislatively fixed the list of officials in the field of communication, their quantity and functional duties. The day of signing this regulations by Peter I is considered the day of the organization in the Russian Army of regular postal and courier communication service which given a start to the process of creation and development of military communications in Russia [5, p. 6]. From

that time army commanders and subordinate commanders were given aide-de-camps who delivered written orders and transferred oral instructions, and watched their execution also. For the maintenance of communications on the battlefield each commander wielded two drummers and no fewer than three messengers.

Consequentially, in analysis of operations of the last fights and wars as a whole experience of the organization of troops control with the purpose of its account was generalized by the development of some battle documents. For example, by the development in 1763 of the new Infantry charter and the charter for cavalry alongside other questions of action of infantry the organization of communications on the march, alignment of forces and their forming-up was also considered in detail. [6, p. 157].

In A.V.Suvorov's campaigns who raised Russian military art to a higher level of development, troop control and military communications received the further development having outstripped the military art of the Western Europe. A.V.Suvorov practiced the allotment of staff officers to columns on the march, achieved the organization of steady communication on the front, and in necessary cases for maintenance of interaction used groups of cossacks which had in advance developed tactical abilities to appear suddenly or disappear, pass through fighting orders of the enemy, passing difficult sites and establishing communication. The commander showed samples of skilful application of a communication means depending on their battle characteristics (a rocket, alarm means), for the first time has applied a communication facility (rocket) for disinformation of the enemy, showed care of providing of couriers with all necessary for the performance of their duties.

For the fastest transfer of the instructions and orders to armies, and also duly situation data acquisition A.V.Suvorov's first of all applied and used staff meetings (advice) of generals and head commander. [7, V. 1, p. 150, 158 – 159].

In 1778 the first special signal unit-Yamskoy Cossack regiment, and in 1796 – courier service corps were formed [8, V. 8, p. 266].

On the eve of the Patriotic War of 1812 Russian military thinking in the field of troop control and communications went its own way, relying on the experience of the last wars and reached the level of development of productive forces. In January, 1812 the charter « Big army field forces control Establishment» was put into operation where functions of the second department and the on duty general in charge of communication matters were described. Field post offices were put in force in armies. Duties of messengers, orderlies, aide-de-camps, couriers were fixed. The special form and signs for the communication maintenance personal were fixed. The responsibility for a condition of military roads, placement of postal unit on them, providing of units with a delivering means, security and recruitment was established. Time of departures and deliveries of packages was fixed. The post «the military adviser and the field inspector of mails» was founded.

During the Patriotic War the theory developed by M.I.Kutuzov and practice of troops control, precisely defined service of aide-de-camps, orderlies, messengers, couriers and military post, have facilitated work of staffs and commanders. Nevertheless an applied communication facility lagged behind the requirements of troops control that is why army officers, inventors and constructors began to search for an output in the creation of technical communications.

After the Patriotic War of 1812 development of a communication facility went mainly in a direction of creation of such samples which would allow not only to submit prearranged message, but also to conduct the transfer of information, carrying out two-way exchange.

Though officials of the imperial government, admiring everything foreign, did not encourage the domestic inventors, many Russian innovators worked at the improvement of a communication facility and have achieved in this respect great successes. And still, in spite of available domestic inventions: night optical telegraph of land surveyor Ponjuhaev in 1815; optical telegraphs of Russian inventor Shegorin in 1818 and Captain-Lieutenant P.E.Chistyakov in 1827 [9. d. 404a. p. 434]; semaphore telegraph of Major-General P.A.Kozen in 1824, – the imperial government for a huge sum of money bought the patent for the system of optical telegraph of the French engineer Z.Shato, represented advanced design of telegraph I.P Kulibin in 1833, invented in 1793 [10. V.1, p. 93].

The optical telegraph existed in Russia for about half a century. From 1852 it began to be replaced by the electric telegraph. It was promoted by the discovery by Russian scientists and inventors in the field of electrotechnics and electromagnetism.

The first electromagnetic telegraph was invented in Russia in 1832 by Pavel Lvovich Shilling, the outstanding Russian physicist and the orientalist, therefore the priority of its creation belongs to Russia.

The worthy successor and continuer of P.L. Shilling works on the development and introduction of telegraph in Russia was Boris Semenovich Jakobi, an outstanding physicist and electrical engineer, a member of the Petersburg academy of sciences who in 1841 for the first time in Russia constructed a line of electric telegraph between the Winter Palace and the General Staff in Petersburg. Communication was carried out by means of original writing devices which design was better and more simple, than at invented in the same time in the Western Europe Morse device [11, p. 27-38].

Qualitatively a new period of development of Signal Corps began in the second half of the XIX century with the introduction in the Russian army of telecommunication means. Having estimated the advantage of electric telegraph in transferring of reports, orders, instructions on great distances in small terms that was important owing to the changed ways of conducting the armed struggle on extensive and isolated from each other battlefields, the Russian Military Engineers department of the Russia Ministry of War in April 1854 ordered a station of the military-marching electric telegraph consisting of two Morse cable devices and 16.5 versts of copper wire and poles in Vienna. In a year the military electric telegraph was applied in conditions of warfighting in Sevastopol during the Crimean War. Thus it is necessary to note, that by 1855 in Russia more than 5 thousand km of constant cable lines had been already constructed.

By 1864 the Sveaborgskiy fortress military telegraph has been formed, and in 1865 the fortress military telegraph in Kronstadt. Fortress telegraphs were regular parts of Signal Corps whose experience was used in the further formations [12, p. 9 – 13]. So, in 1867 the first exemplary military-marching cable park was completed which incorporated 4 officers and 40 enlisted man, 8 Morse devices and 35 versts of wire. In three years the decision of forming six more military-marching parks was accepted. Subsequently, the manning level and material of parks were increased.

Field cable communication was successfully used during Russian-Turkish war in 1877 – 1878. The generalization of gained experience led to the reorganization of existing parks in 1883 and the forming of 17 new marching military-cable parks at the rate of one park to each corps. Parks have received new manning table and equipment lists, their

communication facilities became more various; a new optical communication facility has appeared – heliographs and lanterns.

