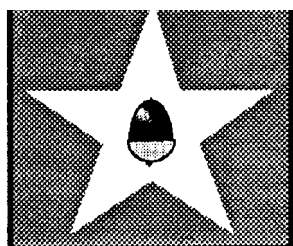


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# The Reform of the Russian Air Force

July 2002



**B57**

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# The Reform of the Russian Air Force

Stéphane Lefebvre

The Russian Air Force (*Voyenno-vozdushnyye Sily* - VVS) is no longer the feared instrument that it was in Soviet times. The last ten years have proven to be very challenging, if not disquieting. The problems encountered today by the VVS are hardly surprising to the observers of the Russian political and economic scenes; they stem from an economy in reconstruction, a new strategic environment, and parochial interests. It is not the first time in its history that the VVS faces such a situation. It suffered from Stalin's purges and was nearly eliminated by Germany in the Great Patriotic War, but heroically came back to inflict serious losses in a war of attrition against an initially superior foe. Its heyday came during the Cold War that ended in 1989, when it significantly increased its numbers and ability to wage war from the air. Although the VVS never did match the West in all technological areas, experts recognized that it had talent and resources to innovate in several.

The Afghan war (1979-1989) proved inconclusive for the VVS; despite all its efforts, it barely affected the outcome of the struggle on the ground. A couple of years later, the Gulf War confirmed that its doctrine and tactics needed to be rethought and its infrastructure and organization adapted to the changing nature of war and the new geo-strategic situation emerging with the end of the Cold War.<sup>1</sup> Later in the 1990s, Operation Desert Fox over Iraq and Operation Allied Force over Kosovo and Serbia would further convince military leaders that the VVS ought to be the armed forces' spearhead in a conventional conflict of the kind.<sup>2</sup>

The difficulties encountered by the VVS over the last decade are easy enough to pinpoint; their exact scale, however, is not. The statistics and official statements attesting to the poor state of the force or asserting its health are consistently too under-specified to be really meaningful, and oftentimes contradictory. They are used for many reasons, from boosting the budget for the VVS, to making a point against an opponent, to boosting export figures. While we should be cautious while using them, they remain useful in providing us with a general, if not specific, appreciation of the situation.

## A New Reality

Just before the dissolution of the Soviet Union, the VVS had 20 large strategic formations, 38 air divisions, 211 air regiments and about 10,000 aircraft, with first rate airfields, and command and control and communication facilities in border districts. After the break up, it was left with 60% of the combat aircraft and about 50% of the airfields, mostly located west of the Urals. Many key installations, including airfields and training centres, and modern aircraft were now located on foreign soil. Personnel, aircraft and equipment located in former Warsaw Pact countries were however repatriated.<sup>3</sup>

Plagued with a plethora of older aircraft, the VVS rapidly got rid of 1,700 older aircraft (Su-7, Su-17, MiG-21, MiG-23, MiG-27, Tu-16, and Tu-22) in order to focus its fleet around fourth-generation aircraft. Yet, the fleet inventory in 2001 still had several dozen types and variants of aircraft and an even greater range of spare parts, ammunition and petrol, oil and lubricants. If only for this, the VVS is a very complex organization to sustain. Over a few years, personnel was also reduced to 170,00 from 500,000, and the number of generals to 130 from 330.<sup>4</sup>

The VVS now has 142 airfields with a runway longer than 1,800 metres, with no less than 50% in need of capital repairs and reconstruction, a proportion which is expected to reach 80% in 2005. In 2002, only 70 airfields were in use since the VVS had funds to repair no more than one airfield per year. The VVS main airfield, Chkalovskiy, near Moscow, was resurfaced in 2001, but a year later repairs remained incomplete due to a lack of light-signal equipment, for which there are no manufacturers in Russia.<sup>5</sup>

The general ailments affecting the armed forces during the 1990s (under-funding, indiscipline, poor morale, personnel problems,<sup>6</sup> and 'institutional interests in self-preservation,' that is, 'giving lip service to the realities of the post-Cold War environment' by trying 'to retain as much as possible traditional strategic roles and operational missions')<sup>7</sup> have not spared the VVS. Lack of financial resources has affected readiness, training, maintenance, research and development, modernization, the purchase of new weapons systems, logistical support to aircraft, flight safety, and the resolution of social problems. Over the last ten years, the budget allocated to the VVS has consistently been below the amounts requested by as much as 70%. This goes a long way to explain why the infrastructure is in such disrepair, why so many servicemen's families are hungry and homeless, and why the air fleet is in a low state of combat readiness due to a lack of fuel, spare parts and flying time for pilots. In the mid- to late 1990s, only 50% of aircraft could be flown during the day and 30% at night. The VVS finally admitted in 1997 that it could no longer conduct large-scale conventional operations over several theatres of operations or strategic directions.<sup>8</sup>

Ten years ago, there were too many pilots for the number of aircraft available. While their number has been considerably reduced, other problems such as a lack of fuel and airworthy aircraft have reduced flying time to an average of about 20 hours per year. Because flying time is given primarily to the better qualified first-class pilots, second- and third-class pilots are hardly able to keep their qualifications, let alone move to the next level. This is a very precarious situation since first-class pilots today represent 40% of the total number of pilots in air regiments, and on average they are only a few years away from the retirement age for pilots of 45.<sup>9</sup>

In early 2002, morale was further affected by the decision to phase out the traditional VVS blue uniform to replace it with a cheaper khaki model simply for the sake of uniform unification across the armed forces (except for the Navy).<sup>10</sup>

## **Adapting The VVS**

The dissolution of the Soviet Union confronted the new Russia with a host of regional conflicts (Chechnya, Osetia, Daghestan, Moldova, Georgia and Tajikistan). These conflicts, similarly to the Soviet-Afghan war, were not fought as large-scale, theatre-level conventional wars, that is, on a linear battlefield with pre-determined

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tactics and professional soldiers and/or conscripts. Engagements in such conflicts occurred in unexpected locations, including urban areas, and involved guerrillas or para-military groups using the ground and man-made and natural obstacles to the fullest extent. Fighting under these circumstances placed an emphasis on air strategic and operational mobility and the development of precision-guided weapons. Russian officers at large, however, are not yet fully assimilating the lessons supposedly learned from regional conflicts very quickly, and still devote considerable time to studying large-scale conventional and nuclear war scenarios.<sup>11</sup>

Conscious somewhat of the changing nature of conflicts, then Colonel General Pyotr Deinekin, VVS Commander-in-Chief, wrote in 1993 that

The principal goal of Air Force organizational development for the period up to 2000 is to establish, based on existing air units, a highly mobile branch of the Armed Forces with a balanced makeup and modern aircraft and weapons capable of effectively accomplishing the full set of its assigned missions in joint or independent operations and requiring minimum outlays for upkeep.<sup>12</sup>