Wide application of military telegraph in the army has played an exclusively important role in the radical improvement of troops control. It has not only expanded opportunities for orders and reports transferring on great distances in short terms, but also provided document communication. But the telegraph did not allow carrying out personal discussions of commanders and staffs directly from the workplaces. The scientific idea aspired to solve this problem. In 1876 the American A.Bell and almost simultaneously with him, his compatriot E.Grey submitted patent applications for phones invented by them. Already by the end of 1877 telephone sets had appeared in Russia.

Many engineers and commanders of the Russian army have highly valued the importance of this invention for military communications. In the summer of 1878 in Vyborg under the direction of Lieutenant Colonel V.B.Jakobi the first tests of phones in the Russian army were carried out. Communication between islands of the Tranzundskiy sea gate at a distance of 6 km by telegraph cable and between Vyborg and Uran-Saadskaya the governmental station on a line of military telegraph at a distance of 30 km was carried out. The results of tests seemed positive. However the awkwardness and great weight of the first telephone sets did not allow for their use in the army. Soon V.B.Jakobi designed a miniature phone – the first field telephone set [13, p. 27 – 31].

The difficulty of using the phone firstly consisted of the necessity to have for this purpose special wires. Only after the decision by Captain G.G.Ignatyev in 1880-1881 a problem of simultaneous telegraphy and telephony by wires, did the phone start to be widely used in the Russian army [14, p. 10]. The initiator of the use of phones in the navy fleet was naval officer E.V.Kolbasev.

In 1894 the decision on the disbandment of existing cable parks was accepted. Instead of them for communication between staffs of army, corps and divisions in the structure of every army corps engineer battalion one telegraph company was formed. It consisted of 310 men and incorporated 24 field telephone sets, 189 horses and 74 vehicles [15 p, 161 – 162].

Formation of telegraph companies in engineer battalions subordinated in the operative attitude to the chief of staff of the corps, and concerning completing the staff by specialists, communication materials and a special transport – to the Chief of the Army Engineers Department, was a great achievement in the development of a problem of centralization of military communications control in the Russian Army.

In the process of developing a means of fighting and military art, requirements to management of armies were continuously raised. An existing electric communication facility could not completely satisfy the need for management any more. On doctrines in peacetime and in fighting conditions often it was necessary to provide communication in conditions when it is difficult, and sometimes impossible to build wire lines (for example, in areas occupied by the opponent, greater water barrier or impassable mountains, with the ships in the sea and in a number of other cases). Life persistently demanded the creation of such means which could overcome the listed obstacles. In searches of the decision of a problem many minds in the 1880s and 1890s were occupied with the idea of how to signal at distance without wires.

Due to the progressive activity of Russian scientists and inventors, achievements in electrotechnics and technology of wire telegraph on April, 25th, 1895 at a session of the branch of physics of the Russian Society of Physics

and Chemistry the Russian scientist Alexander Stepanovich Popov made the scientific report on the invention of the communication system [16, p. 7 – 10].

In the spring of 1897 A.S.Popov had led a series of practical works on the realization of radio communication (wireless telegraph) between military fleet vessels, and in 1898 – 1900 under his control military signalmen made two portable radio stations and experiments were conducted on their use.

It would seem, it was possible to provide the army with the necessary quantity of Russian radio stations, however the absence of the industrial base, a necessary commercial crop in the domestic industry of that time, absence of necessary enterprise led to the first samples of Popov's spark radio station and it was decided to order abroad – to French firm «Dukrete».

In May of 1899 the first in the history of Russian military fleet radio unit – the Kronstadt spark military telegraph was formed. And in 1900 after edition of a special Navy Department order which determined the introducing of wireless telegraph, russian military ships radio stations had started to be established [17, p. 161 – 162].

By the beginning of the Russo-Japanese war of 1904 -1905 there were still no independent Signal Corps in the Russian Army, telegraph companies were still a part of engineer battalions. However their organic means could not satisfy growing needs for telegraph and telephone messages any more. Also an absence of signal elements and units in troops complicated the organization of communication in conducting operations at all. And only during the war, with great delay, for the use of the General Headquarters and staffs the 1st and 2nd Eastern-Siberian telegraph battalions had been formed. These battalions arrived at the theater of operation in September, 1904 and in June, 1905. Each battalion consisted of 26 officers and 1078 personnel.

In April 1905, for the first time two wireless telegraph (radiotelegraph) companies were formed for Army use. They used 8 radio stations, bought at the firm "Marconi". Only one radio station served the officer and 45 personnel (24 of them were from logistics staff) [18, p. 12 – 13].

The Russo-Japanese war had shown the perspectives of technological application-telegraph, phone and radio – for operative control of formations and units [7, V. 1, p. 274]. In terms of the variety of signals equipment, the Russian Army was not interior to any other, but the economic backwardness of Russia and weakness of technical base had not allowed it to have the necessary quantity of communications facilities.

Nevertheless, conclusions were drawn on the basis of war experience about the necessity of improving the organization of military communications. From 1910 the infantry corps communication units (21 operators, 13 horse messenger, 4 bicyclists, 10 versts of cable on coils) had been formed, and the total number of telegraph companies in the structure of engineer battalions of the Engineering Corps had reached 35. Additionally there were 8 spark companies. Five of these companies during mobilization were deployable as two independent companies [19, p. 7]. The recruiting of these units required plenty of experts in communication. Their training was carried out in both military schools, and directly in armies.

Training of signal officers for the Army in peacetime was carried out in Petrograd Military Engineering School, the only such school in Russia, and perfection of knowledge of officers was made at the biennial Officer Electrotechnical School created in 1911 on the basis of the Military Electrotechnical School, for teaching in which a number of authoritative scientists, such as B.S.Jakobi, P.N.Jablochkov and A.C. Popov were involved.

The great lack of development of military communications before the First World War in the Russian Army was due to the absence of a single headquarters to control signal elements and units and also questions as to the organization and development of communications facilities. Still there were no independent Signal Corps. The communications service in the army was assigned to the general staff departments.

There were no regular officials responsible for communication.