Two years later, he defined the VVS's purpose thus: 'The Air Force is a highly manoeuvrable branch of the Armed Forces intended for conducting combat operations and air operations in various kinds of military operations in continental and ocean theatres of war (theatres of military operations) and in distant military-geographic areas' ...<sup>13</sup> In a later interview with *Armeyskiy Sbornik*, he elaborated on this by saying that the VVS had a decisive role in 'winning strategic air supremacy, weakening the enemy's military-economic potential, disorganizing his state and military command and control, engaging strategic and operational reserves, and providing air support to large strategic formations of the Ground Troops and Navy in operations ...' With regard to the task of supporting ground forces, he alluded to the 1991 Gulf War, where 'mass employment of aviation ... allowed the multinational forces command element to decide the outcome of the war in a short time essentially without involving the ground grouping'.<sup>14</sup> For many senior VVS officers the air support to ground troops is the most important mission of the VVS, but can only be accomplished with success if air supremacy has been achieved at the tactical and operational levels. Air operations using advanced technologies and munitions, despite the higher cost, are also seen as important because they allow the VVS to hit targets with fewer personnel and weapon systems and greater effectiveness, thus reducing its own losses (by two-five times).<sup>15</sup>

In 2001, VVS Commander-in-Chief Army General Kornukov described the tasks of the Air Force in the 21<sup>st</sup> century as follows:

[T]he main tasks of the Air Force in 21<sup>st</sup>-century military operations are likely to be the following: repelling first surprise air attacks preceding land and naval invasion ...; inflicting a defeat on the main forces of the aerospace adversary by coordinated actions of defence forces engaging aerospace offensive weapons in flight ... and attack forces throughout their entire basing system; providing air support and air cover for the Armed Forces' land units in order to enable them to seize the strategic initiative by way of conducting defensive and counteroffensive operations; providing air support and air cover for joint actions by the Armed Forces and other troops of the Russian Federation; participating in peacekeeping operations outside of the Russian Federation ...'<sup>16</sup>

These missions are more defensive in nature than during the Cold War and, despite a different wording, relatively similar in terms of focus to those of General Deinekin.

To fulfil General Deinekin's 1993 goal, reforms were to take place in three stages. The first one, from 1991 to 1992, included the formation of a new Russian VVS High Command and the revision of the VVS organizational development concept. The second stage, from 1993 to 1995, included the completion of the withdrawal of VVS assets from former Warsaw Pact countries and former Soviet republics, and the formation of new VVS formations in Russia, a reduction in personnel, and a reform of the acquisition and cadres training systems. At that stage, all VVS formations and units would fall under four commands: Long-Range Aviation, Frontal Aviation, Military Transport Aviation and Reserve and Cadres Training. The third stage, after 1995, was to include a complete overhaul of the airfield network, and the implementation of new logistical and cadres and training systems.

The Russian VVS was established on 7 May 1992 after the Russian government decided to create its own independent armed forces following the failure to create CIS armed forces. The VVS was organized into major commands subordinated to the authority of the VVS Commander-in-Chief, and large strategic formations subordinated to the Long-Range, Frontal and Military Transport Aviation commanders. Two Air Force armies were formed in the North Caucasus (the 4<sup>th</sup> Air Army) and Moscow (the 16<sup>th</sup> Air Army from the defunct Western Group of Forces) Military Districts, which had only had Air Force educational and training centres as second echelon military districts during the Soviet Union's time.<sup>17</sup>

A 1995 study on 'The Russian Air Force' (conducted by the VVS High Command and directed by General Deinekin) laid out the motives for merging VVS with the Air Defence Forces (*Voyska Protivo-vozdushnoy Oborony* - PVO), then one of the armed forces' five branches. These motives focused on historical experiences, the organizing principles of foreign armed forces, most of which have only three branches of service, and the necessity to have a centralized view of the air picture. The merger was also aimed at optimizing the use of resources and cutting expenditures, leading to joint procurement practices, logistical support, and training. It was estimated that combining both branches would allow a reduction in personnel from 340,000 to 180,000.<sup>18</sup> Before the idea of the VVS-PVO merger was adopted, Deinekin proceeded with the abolition of the headquarters of the Frontal Aviation and Reserves and Cadres Training commands and the transfer of their staff and responsibilities to the VVS High Command and the Volga Military District Air Force respectively.<sup>19</sup>

The merger was decreed by President Boris Yeltsin on 16 July 1997, and was to be completed by 1 January 1999. The PVO's Missile and Space Defence Troops (*Voyska Raketno-Kosmicheskoy Oborony* - RKO) were excluded from the merger and subordinated to the Strategic Missile Forces (*Raketnyye Voyska Strategicheskogo Naznacheniya* - RVSN) instead. At the same time, military districts, which would take the status of operational-strategic commands, were to assume operational control of all the units, from whatever branch of the armed forces, based within their territorial boundaries. For the VVS, it meant that its Frontal Aviation formations and units would be under its direct command, but operationally controlled by military districts, except for the newly formed Moscow Air Force and Air Defence Forces District. Long-Range Aviation and Military Transport Aviation were not immediately affected by these changes and remained under the command and control of the VVS Commander-in-Chief.<sup>20</sup>

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The merger proceeded in two stages. The first stage, completed on 1 March 1998, saw the integration of the two High Commands (VVS and PVO) into one. The second stage, completed at the end of 1998, saw the reorganization of both branches' large strategic formations. This included the establishment of the Moscow Air Force and Air Defence District (renamed Special Purpose Command of the Central Air Defence Zone in 2002) in the Western strategic sector, Air Force and Air Defence armies under the operational control of Military District commanders, and independent Air Force and Air Defence Corps in the Volga and Ural Military Districts (later an Air Army for the amalgamated districts). One of the major difficulties encountered was to devise a single command and control system for all air force assets. As it was, the aviation command and control system was not sufficiently protected and had very little mobility. Those working well, moreover, were and are still for the most part obsolete, just like the communication and electronic and radar support systems.<sup>21</sup>

**Table 1: Russian Air Force Commanders-in-Chief, 1992-2002**

1992-1998	Army General Pyotr Deinekin
1998-2002	Army General Anatoliy Kornukov
2002-	Colonel-General Vladimir Mikhailov

Colonel General Anatoly Kornukov, who succeeded Deinekin in January 1998, had previously served as Commander of the Moscow Air Defence District. At his first press conference on 10 February 1998, he announced that the new Air Force would assume operational control over all its combat assets on 1 March, that the new Command Post would be operational the following day, that the merger would occasion the departure of 122,000 servicemen (later raised to 125,000), 48,800 officers, and 46 generals, whose posts would be abolished, and that operational and tactical formations would be reduced or reorganized. The latter provision ultimately involved 12 VVS and PVO air armies, 15 divisions, 81 regiments and 496 units. It was also announced that Long-Range Aviation and the Military Transport Aviation would be reorganized into the 37<sup>th</sup> (Strategic) Air Army of the Supreme High Command and the 61<sup>st</sup> Air Army of the Supreme High Command respectively, and directly and operationally subordinated to the new Air Force High Command. Frontal Aviation, as previously noted, was to be divided into Air Force and Air Defence Armies directly subordinated to the Commander-in-Chief, but under the operational control of the Military Districts, each corresponding to a operational-strategic command on important strategic directions (Northwestern, Western, Southwestern, Far Eastern and Southern). There are five such Air Armies today: the 6<sup>th</sup> Air Force and Air Defence Army, headquartered in St Petersburg, Leningrad Military District; the 4<sup>th</sup> Air Force and Air Defence Army, headquartered in Rostov-on-Don, North Caucasus Military District; the 11<sup>th</sup> Air Force and Air Defence Army, headquartered in Khabarovsk, Far East Military District; the 14<sup>th</sup> Air Force and Air Defence Army, headquartered in Chita, Siberian Military District; and the 5<sup>th</sup> Air Force and Air Defence Army, formed after the 2001 merger of the Volga and Urals Military Districts, which each had a separate Air Force and Air Defence Corps.<sup>22</sup> For the Moscow area, the Moscow Air Force and Air Defence District was formed, incorporating the former Moscow Air Defence District and the 16<sup>th</sup> Air Army, reorganized into the 16<sup>th</sup> Composite Air Corps. The new corps was given one air division, two fighter regiments and an air transport regiment. It was redesignated the 16<sup>th</sup> Air Force and Air Defence Army in 2001. Three months after Kornukov's appointment, President Yeltsin appointed 35 generals to senior Air Force positions, in effect putting in place Kornukov's team.<sup>23</sup>

From the time Kornukov assumed command to January 1999 (one year), the number of airmen serving in the new VVS dropped to 184,594 from 318,000. The merger of the VVS and the PVO in the end resulted in 580 units and sub-units being disbanded, 134 units and sub-units being reorganized and 600 re-subordinated, and 32 airfields being vacated.<sup>24</sup> By 2005, the VVS is expected to change its shape further as the Russian armed forces will likely have completed the implementation of a new three-branch structure (Army, Navy, Air Force) from the current four, in accordance with the Russian government's plan for reforming the armed forces between 2001 and 2005.

Kornukov, who had reached retirement age, was replaced in January 2002 by Colonel-General Vladimir Mikhailov, aged 58. Kornukov was rumoured to have had his request for extension refused because of 'his tough opposition to cuts in air defence units [and because] he was too outspoken'. In 2004, Mikhailov is expected to be replaced by his first deputy, 49 year-old Lieutenant-General Anatoly Nogovitsyn.<sup>25</sup> Although Kornukov showed determination and a certain degree of success in implementing far-reaching changes in the VVS, like Deinekin he was unable to give the VVS its former lustre. In a moment of desperation, he told the media in August 2001 that the VVS had 'practically ceased to be a service in permanent battle readiness,' noting that a meagre 5% (or less) of the air fleet was composed of modern, state-of-the-art aircraft. At the same time, other military officials boasted that the aircraft inventory reduction had increased the number of aircraft available to take off to 80%. In fact, the reorganization initiated by Deinekin and implemented by Kornukov had not freed the large sums of money to make a significant impact on the status of the fleet, training standards or combat readiness.<sup>26</sup>

**Table 2: Aircraft Inventory, 2001**

<b>Types</b>	<b>Total</b>
Strategic bombers:	244
Refuelling aircraft	20
Frontal Aviation	
Fighter/Ground Attack aircraft	586
Fighter aircraft	952
Reconnaissance aircraft	226
Training centres' aircraft	155
Airborne Early Warning	20
Military Transport Aircraft	354
Training schools' aircraft	680
<b>TOTAL: All types</b>	<b>3,537</b>

The Conventional Forces of Europe (CFE) Treaty's Tashkent Agreement of 15 May 1992 limits Russia to 3,450 combat aircraft in the area west of the Urals. *The Military Balance 2001-2002* (Oxford: Oxford University Press for The International Institute for Strategic Studies, 2001), p116.



## Frontal Aviation

Frontal Aviation is the VVS's largest, but most neglected element. Responsible for air operations in support of deployed forces and for gaining air superiority, it encompasses the reconnaissance, tactical and operational offensive and defensive (including air attacks, close air support and battlefield interdiction) functions of the VVS, but it is judged less essential to the defence of the motherland than Air Defence regiments and Long-Range Aviation. It therefore does not receive a sufficient share of fuel and spare parts to keep its combat readiness and training at adequate levels (with the notable exception of those Frontal Aviation units involved in the conflicts over Chechnya). This situation affects the retention of key personnel, such as qualified pilots and maintenance technicians.<sup>27</sup>

The operational subordination of Frontal Aviation to military districts in 1997 was not an entirely new experiment. Earlier decentralizing experiences (up to 1942 and between 1980 and 1988), in which central command was relinquished to the ground forces, had not been successful, according to VVS officials, despite the stated motive to increase cooperation between the aviation and ground forces. These officials argued that keeping direct command and control over all air assets was essential for the VVS if it were to be able to shift air resources from one direction to another, depending on the provenance of the threat.<sup>28</sup>

Frontal Aviation is equipped with an assortment of combat aircraft, the most prominent being the Su-24 'Fencer' and Su-24M tactical bombers, the Su-25 'Frogfoot' and Su-25T attack aircraft, and the MiG-29 'Fulcrum' (among the best of its generation) and Su-27 'Flanker' fighters. Because of a lack of funds, no new fourth generation MiG-29, Su-27 and Su-30 long-range fighter aircraft and trainers have been acquired for a long time. For the same reason, modernization has been moving at a snail's pace. The MiG-29, the Su-27 and the Su-25 are essentially fourth-generation single-role tactical aircraft; the VVS would like to replace them with a fifth-generation multi-role aircraft and eventually retire third-generation aircraft such as the Su-24.<sup>29</sup>

In addition to modernizing the fleet and acquiring a fifth-generation multi-role fighter, emphasis and priority are also given to the development of precision-guided weapons. VVS officials assign them a high degree of combat effectiveness, comparing them to low-yield tactical nuclear weapons, because they can reduce collateral damages and casualties, eliminate the need for fire adjustment, and reduce the logistic tail and the cost per target destroyed.<sup>30</sup>

## 37<sup>th</sup> Strategic Air Army

Long-Range Aviation (*Dal'naya Aviatsiya* - DA) is responsible for conducting long-range conventional and nuclear bomber missions. To hit 'targets of vital importance to Russia,' it relies heavily on the use precision-guided weapons, air-launched cruise missiles and free fall bombs.<sup>31</sup> Originally formed in 1942, Long-Range Aviation is, according to Steven Zaloga, 'the weakest partner in the strategic triad,' because of its high dependence on the old Tu-95MS 'Bear-H' bombers and a handful of Tu-160 'Blackjack' bombers. Throughout the 1990s, its ability to conduct its intercontinental mission was hampered by a lack of funds for training and exercises. Budgets have only allowed a modest force modernization, an upgraded version of the AS-15/Kh-55 air-launched cruise missile (ALCM) and work on the development of a stealth one, the Kh-101.<sup>32</sup>