And still during the First World War real steps on uniting a radio communication control were carried out – in 1915 radiotelegraph managers of the fronts and armies were appointed and instead of spark companies radiotelegraphic battalions (at the end of war there were 16) were formed. In each corps and division a radiotelegraphic section was organized. By the end of 1916 there were 45 separate cable companies and 79 cable companies of engineer battalions in armies. Besides telegraph-cable sections were formed as part of division's engineer companies. It became possible due to the creation during the war of a necessary industrial base for the manufacture of a domestic communication facility. So, in 1916, 105 thousand telephone and 3 thousand telegraph devices, 236 thousand versts of cable, 800 radio stations and 10 thousand carts were supplied to the army [20, p. 1210, Л. 3, 48, 52].

For the preparation of signalmen in September – October, 1916 in all armies field educational telephone commands were formed, and from that time every front radiotelegraph manager had charge of a radio engineer school. Preparation of signalmen (private soldiers and corporals) was assigned to three reserve cable battalions and cable companies of engineer battalions. In 1915 for the purpose of officers preparation the Military Engineering School in Kiev was founded, and in 1916 at all headquarters of armies and fronts short-term (monthly and three-monthly) telegraph-telephone officer courses were organized [4, p. 34].

The quantitative growth of communications facilities and variety and complexity of their use urgently demanded centralization in the organization of a communication service in the Army as a whole. But by the end of the War it was not done in full measure. Only in May, 1917 the post of chief signal officer in all headquarters from the General Headquarters to the regiments inclusive (in the regiment this post was occupied the signal team chief) was created. However the problem of organization of one centralized army signal service and separation of signal units and elements in special signal troops was not solved.

The First World War experience showed that operations where commanders paid close attention to the questions of troop control and organization of communication, as a rule, troops always achieved success (the operation of Southwest front, the 8th Army, etc.). On the contrary, the slighting attitude to questions of troop control and organization of communication led to defeat (destruction of the 2nd army of General Samsonov in the East-Prussian operation). This experience has implications for today.

After the October Revolution, in the conditions of the beginning of Civil War and military intervention, for the purpose of Soviet authority protection the formation of the first parts of the Red Army began. At the beginning of 1918 numerous measures on the creation of the control system of the Army were implemented [18 p, 17 – 18]. So, by the order of The People's Commissariat of Military and Naval Affairs of April, 20th, 1918 №294 the first in Red Army the rifle division manning document was fixed. It made provision for having in a division a separate signal battalion of 977 personnel, and in regiments- signal teams.

The battalion commander simultaneously was charged with division signal affairs, and the

regiments signal team commander was charged with regimental signal affairs. But to form signal battalions appeared impossible as there were neither personnel, nor techniques and transport. Therefore in November, 1918 new manning document of rifle division signal battalion, rifle brigade signal company and rifle regiment signal team were fixed. By these manning documents the signal battalion of a division and a signal team of rifle regiment had much fewer communications facilities and less personnel and transport [21. Д. 43. Л. 59]. In December of that year signal elements had begun to be created in Aviation and the Cavalry.

Thus, from the very foundation of the Red Army signal battalions and signal teams did not consist any more in staffs of engineer units and elements. However a central body had not been created that could control the communications of the whole Red Army.

Since October, 1918 the field army radio communication control was carried out by the radiotelegraph inspector who was operationally subordinate to the Military Revolutionary Council headquarters, and in technical matters – to the chief of the General Military Engineering Command. At the fronts the post of the inspector of front radiotelegraph was created, and in armies – the post of army radiotelegraph manager was fixed. In front Headquarters the postal telegraph departments of people's mails and telegraph commissariat (they provided a mail service and communication on constant communication lines) were created. The General Military-Engineering Command provided the Red Army with signal supplies.

By order of the Military Revolutionary Council Revvoyensoviet, Revolyutsionny Voyenny Sovyet) № 1736/362, on 20th of October 1919, the Communications Office of the Red Army (RKKA) was formed. It was headed by the chief of the Red Army. Besides, the Departments of communications of fronts and armies, divisional and brigade departments of communications were formed [22, 72]. Thus, there was the formalization of association leadership coupling of the Red Army into a harmonious system. That day became the birthday of the Signal Corps of the Armed Forces, as a separate specialized corps.

The Communication Office of the Red Army was responsible for the organization and providing of communications for the republic MRC and Field Head Quarters, fronts and armies of the Red Army, establishing of communication units, its training and equipment [21, D. 2. L. 7.]. The first Chief of Communications of the Red Army was A.M. Ljubovich (formerly the Commissar of Post Offices and Telegraphs); from September 1920 to April 1924 it was I.A. Khalepsky (formerly the chief of the Caucasus Front), who had done a lot for the establishment and development of Signal Corps.

By the end of 1920, Signal Corps included 13 separate battalions and 46 battalions, communication divisions and brigades, a large number of companies and commands, warehouses, workshops and other units. The total strength of signal troops was more than a hundred thousand people [23, V. 2, p. 54].

During the civil war the general organization of communication at all levels of command of the Red Army had been developed, the main duties of communications officers were worked out, new ways of communicating by various means and devices were developed. Continuously the organizational and staff structure of linear and nodal units of communication were improved. It was the first time in the history of military communications, when the Red Army trains were used for communication and control. So it became easier for the commanders and HQ staffs at all levels to conduct control functions.

The activity of The Army Signal Corps during the Civil War was commended in a special

order of the Revolutionary Military Council of 17 February 1921, which stated: "The heroic Red Army, which covered itself with undying glory, owes much to the signal troops, who carried out during the long struggle with the enemies of great responsible tasks "[24, D. 13. L, 31].

After the Civil War the corps had been reduced to 32,600 people and was armed with worn-out communications mostly of foreign production.

However, despite the low strength and the necessary involvement of soldiers for the reconstruction of civilian lines and communications centers, as well as other facilities, the Signal Corps was improving its structure, equipment and training of personnel. The actual issue of improving military communication came into existence because of the diversity of communications equipment and devices and their deterioration.

By order of the Revolutionary Military Council on 6 June 1920 the Military Technical Council of Communications (MTCC) – VTSS RKKA)), headed by the Red Army's chief of communications was established, which was assigned to find solutions to all major issues of organization and development of military communication, including leadership in research and development of new technical means and current urgent issues.