Like the other VVS commands, Long-Range Aviation was subject to significant changes. Over the last ten years, it saw its personnel reduced from 25,000 to 3,000 and its organization changed into an Air Army with the two major divisions, the 22<sup>nd</sup> Guards Red Banner Donbass Heavy Bomber Division, at Engels air force base in southwestern Russia - most modern bombers serve in this division - and the 79<sup>th</sup> Guards Heavy Bomber Division, at Ukrainka air force base in the Far East, and units such as the 4<sup>th</sup> Centre for Combat Training and Aircrew Conversion at the Lipetsk base. One of its major air bases, in Mozdok in North Osetia, was closed in April 1998 because of the threat from guerrilla groups and its airworthy Tu-95 bombers relocated to Engels. The situation at Engels, however, was difficult for all personnel: not enough flying time for pilots, insufficient financial resources to buy fuel or new equipment, and lack of realistic training and accommodation. Even experienced pilots were losing their expertise; at some point two of them collided and crashed their bombers.<sup>33</sup>

At the dissolution of the Soviet Union, 19 Tu-160 and 25 Tu-95MS (both nuclear-capable) remained in Ukraine and 40 Tu-95MS in Kazakhstan. The Tu-95MS in Kazakhstan were recovered, and, in 2000, Russia agreed to pay Ukraine \$285 million for eight Tu-160 and three Tu-95MS as well as 575 Kh-22 and Kh-55SM long-range air-to-surface cruise missiles.<sup>34</sup> It was assessed in the mid-1990s that 70% of the Tu-95MS on hand were in need of major repairs. In 2000, 80% of the bombers were reportedly combat ready.<sup>35</sup>

The TU-95 joined the force in 1956, the TU-95MS bomber in 1979 and the Tu-160 fourth-generation bomber in 1987. The acquisition of eight Tu-160 from Ukraine, plus the delivery of a newly completed aircraft from the manufacturer in 2002, increased the Tu-160 fleet to 15 planes, a significant increase in the strength and capability of Long-Range Aviation.<sup>36</sup> The Tu-22M3 'Backfire' long-range bomber, also employed by Long-Range Aviation, is a fourth-generation aircraft developed in the 1980s. Ryazan, with Tu-134Bsh 'Crusty' trainers, serves as the main training centre for 'Bear' and 'Backfire' air and ground crews. In the mid-1990s, the conditions for the fleet stationed at Ryazan were rather poor. The base had a single runway and a single hangar used for repairing aircraft. Resident bombers were therefore maintained and serviced in the open in all weathers.<sup>37</sup>

In the late 1990s, Long-Range Aviation exercises showed the importance Russia attaches to its bombers and their intercontinental mission. For the first time since the end of the Cold War, exercises testing the response time of Western nations again brought Tu-95MS and Tu-22M bombers close to the coasts of Iceland, Canada and Norway. This was repeated in the first two years of the new millennium, with bombers reaching the shores of Japan, Norway, the United Kingdom and the United States.<sup>38</sup> Despite a renewed assertiveness, the need for long-range bombers is questioned by many Russian officials. In an interview, retired Marshal of Aviation Yevgeniy Shaposhnikov questioned thus:

Do we have any need, for instance, for long-range aviation? Today our nuclear missile forces are the basis of our Armed Forces, so why should we spend colossal amounts of money on long-range bombers? Is it possible that we already have enough of these and that we could make a smooth transition to the reduction of their number? We have to think about this.<sup>39</sup>

## Army Aviation

Army Aviation (*Aviatsiya Sukhoputnykh Voysk* - AVS) was formed in the 1960s with the primary missions to offer direct fire support to ground troops on the battlefield, and transport troops, supplies, equipment and ammunition over short distances. Helicopter units are typically called upon to perform combat, transport, reconnaissance, target designation and electronic warfare missions. Since 1992, the AVS has played an important supporting role in all of Russia's regional conflict adventures, and especially in the Caucasus. It is, in fact, one of the most combat ready elements of the Russian armed forces; the experiences of Afghanistan in the 1980s and Chechnya in the 1990s gave it no choice but to adapt its tactics, innovate and be prepared for action.<sup>40</sup> From 1980 to 1990, the AVS command was subordinated to the VVS, while its helicopter units became part of the ground forces. In December 1990, it was re-subordinated to the High Command of the Army in order to improve coordination with ground troops. Despite the AVS's importance to the army and the constant operational demands placed upon it, between 1992 and 1999 2,000 pilots were cut from the AVS ranks (about 50% of all pilots) and the number of attack and transport helicopters in military districts reduced from 2,000 to about 900.<sup>41</sup>

The AVS is mostly equipped with helicopters that entered service in the 1970s and whose production has stopped altogether. Between 1992 and 1997, only four Ka-50 'Hokum' single-seat attack helicopters (which practically have not been used due to lack of money), ten Mi-26 'Halo' heavy transport helicopters and eight Mi-8 'Hip' transport helicopters were delivered to the AVS, while the AVS needs about 40 new transport and 25-30 new combat helicopters a year to replace older models. Defence Minister Ivanov's February 2002 statement - that due to lack of money the AVS fleet will not be renewed in the near future - was disconcerting to AVS officers.

Throughout the 1990s, AVS pilots flew on average twice as often as Frontal Aviation pilots, but its fleet was in as much need of modernization and repairs. According to the AVS Commander, in summer 1997 a thousand helicopters were awaiting repairs because of a severe shortage of spare parts (only 20 helicopters a year had been repaired between 1994 and 1997) while on average only 28% of AVS helicopters were clear to fly.<sup>42</sup>

## 61<sup>st</sup> Air Army of the Supreme High Command

The Military Transport Aviation (*Voyenno-transportnaya Aviatsiya* - VTA) celebrated its 70<sup>th</sup> anniversary in 2001. With an increased emphasis on the mobility of ground troops, its role is more important than ever before. Over the last decade, the VTA has played an essential function in replenishing and transporting troops to regions in conflict within Russia and its neighbours (the South Caucasus, Tajikistan, Moldova) and under the authority of the United Nations (Bosnia, Afghanistan). In addition to its transport services (dropping airborne troops and moving troops, equipment and supplies), since 1993 it has been providing electronic countermeasures support against radio and electronic emissions, wherever they originate. The reforms implemented under Kornukov in effect reduced the VTA fleet of transport aircraft by approximately 30% (regiments reduced their number of aircraft and crews, and old An-12, An-24 and An-26 transport aircraft retired) and consolidated it around the Il-76 and An-124 'Ruslan' aircraft.<sup>43</sup>

Subordinated to a single command, the VVS, since 1955, the VTA, as the 61<sup>st</sup> Air Army, is divided into two divisions, each with four to five regiments, and has its own Combat Training and Aircrew Conversion Centre (the 610<sup>th</sup>). 60% of the transport aircraft are reported to be based within the Moscow air traffic control zone.<sup>44</sup> With some 350 aircraft, the VTA can lift an airborne division in about two lifts, but needs much more capable aircraft to give the ground forces the mobility it desires. The VTA has also been performing commercial flights, in accordance with a 1993 presidential decree. Because of a perennial lack of fuel, it was envisaged that these commercial flights would provide VTA pilots with needed extra flying hours. It was also thought that the money raised by charging customers would be used to buy spare parts, build accommodation, etc. However, it appears that only a small percentage of the proceeds (20% or less) has been pocketed by the VVS. Furthermore, the investigative journalists have implicate the VTA in suspicious shipments throughout Russia, and to and from Western countries. Notwithstanding this, VTA pilots fly more hours per year than any other VVS pilots (on average 50) because both of commercial activities and supply of troops operationally deployed.<sup>45</sup>