However, very soon it became obvious that in the difficult conditions of transition period of the Red Army from war to peacetime in 1921 – 1923 MTCC was necessary to remove a number of previously defined functions, and partially transmit them to any agency, which was capable of engaging in the development and implementation of research and technical policy in the field of military communications.

As a result of the urgent efforts of the Red Army's chief of communications I.A. Khalepsky by order of the Revolutionary Military Council of the Republic on April 15, 1923 The Research Institute for the MTCC was established [25, S. 2 -7]. Based on the outcome of the research institutes, during the prewar period the first generation of military field radio, telephone and telegraph apparatus, switching devices, communication cables, terrestrial signal monitoring means with which the Red Army entered the Great Patriotic War, were created [26, 61 – 73].According to the technical characteristics, those facilities primarily satisfied the requirements of that period, but they were not developed enough, because of the extremely slow pace of signal corps modernization. In addition, some new means of communication before the war were only in the stage of development of mass production, but for their mass production, there was neither capacity nor time. Therefore, a substantial amount of obsolete communication devices were used in the Red Army.

The problem of the supplying of Signal Corps with equipment was the most acute, when mass deployment of the Armed Forces from autumn 1939 started. By mid-1941, the Red Army increased by 280% (total number of army and navy reached more than 5 million people). By that time just central and district units of the Signal Corps consisted of 19 separate regiments, 25 separate battalions and other units and organizations of communication. Nevertheless, despite the necessary amount of signal units and elements, the level of equipment of radio facilities was as follows: echelons of the General Staff- the front to 35%, army -corps – 11%, and divisions – 62%, – 77 %, in battalions – 58%. From the total number of radio stations, obsolete types 75% was in the frontline radio network, in the armies – 24%, in the divisions – 89%, in the regiments – 63% [27, D. 10, L. 271 – 273,261 – 269].

In addition to technical, there was also a shortage of staff, although training of commanders and troops of communication

professionals in the prewar period was performed in the Electrical Military Academy of the RKKA, Leningrad, Voronezh, Ulyanovsk, Kiev, Kharkov, Ordzhonikidze, Stalingrad military academies and military communications department of the Moscow institute of engineers of communication [23, V. 2. S, 349 – 354]. This state of affairs was due to an insufficient number of schools and the staff of teachers, as well as the problems of low logistic support of academic activity [28, D. 11, L. 33].

Such a state of military communications equipment and staff training on the eve of the war was not only due to economic hardship in the prewar years, but also due to in appreciation of the role of military communications. Thus, the Chief of the Red Army's (USKA) motion on increasing the capacity of the communications technology factories was rejected, due to the fact that funds were necessary for increasing production of other kinds of military products. In addition, in 1938 – 1939 several factories, manufacturing communications equipment for the army, were converted to the production of other weapons.

The main mistake was in the fact that the Soviet military leadership overestimated the role of nationwide communications in command and control of the fronts and armies', considering that communication technology equipment supply was not so important. Thus, in the fall of 1940, the Defense Committee, having considered the plan for delivery of communications for 1941, made a decision to allocate most of them to various non-military commissariats: Railways (People's Commissariat), of Internal Affairs and others [29. 49]. Incidentally, we see the same attitude to the signal corps of the Armed Forces of Russia nowadays.

The Army Signal Corps from April 1924 to June 1941 was successively headed by N.M. Sinyavskii, R.V. Longva, A.M. Aksenov, I.A. Naidenov, N.I. Gapich [30. p. C 3 – 4].

The World War II analysis of many factors of the opposing armies fighting showed the crucial role of field centers in the sustainable command and control of troops, and also uncovered strategic and tactical problems. In a combat situation, when the enemy provides communications centers in the category of primary destruction sites, and in conditions of high troops mobility, the requirements for survivability and mobility of centers immeasurably increased. It was necessary to change their combat use tactics radically, paying particular attention to such issues as the deployment of elements of centers on the terrain, security, defense and engineering equipment centers, and the order of their moving. Nevertheless, at the beginning of the Great Patriotic War, these issues were worked out very poorly.

As before the missions of the communications organization at the tactical level (up to and including the Infantry Corps) were to be accomplished by the organic units of the Signal Corps. The main communications formations were: the Separate Battalion Infantry Corps, a separate battalion Infantry Division, a communication company in the regiment and battalion communications platoon. The Communication in the strategic-tactical and operational levels of command (Front -Army) was planned to be provided by forces of the Commissariat for Communications and Signal Corps Reserve Command (SRC). However, the full combat and communications unit of fronts and armies strength was only on paper, i.e. in the mobilization plans. Therefore, in the initial period of war (until Mobilization of the SRC units and elements) the leadership of the Red Army relied just on a nationwide network of People's Commissariat of communication [31, p. 11].

In the first, most difficult period of war the lack of communications means and devices in border areas became apparent as did, the lack of

the technical equipment and poor training level of the troops. Stationary military communications centers existed in peacetime and were prepared for wartime, but they were not protected from air attack, they did not have independent outputs on the country lines, and therefore they were entirely dependent, as has been said before, on the centers of People's Commissariat of communication. This enabled enemy aviation and saboteurs to put the communications centers out of action quite easily, according to previously planned actions. [32, p. 58]. Radio communications, neither organizationally, nor materially were not prepared for sustainable troop command and control. In the retreat, and difficult defensive battles the Red Army forces, units and elements were not fully strengthened with communications units. Moreover, communications units and elements were extremely undermanned and underequipped and equipment. All these and several other factors were a cause of control loss and temporary failure of our troops in the initial period of war [33, p. 141].

At the same time the scale of the battles from the outset demanded the use of the whole country's capacity to ensure communications with the troops. In order to centralize communications control in the country and army, by the determination of the State Defense Committee on 23 July 1941 the Red Army's chief of communications was appointed colonel I.T. Peresypkin (from February 1944 – Marshal of the Army Signal Corps), who retained the post of Commissar of Communication of the USSR. The subsequent appointment of I.T. Peresypkin as Deputy Commissar of Defense highly raised the prestige of troop leadership of communications departments, as that fact eliminated the inter-departmental barriers and created the conditions for the use of all available resources of the nationwide communications network to provide leadership of the Armed Forces [34, p. 68 – 69].