With no transport aircraft acquired between 1992 and 1996, the VTA's fleet has rapidly aged. Today, the An-12 'Cub', An-22 'Cock' and Il-76 'Candid' transport aircraft are at the end of their life and should be replaced early in the 21<sup>st</sup> century. While the planes are getting older, maintenance technicians are having difficulties keeping them flying due to staff and spare part shortages.<sup>46</sup> Depending on the type of aircraft, between 49 and 75% of the fleet was operational in May 2001. A lot of hope is placed on new planes which are expected to join the fleet in the next decade (in particular the Il-76MF to replace the An-22 and Il-76, and the An-70 to replace the An-12, An-26 and the Il-76).

Built in Ukraine, the medium-range An-70, dubbed the most sophisticated military transport plane by Russian media, is jointly funded by the two countries (Russia-80%; Ukraine-20%). One will be provided to the VTA by 2004 and three more for the Czech Air Force in 2005-2007 to settle Russia's debts to Prague. One of its advantages is that the An-70 can be used on short (600-800m), unpaved runways. The commander of the 61<sup>st</sup> Air Army, Lieutenant-General Viktor Denisov, estimated in 2001 that in future the VTA will fulfil its needs with An-70 (30-40% of the fleet) and Il-76MF (60-70%).<sup>47</sup>

## **Social Conditions**

The VVS has been underfinanced throughout the 1990s. In comparison with the air force budgets of foreign armed forces hovering around 30%, the VVS has complained that its share of the military budget was too low; in 1992, it was 20%, in 1998 9% and in 2001 less than 12%. On this basis, Russian officials and experts have argued that to fulfil its missions properly the VVS should see its share of the budget increase significantly. Limited budget allocations have had a negative impact on personnel. Several incidents highlighted the difficult situation faced by many: according to Deputy Defence Minister Boris Gromov, in November 1994, 10,000 pilots were without permanent quarters. Four years later, it was reported that 30,263 VVS personnel were without apartments and 10,000 living in sub-standard housing. In 2001, the Deputy VVS Commander noted that 25,944 officers and warrant officers were essentially homeless and 41,851 more in need of proper housing.<sup>48</sup>

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The situation was particularly adverse until the end of the 1990s and marked by numerous incidents of protest over unpaid salaries and allowances. Pilots, for instance, were reported to have gone on hunger strikes to get housing and food to feed their children. One threatened to take over by force an electric power plant if power was again cut without warning during training flights.<sup>49</sup> To compound this problem, senior VVS officers were involved in criminal activities such as embezzlement and theft.<sup>50</sup>

### Training

The problems besetting the VVS have had a tremendous impact on training. Routine exercises, large and small, common during the Cold War have been reduced to a minimum. In the influential journal *Military Thought*, Colonel Krasnov noted:

The reduction of routine, scheduled large-scale exercises and the critically low personnel training standards. Commanders and pilots have not gone through rigorous combat training and [have] no experience in combat alert duty; graduates of military aviation institutes (schools) lose their professional skills after four to five years of service. Thus, only one-third of young pilots who joined the Air Force after 1994 are prepared to perform combat missions.<sup>51</sup>

In the early 1990s, many Russian military authors recommended a move away from traditional training methods (there were fewer funds available and many training facilities were lost with the break up of the Soviet Union) towards an increased and more productive use of 'weapon ranges, flight simulators and computer aided training schemes'.<sup>52</sup> For this to happen, however, more qualified training instructors, modern simulators and computers were required; they were not forthcoming. Flying hours were consistently and well below the bare minimum of flying hours (in Russia, 80 hours; over 100 in Soviet times) a pilot need to remain proficient. In 2001, a fighter pilot flew on average 15 hours, a bomber pilot 14, an Army Aviation pilot 20, a Military Transport Aviation pilot 22.5 and a Long-Range Aviation pilot over 50.<sup>53</sup> Under such circumstances, a pilot 2<sup>nd</sup> class (one who can accomplish a day-time all-weather mission and a night mission under normal weather conditions) would be fully trained after 10-15 years. As a result, pilots overall are poorly qualified and demoralized.<sup>54</sup>

Over the last ten years, the VVS has streamlined his training processes and reduced the number of training establishments. In 1996, the VVS was managing 14 higher and 4 secondary educational establishments in addition to a host of institutes and academies. Three years later, the number of establishments had been reduced by half with the implementation of a new educational structure based on one academy, two universities (based upon the Air Defence Academy and the Zhukovskiy Air Engineering Academy), as well as six institutes, previously called military schools.<sup>55</sup> By 2002, pilot conversion and advanced training has been consolidated into four Centres for Combat Training and Aircrew Conversion; the DA, VTA, AVS, Air Defence and Frontal Aviation each has its own centre.<sup>56</sup> The air defence's surface-to-air missiles troops and the Radio-technical Troops also have their own dedicated training centre.

With regard to training aircraft, the VVS has decided to change its Czech and L-39 Albatros aircraft. In 2001, it selected the Su-49 as its new piston-engine primary

trainer (100 are expected to be purchased to equip two training regiments) and in 2002 the Yak-130 combat trainer to replace its fleet of L-39 and serve as a light strike aircraft (*Lyogkiy Udarny Samolyot* - LUS) for low-intensity conflicts. Russia is expected to acquire 150-200 aircraft until 2020, with the earliest delivery in 2005, but is only funding the next stage of research and development work. The competitor to the Yak-130, the MiG-AT, will be developed for the export markets.<sup>57</sup>

## Operational Deployments

The VVS has been in decline for a decade. Yet, Russian combat operations could not have been conducted and sustained without the contribution of air power. The full range of VVS capabilities was not fully exploited, however, due to a lack of preparation and training among air staff and crews.

### Chechnya, 1994-1996

For the first Chechen campaign, Frontal Aviation formed a special aircraft regiment from elements of the 4<sup>th</sup> Air Army, reinforced with sub-units and elements from a number of military districts (such as the A-50 'Mainstay' airborne early-warning and control system). The regiment deployed at least 140 aircraft, including Su-25 ground attack aircraft, Su-22M fighter-bombers, and Su-24 Frontal Aviation bombers, but its fuel, ammunition and spare parts stocks were '50% less than prescribed'.<sup>58</sup>

During its first seven months of operational deployment, which included the invasion (December 1994) and consolidation phases (January to June 1995) of the operation, there were over 9,000 sorties, including 5,300 air strikes and 627 air reconnaissance missions. The VVS easily eliminated the Chechen air force and its 266 aircraft. The air regiment's first task was to destroy the aircraft of the Chechen force based at the Khankala, Kalinovskaya and Grozny North air bases, followed by air support to advancing Russian units, the transport of troops and material, reconnaissance, bomb-damage assessments, air strikes and other missions.