The first week's experience of World War II showed that the number of communications units, according to the plan, was clearly in adequate, mainly because of a larger-than-expected number of operational formations, which in turn increased the needs of the communications units and elements for every front and army. Therefore, the communications chief of the Red Army had 4 July 1941 filed a petition before the General Staff on the additional formation of 5 separate regiments of communication, 33 front and army battalions, some linear battalion, and 26 of the selected telegraph and construction and maintenance companies. The organization of the Red Army's new front and army offices created continuously increased needs of communication units. In just one year of the war more than 1000 communication units were formed. During particular months 250 – 350 communication units were in the stage of organization, i.e., a few dozen of the communications units per military district that caused considerable tension due to a lack of the required number of communication technologies in the military commands.

Since August 5, 1941 The Communications Office of the Red Army was reorganized into the Main Office of Communications, the Red Army (MOC), which took under their own control the mission of providing General Head Quarters and the General Staff, fronts, military commands, and the reserves [35, V. 3, s. 14, 28], since the beginning of the war the situation with troops technology communication providing was extremely complicated. Severity of the situation aggravated by the fact that most of electrical engineering factories from Leningrad, Moscow and Kharkov were evacuated inland, and only by the end of 1941 the required products began to be produced [36, s. 28 – 30, 37, d. 1,l. 11-12].

Particular attention was paid to the application and development of radio communication, which became much more widely used in the armed

forces, although by the end of the first period of the Great Patriotic War it was not the main type of communication [7. T. 2. P. 184]. It should be noted that in the initial period of war radio equipment for command and control was not used, because of the fear of the HQ at all levels being detected and the inability to deploy, to organize and to provide radio communication In order to correct that situation during of the summer-autumn of 1941 the People's Commissar of Defense issued a decree «On the Red Army communication improvement» № 243 dated July 23, 1941 [38, d. 65,l. 165 – 169], to which was later added a GHQ directive «About the shortcomings in the organization of command and control» of July 24, 1942 [39, s. 45]. Those documents ordered the elimination of underestimating radio communications and to create order in the use of radio as soon as possible.

The defensive fighting experience with radio communications demanded improved methods of its organization, modernization of existing and new radio facilities. Thus, in 1942, the first portable domestic VHF A-7 with frequency modulation for infantry and artillery regiments was developed, which was much appreciated by the troops. Quartz-top boxes were set up to HF radio for radio noise-stable direct-printing of the General Staff to the front (PAT station with the prefix «Diamond»), the fronts to the armies (RAF station with the prefix «Carbide») and the army with regiments (radio SSR with the prefix «Bekan»). The use of these devices provided a significant increase in the stability of radio communications, in both the higher echelons of command, as well as the tactical level.

The role of radio communication increased greatly during the operations of the summer-autumn campaign in 1942 [18, s. 59].

Combat experience showed that radio, especially while on the offensive, becomes the main, and often the only means of communication, providing command and control. Accordingly, further improving of the communications, organizational structure offorces, command and control functions, improving of communications units, and increasing of their numbers was the full structure of Signal corps of fronts and armies conducted was defined more exactly, and they were strengthened with new units and elements.

New elements – communications units of special-purpose (USON) were added to the General Staff communications system, through which a direct wired connection between the General HQ (Stavka) and 2-4 fronts were provided. USONs were placed 50-200 km behind the front lines. Therefore, through those units, communications between adjacent fronts were provided [40, s. 137].

In 1944 with an increased number of active fronts, and the distance between the General Staff and the fronts headquarters, the Supreme CommandReserve(RVGK-ReserveVerkhovnogo Glavnokomandovaniya) increased substantially, due to the new formed communications brigades (RVGK).

Despite all these shortcomings, the domestic electrical industry, reorganized during the Great Patriotic War according to the army needs of radio and wire communications means and devices was successful. Several models of communications equipment were upgraded in accordance with the requirements of combat units. Only in 1944, 62 249 sets of radio stations were produced for Soviet troops. That was significantly higher than the level of 1941, when just 9586 sets were produced [41,20 – 21].

Besides, it should be noted that throughout the war the number of communications personnel continuously increased in the overall strength of the army. Thus, if on the eve of the Great Patriotic War signalers were about 5% of the total, by the end, every tenth soldier of the Red Army was

a signalman. During the Great Patriotic War, 28 266 signalers were trained, in the School of Communications and, in the Academy of Communications 4 653 of command personnel [42, s. 241 – 243].

Gradual improvement of the organizational structure and technical support, methods of use, continuous improvement, the professional skills of commanders and the Army Signal Corps personnel special training enabled the execution of complex tasks to ensure forces command and control during the Great Patriotic War.

Mass heroism, courage and dedication were the main features of military signalers on the battlefield. 294 warriors-signalers were Heroes of the Soviet Union; more than 100 signalers were holders of the Medal of Glory. A great number of military communications personnel were awarded medals. During the war, almost 600 communications units were awarded medals. A number of front and army communications units were awarded the title of Guards.

During World War II, the Signal Corps received tremendous experience in providing communications in difficult combat conditions.

Analyzing the Army Signal Corps experience, we see that success in the conduct of operations and fighting depended to a certain extent on the quality of forces command and control – from the state of technical equipment, capabilities and level of readiness and skills of the Army Signal Corps. Practical experience of communications, received in the war, and the equipping of signal troops with technology and its correct use became the foundation for further building and improvement of military communications.

In March of 1946 the Red Army General Communications Office was reorganized into the Office of the Chief of Army Signal Corps of the USSR. And in April of 1948, by a directive of the USSR Ministry of Defense, the Office of the Chief of Army Signal Corps Army of the USSR was reorganized into the Office of the Soviet Army Signal Corps.

In the early postwar years, special attention was paid to the development and introduction of new principles of communications organization according to the great experience of the Great Patriotic War, that was required to improve the structure and quality of the Army Signal Corps as well as the introduction of a new army communications, capable of providing command and control in real conditions of warfare.