Although the lack of spare parts and pilot training were a serious cause for concern, as of December 1995 losses had been limited to one Su-24 (slammed into a mountain), two Su-25 (anti-aircraft fire) and damage from anti-aircraft fire to 24 other aircraft. Over the course of the whole campaign, the air regiment destroyed 3,519 buildings and other targets, in addition to damaging command posts, armoured and soft-skin vehicles, cars, bridges, warehouses, guerrilla assembly points, industrial facilities, and sections of highways. It is interesting to note, given these results, that at some point General Deinekin denied that civilian sites had been targeted. Until May 1995, when the fight shifted to less populated areas, ground offensive operations were not preceded by air strikes to avoid unnecessary civilian casualties; only in cases of fierce resistance was air support from ground-attack aircraft and helicopters requested. Civilian infrastructure, according to him, was hit collaterally due to its proximity to legitimate targets.<sup>59</sup>

Russian troops were hit by their own too. Some of the air strikes' bombs and unguided rockets hit buildings already seized by Russian troops because of target designation errors, poor coordination and communication with forward air controllers, and insufficient training.<sup>60</sup> Precision-guided munitions (PGMs) were also used against small military targets, including in urban areas, but accounted for only 2.3% of sorties, mainly because Russia does not have all-weather precision weapons. The bulk of the bombs dropped in Chechnya therefore were 'dumb' ones.

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The presidential palace in Grozny, for example, was attacked by Su-25 ground attack aircraft using the BETAB-500 concrete-piercing bomb and the heavy S-24 unguided rockets. General Deinekin commented that PGMs were needed in greater quantity as well as greater strike coordination to deal with low-intensity targets such as those encountered in Chechnya. Even so, Grozny was vastly damaged.<sup>61</sup>

Army aviation from the North Caucasus Military District provided 55 helicopters (25 Mi-24, 28 Mi-8 and two Mi-6) divided into three helicopter regiments and a squadron of Mi-26 heavy lift helicopters, and another squadron of Mi-9 command and communications helicopters from the Volga Military District. In March 1995, the number of helicopters in Chechnya reached 105, including 55 Mi-24. The Mi-24, however, could not operate under low-visibility conditions because of on-board navigation problems; in other words, it needed line-of-sight to the targets to be effective. Most of the combat helicopters deployed were for the most part worn out and equipped with obsolete systems, with no or little ability to operate at night. As of August 1995, the helicopter fleet had flown 16,547 sorties: 37% for fire missions, 44% for transport-assault missions, 8% for reconnaissance missions, and 12% for special tasks (search and rescue, radio relay, etc). About half the helicopter pilots had served in Afghanistan. By July 1995, five Mi-8 and seven Mi-24 had been lost, and 30 other helicopters damaged.<sup>62</sup> The major tactical problem with the AVS was that it employed its helicopters 'at stand-off range on city ring' and 'would rarely venture into urban canyon for fear of attack'. Resupply and transport missions therefore predominated.<sup>63</sup>

The VTA provided 30 aircraft (An-12, An-22, An-26, An-124 and Il-76) to airlift troops and equipment from the Mozdok and Beslan airfields. Overall, these aircraft conducted 3,227 sorties, transported 133,024 troops and 9,205 tonnes of cargo.<sup>64</sup> The DA also made a contribution to the war effort by bombing concentrations of Chechen troops and roads and providing target illumination (24 sorties) at night. It flew 172 sorties and dropped 2,287 bombs and 2,479 flares.<sup>65</sup>

Overall, poor weather, insufficient preparation and training, and the lack of all-day all-weather platforms affected air operations - air reconnaissance in particular - throughout the campaign. Ground troops thus did not receive the amount of direct fire support they had expected and were even subject to fratricide because of poor communications.<sup>66</sup>

### **Chechnya, 1999-2002**

In the second Chechen campaign, some of the lessons learned from the first campaign had an impact. The VVS had a much bigger role in the joint operations and contributed to the intelligence picture by performing more effective air reconnaissance sorties. Air assets were used more often and the VVS showed improvement in its ability to coordinate missions with other forces deployed in Chechnya and conduct air reconnaissance missions. The latter involved the use of the Su-24MR, Su-25, and MiG-25RB and the Pchela-1T unmanned aerial vehicle for real-time aerial reconnaissance.

The aircraft and helicopters used in terms of types and numbers were very similar to those of the first campaign. Of note, the Ka-50 'Hokum' combat helicopter and the modernized Su-25T all-weather aircraft were tested; the latter successfully fired Kh-25ML rockets.<sup>67</sup>

The AVS deployed a helicopter regiment comprising 80 Mi-24 and Mi-8 to Chechnya. The primary missions assigned to the Mi-24 were to support ground

troops' movements and to attack Chechen guerrillas in mountainous areas.<sup>68</sup> In the first stage, in Daghestan from 2 August to 30 September 1999, Mi-24 and Mi-8 attack helicopters were used against Chechen armed groups in south-western Daghestan. During that stage, one Su-25 fighter ground attack aircraft and three helicopters were lost. During the second stage, from 1 October 1999 to 22 April 2000, air strikes, often using fuel-air explosives and cluster bombs, were used extensively to avoid close combat casualties among Russian forces. Overall, however, unguided bombs and rockets were the main air-ground munitions used. Before Russian forces reach Grozny in mid-October 1999, the aerial attacks were said to emulate NATO Operation Allied Force over Serbia and Kosovo earlier that year. During that stage, two Su-25, two Su-24 maritime reconnaissance aircraft and ten helicopters were lost. During the third stage, from May 2000 onward, marking the end of major operations in Chechnya, air support continued against pockets of Chechen fighters. Again, most air operations were conducted during daytime and under good weather conditions, except when use was made of the Su-24M. Fratricide incidents involving VVS platforms were again reported, but were much less of a problem.<sup>69</sup>

Among the major VVS losses figure a September 2001 Mi-8 crash that killed 11 passengers, including eight colonels and two generals from the General Staff, and two Su-25 attack planes lost in action in Chechnya in 2001.