In 1948 the Armed Forces of the Soviet Union reduced to 3 million people, and major changes at the high level of the military command, military districts, armies, and divisions were carried out [43, 106]. The experience and views on war tactics were fixed in the new «Field Service Regulations of the Armed Forces of the USSR in 1948». On the basis of Marshal I.T.Peresypkin's work plan for the reorganization of security forces communications means, approved by the Chief of the General Staff, work on the acceleration of industrial production for the first postwar generation of military communications base for various purposes was started.

In the late 40s and 50s the signal troops began to receive adopted communications complexes with new, improved military characteristics: shortwave car radio sets R-100 and F-110 for radio of the General Staff, P-101 and F-102 to the front, P-118 and F-103 for the army (corps) radio networks, as well as R-104 (in the mobile and portable versions) for the division of networks and F-112 for the tank forces [44, d. 425,l. 123 -127].

The signal troops were provided with VHF radio sets R-105, F-106, F-108, F-109, F-114, F-116 and R-1 13 (Tank), which provided communication on preset frequencies and without fine tuning communication at the tactical level control [45, d. 105,l.10-12].

At the same time, a fundamentally new type of communications – radio-relay (multi-channel station P-400 [46, s. 34 – 38] and thin – route R-401 technical equipment [47, s. 30 – 40]) were developed for the Soviet Army, as well as frequency-division multiplexing and channeling systems (P-310, P-304, P-311, P-312, P-313, P-314), and improved types of telephone and telegraph devices, switching devices, several types of field communication cables were developed. Providing troops with relays was a completely new stage in the development of communication systems of operating units, formations and ground forces, so it improved reliability, persistence and resistance to countermeasures, and other characteristics.

The modernization of new equipment caused changes in the organizational and technical structure of the signal centers. Through the use of new means of communication standard systems were established for the automotive hardware for organizing mobile field communication hubs of various command levels. For the first time manufactured mobile communications devices (PUS), industrial production (during the war, they were made by the servicemen themselves) were used in the Army: PUS number 1 – for command post, transported by 22 cars, PUS number 2 – for the mobile command post of the front, transported by 6 cars, PUS № 3 – for the Army command post, transported by 9 cars, PUS number 4 – for Corps command posts, transported by 4 cars, PUS number 5 – for division command posts, transported by the same machine. Time for the deployment of those centers was significantly reduced, but communication systems mobility was greatly improved.

In October of 1958 by order of the USSR Ministry of Defense, the Office of Signal Corps of the Soviet Army was reorganized into the Office of the Chief Signal Corps of the Ministry of Defense of the USSR.

In the second half of the 50s, the rapid development of nuclear missiles, the improvement of other warfare means started, which caused significant changes in the Armed Forces structure. Thus, the new military service of the Armed Forces – the Strategic Missile Forces (SMF) was established in accordance with the Council of Ministers of the USSR of December 17, 1959 [48, s. 447]. The communication units became integral part of SMF [48. 106]. Those structural and organizational changes took place in other services and branches of the Armed Forces. These circumstances, in turn, necessitated the development of new methods of units and weapons command and control.

The increased duty level greatly influenced the general command and control system of the Soviet Army and Navy and caused a significant time reduction in command and control processes.

The 60s are generally characterized by practical work on the automated systems of command and weapons (anti-aircraft, artillery and missile forces) development, and planning work in the field of troops control automation of the Armed Forces. That was the reason of increased demands on the communication systems and channels in terms of their stability, resistance to countermeasures, secrecy and transmitting information timing.

With the retirement in 1957, of Army Signal Corps Marshal I.T. Peresypkin A.I. Leonov took charge of the Signal Corps (from 1961 Marshal of Signal Corps). Under his leadership, work on improving the structure of the Army Signal Corps and the creation of new means of communication was continued. Under his leadership communication devices were upgraded and more efficient radio devices were created.

The development and providing signal troops with the new HF and VHF middle and high average power single-sideband radio

devices (P-135, F-136, F-137, P-140) significantly enhanced the quality characteristics of radio channels at the operational and tactical levels of command. New means of VHF radio for tactical command level, including portable and Ammunition radio R-107 and R-111 with a wider range of frequencies (significantly increasing the number of operating frequencies) and an automatic adjustment to the prearranged frequency was created and [49, p. 4].

Relay communications were further developed. The new type of communication based on the P-121, F-122, F-408, F-410 enabled the provision of high quality multi-channel connections directly between the control stations at a distance of 150-250 km from each other (without relay), even through difficult terrain conditions.

In the 60s the first practical work on the creation of satellites was carried out. Complex were created for unified hardware compression and channeling for cable, radio relay and tropospheric communication lines, new means of telephone, telegraph and facsimile equipment, data communication equipment and information security systems equipment for various purposes.

Different types of communication equipment were provided and we see the development and delivery of next-generation hardware field communication hubs, as well as several types of command and staff vehicles for automotive and armored transport base for commanders of mechanized infantry (tank) regiments and battalions.

The new mobile communication devices highlighted the changes necessary in the organizational structure of the signal corps and in the training of highly qualified teams of engineering personnel and military communications staff, providing them with the necessary technical facilities. As a result, the whole complex of arrangements for the Signal Corps improvement, ensured the mobility and speed rate of communication in different levels of command.

The next stage of Signal Corps development is associated with the activity of A.Belov (in 1973 Belov was conferred the rank of Marshal of the Signal Corps).

In the early 70s at Belov's initiative, a system of routine maintenance and a field performance program of communication equipment was developed and implemented in the Army. This implementation improved the equipment maintenance culture in a quality manner, made possible to keep it in a state of combat readiness and promptly submit a complaint to the industry to eliminate identified equipment deficiencies.

As at that time the Soviet industry did not have any technical means to equip the communication control centers and the lack of an integrated extensive communications control system did not make it possible to use available channel resources effectively, particularly in fast-changing conditions, drastic measures were taken to solve the problems of communication system control. In this regard, the Central Scientific Research Institute of Communications of RF Ministry of Defense was assigned to develop and produce unconventional integrated equipment for the communication control centers. Repair services of Signal Corps were involved to replicate needed equipment and to equip communication command posts at the front and army level. Such advanced communications facilities reduced by 2-3 times the average time for communication gaps of the main signal channels.

Taking into account the increasing role of communication systems in the Armed Forces control, the Signal Corps command of the USSR Ministry of Defense was included in the General Staff as of the USSR Armed Forces. The Signal

Corps command existed until the beginning of the RF Armed Forces formation.

In the late 70s there some measures were taken to develop integrated researches in the research institutes of the Ministry of Defense and the Ministry of Industry, to prove conceptual aspects of building and operating perspective automated communications system of the Armed Forces. On the basis of the research results

Large collaboration of industrial and research organizations of the Ministry of Defense was achieved in 1980 by a special resolution of the Central Committee of the Communist Party of the USSR and the Council of Ministers of the USSR. Moreover, the joint automated communications network of the Armed Forces and communications facilities was developed.

At the same time a front automated communications network, unified satellite communication system of the Ministry of Defense and advanced communication facilities were established. The unified satellite communication system of the Ministry of Defense was an independent system and separate from the Ministry of Communications network had a common space-vehicle launching system and command – and – measurement complex.

The Signal Corps dealt with complicated problems of providing communication for mobile command posts (including an airborne communications control center) and linking them to the corresponding communication systems. To provide for the operation of the Armed Forces automated process-control systems, and corps and weapon system, the special data interchange systems (data communications systems) were developed. In its turn, the implementation of the automated control systems has caused an essential raising of requirements to technical characteristics of the communications equipment and communications system as a whole, so special attention was given to the development of new generation general communication equipment and the modernization of some existing communication equipment. As a result, complexes of automated frequency-adaptive were developed jam-resistant HV-VHV radio communications: for a front communications system -R-161; for strategic and tactical levels – R-164.

The analysis of the structure and the communication system operating conditions of the Soviet forces command and control at the operational and strategic levels in Afghanistan made it possible to learn some instructive lessons on communication organization.

From the first days of the Afghan war the Soviet forces had to fulfill a lot of combat missions. All components of the military command and control system were dramatically changed (echelons of command, command centers and communications system). The main reorganization purpose was to raise controllability. The combat operations experience demonstrated the impossibility of using the local communication systems centers and communication lines. That was caused by a low level of expanding communication or the hostile attitude of the operating staff. Difficult physiographical conditions required a rational approach to the ways of constructing field communication system elements, especially primary networks.

Space communications ranks first in the Army command and control system that, unfortunately, had been established only at the division and regiment levels. Wire communications was limited in usage because it was difficult to lay cable in rocky ground and to protect it.

Under preparation and in the process of combat operations there was a severe problem in providing communications security in a tactical command and control level. Combat operations illustrated the fact that in military

conflicts the opposing force operatively reacted to intercepted information practically in a real time scale.

During the Afghan war there were also many difficulties in the communication maintenance organization. Firstly, they were caused by a failure of communications equipment and the transport base resulting from serious battle damages, a sharp decrease in their technical reliability in difficult physiographical and environmental conditions, the necessity in communication system maintenance whose elements are dispersed over a large territory, etc.

The lessons received as a result of the experience of establishing communication control in Afghanistan made it possible to improve the ways of communication organization and providing communication applied to the conditions of conducting operations in local wars and conflicts and also in the conditions of providing forces command and control in the mountainous and desert areas.

In the late 80s specialists at the scientific research institute of the RF Ministry of Defense developed and implemented for the Army an automated complex of HF-VHF reliable radio communication and introduced the automated complex KV-UKV radio transceiver R-163 (12 types), but in the late 90s the R-163 was replaced by the advanced complex of antijam radio communication set R-168 at the tactical level (17 types). Considering the combat operations experience in Chechnia, the complex was recommended as the base equipment for the standard communications systems at the tactical level.

Later, the newest multichannel radio relay stations (R-414, R-416, R-417, R-418, R-423) and low-channel radio relay stations (R-415, R-419), including the first home-produced RRS of millimetric-wave R-421, and also new effective tropospheric communication equipment (R-412, R-423) were developed to widen communications capabilities.

The integrated satellite communications system of the second stage had higher possibilities. To be more precise, it had high-traffic capacity satellites and the newest satellite communications stations, including light, mobile and armored (R-438, R-439П, R-439БК). These types of radio stations are more effective for providing communication in peacekeeping operations.

It is especially necessary to point out the command vehicles: the experience of Command Vehicle type R-145 demonstrated the fact that the CV's were outmoded technically and morally. They were replaced by the advanced command post carriers with improved armor (R-149 combat vehicle, R-149 combat vehicle), that provide control and communication functions at a higher technical level (They include a personal computer, portable satellite communication station R-438, and navigation equipment).

The Armed Forces received the unified systems of frequency division multiplexing and time division multiplexing. In the 90s the complexes of field fiber-optic transmission systems P-335 and P-337 were developed.

Thus, it is possible to make a conclusion that the accepted communication equipment would allow the formation of highly-structured communication systems of strategic units. For the first time radio relay and tropospheric communications systems, sound channel and telegraph channel scramblers began to be widely applied in the front and army communication systems. Radio communication was arranged from all front (army) control centers to the control centers of the subordinate and coordinating units. Radio relay and wire communication was arranged directly or through auxiliary communication centers or main signal centers. Difficult work was carried out to establish multipurpose stationary territorial communication systems of military districts and to improve the

national communication network, to increase its survivability and qualitative characteristics of communication channels, where the basic control and communications systems of the Joint Staff, military branches and the special control systems of the Ministry of Defense are based on the channels of this communication system. The questions of Signal Corps organization and establishment improvement, Signal Corps development and qualified signal specialist training were decided timely.

During a long period of Signal Corps leadership (1970 – 1987) Marshal Belov managed to reorganize the Signal Corps radically to a symmetrical system which allowed the Command to deliver decisions and orders in real time to the armed forces and to provide continuous, operations and sustained control for the Armed forces. After Marshal Belov the Signal Corps were commanded and controlled by General K.I. Kobets (1987-1990), General O.S. Lisovskij (1990-1991), General G.P. Gichkin (1991-1997), General Yu.M. Zalogin (1997-2003), General N.P. Ljaskalo (2003-2005).

During the last decade of the 20th century there were many global changes in politics, economy and society that affected the world. Socialism and the USSR collapsed, the Warsaw Pact was liquidated.