## 11 September 2001 & The War on Terrorism

The VVS was not put on high alert in the moments following the terrorist attacks in New York and Washington, but on a heightened state of readiness and cancelled its flights over the Atlantic, Pacific and Arctic Oceans conducted as part of a training exercise scheduled for 10-14 September.<sup>70</sup> Media sources commented that the air defence system around Moscow was full of holes and that what happened in New York could easily have happened in Moscow. While Moscow was defended by three rings of defence during the Cold War, today they no longer exist. The air approaches to Moscow are now protected by two regiments of fighter-interceptors whereas there were 20 15 years ago. The Moscow Air Force and Air Defence District's airspace is covered by three air defence corps.<sup>71</sup>

In December 2001, the commander of the VVS Radio-Technical Troops, Lieutenant General Aleksandr Shramchenko, admitted that since reforms started 50% of the Troops' capabilities to monitor Russia's airspace had been lost: 'In fact we do not control the air space from the Ural Mountains to the Kurile Islands. There is only a thin thread of radar coverage along the border with Kazakhstan, Mongolia and China.' Reductions which followed the merger of the Air Force with Air Defence Forces led to the loss of 30% of the units and 60% of the personnel. Older generation radars are in service and only about ten are modernized every year.<sup>72</sup>

VTA Il-76 transport planes have flown to Bagram airfield near Kabul transporting Russian Embassy personnel, a mobile hospital, and construction and humanitarian supplies. These flights are occasional as most cargo shipments to Afghanistan are carried out by the Ministry for Emergencies. As of 31 December 2001, they had flown more than 100 people and 40 tonnes of cargo to Bagram.<sup>73</sup>



## Other Deployments

The VVS has deployed a variety of aircraft in support of Russian forces involved in regional operations such as those in Moldova and Tajikistan and flown on behalf of the UN or NATO in missions such as those conducted in Kosovo (27<sup>th</sup> Aviation Group with 11 Mi-8 and Mi-24 helicopters and 50 pilots and technicians), and in Sierra Leone (an aviation unit composed of four Mi-24 and 115 pilots and technicians), where it provided armed escorts and reconnaissance services to UNAMSIL (United Nations Mission in Sierra Leone).<sup>74</sup>

## Modernization

Russia's military aviation industry nearly collapsed in the 1990s. For most of the decade, the Russian government avoided buying any significant number of aircraft (only 9.4% of the VVS procurement projects were funded in 1996, 3.4% in 1997 and 1.6% in 1998), forcing the industry to consolidate further and focus its activities on the export markets. This has contributed to keeping the industry alive for the moment when Russia would be financially sound enough to decide on the modernisation of older aircraft and the acquisition of new ones. The industry has shown surprising vitality, having no less than 15 types of platforms undergoing testing in August 2001. Furthermore, since the Air Force was formed in May 1992, at least 15 new weapon systems have entered service, keeping smaller industries alive. These include the R-77 air-to-air guided missiles, laser-designated bombs, and the Stroy-P unmanned reconnaissance vehicle.<sup>75</sup>

The VVS's objective is to modernize 20-25% of the fleet to the fourth-generation plus one level until a fifth-generation multi-role aircraft enters service around 2010 and replaces the MiG-29 and Su-27 aircraft.<sup>76</sup> The modernizing of the current fleet and the acquisition of new aircraft are pressing as bulk obsolescence is setting in. Already in 1996, Major-General Aleksandrov and Colonels Barayev and Gerasimov warned in *Military Thought* that Russia was on the verge of losing 'its great aviation power status'.<sup>77</sup> In 2002, 50% of the aircraft were more than fifteen years old, 20% ten to fifteen, 30% five to ten, and less than 1% less than five.<sup>78</sup>

The development cost for the fifth-generation aircraft, officially referred to as the Frontal Aviation Advanced Aviation System (*Perspektivnyy Aviatsionnyy Kompleks Frontovoy Aviats'ii* - PAK FA), is expected to reach \$1.5 billion, but Russia is expected to cover only around 20% of the cost, and export customers the remaining portion. The initial contract for its development was given to the Aviation Military Industrial Complex Sukhoi (as lead designer) in April 2002 by the Military-Industrial Commission. Sukhoi will work on a tight schedule, being contracted to complete the draft design by the end of 2002. Given the financial questions surrounding the whole project, many doubt that it has been launched to really re-equip the VVS, but rather to sustain the industry and gain a potentially large export market.<sup>79</sup> Developed in the 1980s, the Sukhoi S-37 and the Mikoyan multi-purpose combat (*mnogofunktsionalnyy frontovoy istrebitel* - MFI) fighters are fifth-generation technology demonstrators which are in many respects already obsolete (eg computers) and will serve as the basis for the Sukhoi's fifth-generation aircraft.<sup>80</sup>

With regard to the modernization of the current fleet, the focus is on upgrading or replacing their radars and weapon control systems in order to maximize the employment and effectiveness of new precision-guided missiles and avionics suites.<sup>81</sup> Air-related infrastructure projects include the development of new over-

the-horizon and bistatic radars as well as a new military-civilian radar system called the Federal System for Reconnaissance and Control of the Airspace of the Russian Federation (FSR i KVP) which will provide Russia with a unified air traffic control system.<sup>82</sup>

## The Future

VVS senior officers who have studied coalition operations conducted in the 1990s (such as operations Desert Storm, Desert Fox and Allied Force) have paid particular attention to the use of long-range precision weapons and the leading role of offensive air operations in these conflicts. Drawing conclusions for the future, General Kornukov notes that:

In future, military conflicts will afford chances of comprehensive engagement of first and second echelons of opposing (troops) forces. This will be accompanied by simultaneous actions against all targets regardless of the depth of their disposition, with weapons allocated for the purpose dispersed over all possible lines of attack. This tendency is also due to the use in future military conflicts of unmanned long-range precision weapons and a considerable boost in the combat potential of strike aircraft.<sup>83</sup>

Kornukov and several of his contemporaries believe that the quality of the VVS weapon systems and platforms will be more important than their quantity for Russia to achieve air superiority and secure strategic objectives in any future conflicts involving Russian armed forces. In that sense, the Gulf War and Kosovo are focal examples of conflicts whose initial period of war and their eventual resolution was dependent in large part on air power and advanced technologies.<sup>84</sup> The VVS emphasis on modernization is thus quite understandable; it does not want to be at the receiving end of an operation similar to Allied Force.<sup>85</sup> The problem, though, is that the VVS cannot project power far beyond Russia's landmass, which is forcing Russia to rely on nuclear deterrence in any conflictual situation with a technologically advanced country. Russia in a sense has been very lucky since the dissolution of the Soviet Union; all the conflicts it has been party to have been of the low-technology high-intensity kind.<sup>86</sup>

Over the next decade, financial limitations will force the VVS to retire older aircraft and reduce its personnel further. To free money for modernization, a further 36,000 positions are expected to be cut from the Air Force by the end of 2004, even though there are critical shortfalls (about 8,000 in June 2001) of officers. Low morale and corruption will continue to affect readiness. A modern Air Force with a professional and technically proficient staff is not likely to emerge until 2020.

## ENDNOTES

<sup>1</sup> For a history of the Russian/Soviet air force, see Mark O'Neill, 'The Soviet Air Force, 1917-1991', in *The Military History of the Soviet Union*, edited by Robin Hingham & Frederick W Kagan, New York, NY: Palgrave, 2002, pp153-168; and *Russian Aviation and Air Power in the Twentieth Century*, edited by Robin Hingham, John T Greenwood & Von Hardesty, London: Frank Cass, 1998.

<sup>2</sup> Greg Austin & Alexey D Muraviev, *The Armed Forces of Russia in Asia*, London and New York: I B Tauris, 2000, p236.

<sup>3</sup> *Krasnaya Zvezda (KZ)*, 5 November 1994, p3; *KZ*, 28 May 1994, p1.