The protracted stage of the Russian Federation's formation and the process of Armed Forces reorganization heavily affected the Signal Corps in the Armed Forces. As a result, the numerical strength of the Signal Corps was considerably reduced. The lack of sufficient financing led to a critical situation where the number of communications equipment considerably decreased and providing the Army with the newest communication equipment was practically stopped.

Moreover, the situation was aggravated by the fact that the Signal Corps command was unable to quantity estimate the current situation, to define the developmental priorities of the communication system and the Signal Corps as a whole.

The main purpose of the plans concerning the communication system and the Signal Corps, the Government arms program for 2001-2010 (concerning the communication system and the Signal Corps) was to develop a technological basis of the communication control system through the introduction of innovations and technologies of the 70s and the 80-ies of the XX century. For these reasons, the Signal Corps of the Armed Forces began to degradate. By 2005, the state of the communications system was deemed unsatisfactory.

In 2005, the Armed Forces of the Russian Federation was headed by Colonel-General E.A. Karpov .

The office of the Chief Signal Officer analyzed in detail the real state of the communication system and the Signal Corps of the Armed Forces and came to conclusion. To improve the following situation the office of the Chief Signal Officer developed a number of program documents signed by the Minister of Defense and the Chief of the General Staff:

- "The concept of transitioning the Armed forces communication system to digital telecommunication equipment";
- "The special integrated work program of a phased transition from a primary communications network of the RF Armed forces to digital telecommunications equipment";
- "The program of a phased transition from secondary communication networks of the Armed forces of the Russian Federation to digital data processing equipment and service provisioning".

These programs were aimed at communications system modernization, a

planned re-equipment of the forces with the latest communications equipment that were developed by using modern telecommunications and information technologies.

The development of the following programs was an objective necessity considering the general tendencies of communication systems development in the Russian Federation.

Many operators deploy and operate digital and communications systems successfully, and provide users with a variety of telecommunications services. It is obvious that the Armed Forces communication system being a special consumer of communications services of an Integrated telecommunications network in Russia follows all progress changes.

The implementation of advanced telecommunication technologies will make it possible to establish an unified automated communication system of the Armed Forces that will provide the various communication services to the military command authority and officials and will allow the automation all processes of troop command and control and weapons control.

It should be noted that the experience of developing a similar system in the Soviet Union proves the fact that the successful accomplishment of a mission to establish an integrated automated digital communication system of the Armed Forces can be provided only in conditions of a due attention from the country's leadership and a full funding for its deployment.

Now, as well as in the time of the Integrated automated communication system development by the USSR Armed forces, the forms and methods of conducting armed conflicts were also reconsidered. The industry enterprises were reconstructed under the influence of other (market) factors. the new technologies appeared. But one essential difference is the fact that the Armed Forces Integrated Automated Communication System was established in the time of economic recession and the USSR's collapse. The IACS reconstruction work begins in the period of the state and economy's rebirth that allows us to expect the successful realization of this perspective system.

Today, in the process of forming a new-look Armed Forces, the Signal Corps are being developed in difficult conditions of planned transformation of the communication system and the Signal Corps in a direction of the maximal conformity of technical characteristics in the control system and the structure of the Armed forces both in peacetime, and in wartime, taking into account many factors of a political, economic, scientific, technical and military nature. The decisions concerning the Armed Forces new look and optimization affect the attitude to the Army control elements: communication system, the Signal Corps, communication equipment development, military education, etc.

The Armed Forces informatization process requires a reforming of the means of conducting combat operations and providing information support in battle.

So, at the present time the leading countries establish global information networks for military use on the base of developing communication systems. Such systems, constructed with the use of internet technologies, will be provided with a high information throughput, scalability and external influence resistance. Seeing these principles the organization, missions and especially equipment of the communications system and the main development prospects require drastic changes and quick re-equipment.

The new hazards and risks to the security of the Russian Federation, the optimization of the Armed Forces structure determine a necessity for the forces control structure development, forms of adaptation and methods of application in the present time.

The general purpose of the communication system establishment and development being the infrastructure element of the Armed Forces command and control system is a transition from the old system to the newest form of the communication network organization by means of digitalization and their integration to the integrated information space of the Army.

Nowadays, the Office of the Chief Signal Officer of the Russian Federation Armed Forces is developing an establishment concept of integrated information space of the Army that should promote effective forces employment by organization of timely planning and coordination of their operations, providing timely feedback communications with the subordinated forces, units and detachments to receive information concerning their status, position and facilities promoting an accomplishment of assigned missions.

The only hope is that in the near future the planned perspective work on Signal Corps development will equalize the Army technical level in a quantity manner with the level of the USA at the beginning of the new millenium. In the US Armed Forces provision with individual radio communication facilities is still at the top level, particularly, their organizational structure of communication units.

In August of 2008, the Russian Armed Forces met some problems in providing communications for the operating forces being involved in the military conflict of Georgia with Abkhazia and the Southern Ossetia. This situation was like the military operations of 1941, when tanks and airplanes were engaged in military operations without communications facilities. Although the Armed Forces of the Russian Federation are equipped with up-to-date weaponry it is impossible to conduct military operations without modern communications means.

Unfortunately, there is one more negative tendency in the Russian Armed forces. Likeprewar years, all Russian departments were provided with communication, except the Armed forces; this was already noted in the article. These days the level of providing communications for the internal security troops of the Ministry of the Interior of the Russian Federation is notably higher than the level in the Ministry of Defense.

The beginning of the XXI century is an appropriate time to solve a problem of providing the Russian Army with modern communications equipment satisfying all requirements.

It is essential to emphasize the fact that in conditions of modern warfare and large-scale military conflicts the Armed Forces will be pressed in time to produce and install communication equipment following the experience of the Great Patriotic War. That we must all remember.

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История, современное состояние и перспективы развития военной связи в Российской Федерации

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В статье рассматривается исторический путь развития военной связи в России от времени ее зарождения до наших дней, показаны противоречия между состоянием военной связи в системе управления войсками и характером современных военных действий, основные направления развития войск связи в условиях формирования нового облика Вооруженных Сил Российской Федерации.

Ключевые слова: военная связь, войска связи, телеграф, радиостанция, автоматизированная система управления, штатная структура, Вооруженные Силы.