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- <sup>4</sup> Col-Gen Pyotr S Deinekin, 'Russia Remains an Air Power', *Military News Bulletin*, 6, 1993, p2; *Rossiyskiye Vesti (RV)*, 18 May 1996, pp8-9, Interfax, 11 August 1997; *RV*, 15 August 1997, p3; *Izvestiya*, 12 May 1994, p5.
- <sup>5</sup> Col-Gen Pyotr S Deinekin, 'The Homeland Will Not Be Left Wingless: On the Concept of Air Force Organizational Development and Employment', *Armeyskiy Sbornik (AS)*, 8, August 1995, pp4-10; Interfax, 21 December 1996; Interfax-Military News Agency, 28 August 2001; ITAR-TASS, 27 February 2002; *Nezavisimoye Voyennoye Obozreniye (NVO)*, 22 March 2002.
- <sup>6</sup> For a quick overview of the poor state of the armed forces in the mid-1990s, see 'Russia: Military Decline', *Oxford Analytica East Europe Daily Brief*, 26 January 1996.
- <sup>7</sup> Alexei G Arbatov, *The Russian Military in the 21<sup>st</sup> Century*, Carlisle Barracks, PA: US Army War College, Strategic Studies Institute monograph, 3 June 1997, p7.
- <sup>8</sup> Col A Gabov, 'Direct Command and Control of Aviation: Organizational Problems', *Military Thought*, 7, 1, 1998, p48; Interfax, 7 April 1997; *KZ*, 16 August 1997, pp1-2; *Segodnya*, 30 March 1995, p2; *Moskovskiy Komsomolets (MK)*, 11 April 1995, pp1-2; *Le Monde*, 14 April 1995, p3; *New Europe*, 195, 16-22 February 1997, p19.
- <sup>9</sup> Interfax, 5 June 2001; [www.militarynews.ru](http://www.militarynews.ru), *NVO*, 3 August 2001; *Nezavisimaya Gazeta (NG)*, 19 July 2001, pp1-2; Austin & Muraviev, *The Armed Forces of Russia in Asia*, p247.
- <sup>10</sup> Interfax, 7 February 2002.
- <sup>11</sup> A B Krasnov & Colonel Yu N Shemuranov, 'The Role of Aviation in Armed Conflicts', *Military Thought*, 7, 1, 1998, p37; on the lessons from regional conflicts, see *The Soviet Afghan War: How A Superpower Fought and Lost. The General Staff Study*, translated and edited by Lester W Grau & Michael A Gress, Lawrence, KS: University Press of Kansas, 2002, pp310-1.
- <sup>12</sup> Col-Gen Pyotr S Deinekin, 'Basic Directions of Air Force Organizational Development and Training Under Present Conditions', *Military Thought*, 2, 7, 1993, p3.
- <sup>13</sup> Deinekin, 'The Homeland Will Not Be Left Wingless', pp4-10.
- <sup>14</sup> Interview with General Pyotr Deinekin, *AS*, 3, March 1997, pp6-9.
- <sup>15</sup> *AS*, 11, November 1997, pp4-9.
- <sup>16</sup> Army Gen A M Kornukov, 'Apropos of the Grown Role of Confrontation in the Aerospace Sphere and Air Force Tasks in 21<sup>st</sup>-Century Military Operations', *Military Thought*, 10, 5, 2001, p11.
- <sup>17</sup> Deinekin, 'The Homeland Will Not Be Left Wingless', pp4-10; *KZ*, 5 November 1994, p3; *Moscow News*, 47, 27 November-3 December 1997, p7; *RV*, 18 May 1996, pp8-9; *KZ*, 5 June 1996, p1. The Kubinka air base, where the 16<sup>th</sup> Air Army's headquarters is located, has been linked to fraudulent activities, especially concerning the misallocation of housing units built by Germany for returning Group of Western Forces servicemen.
- <sup>18</sup> *NG*, 22 January 1997, p5; General of the Army Pyotr Deinekin, 'The Russian Air Force', *International Affairs*, 43, 5, 1997, p228; Austin & Muraviev, *The Armed Forces of Russia in Asia*, p241.
- <sup>19</sup> Andrew Duncan, 'Time of consolidation for Russia's military', *Jane's Intelligence Review*, 9, 10, October 1997, p455.
- <sup>20</sup> *Rossiyskaya Gazeta (RG)*, 19 July 1997, p5; Interfax, 11 August 1997; *KZ*, 16 August 1997, pp1-2. Gen Deinekin explained the merger as follows: 'The merging of the Air Force and the Air Defence Forces under a single command ... will make it possible, with maximum effectiveness, to address the main following tasks: to detect the launching of nuclear missiles, air, or space attack; to provide early warning; to achieve and maintain air superiority; to cover troops and logistical facilities against air reconnaissance and air and space strikes; to provide air support to ground and navy forces; to ensure effective engagement of air and air defence forces; to effectively engage nuclear missile groupings; to ensure effective engagement of the enemy's strategic, operational and tactical reserves, and to perform a number of other basic missions.' Deinekin, 'The Russian Air Force', p228. Col A B Krasnov, Professor and Doctor of Military Sciences, argued that, '*Merging the Air Force and the Air Defence Forces into one armed service of the Armed Forces* [emphasis in original] holds out much prospect and offers numerous advantages in the context of struggle for air supremacy, if only because the "sword" and the "shield" end up in the hands of one and the same authority. The advantage lies not only in the fact that the measure will reduce or abolish identical echelons, particularly so at the operational-strategic level. The new Air

Force configuration provides better conditions for planning the employment of disparate forces, which operate in one and the same air sphere and against one and the same air enemy, and for using them in a coordinated way; it will also help achieve their massing on the basis of a single concept as efforts are made to deal with the whole set of missions involved in air and anti-aircraft operations, and cut the time necessary for the organization of teamwork.' Col A B Krasnov (Retd), 'Struggle for Air Supremacy Against a Vastly Superior Enemy', *Military Thought*, 7, 4, 1998, pp52-53.

<sup>21</sup> Col-Gen V P Sinitsyn, 'The Air Force: Evolution and Development', *Military Thought*, 7, 4, 1998, p10.

<sup>22</sup> Each Air Army is comprised of one or two Air Divisions which include Air Defence fighter regiments, Anti-Aircraft Missile Troops and Radio Technical Troops, and one or two Air Divisions configured to offer strike missions and support to the Military District's forces and separate regiments. Yefim Gordon & Alan Dawes, *Russian Air Power: 21st Century Aircraft, Weapons and Strategy*, Shrewsbury, England: Airlife Publishing Ltd, 2002, p13.

<sup>23</sup> On these series of changes, see Charles J Dick, *Military Reform and the Russian Air Force*, report B56, Camberley: Conflict Studies Research Centre, September 1999, pp2-3; Interfax, 1 February 1998; *Izvestiya*, 11 February 1998, p2; Interfax, 16 March 1998; Interfax, 29 April 1998; Interfax, 6 May 1998; Interfax, 10 June 1998; *NVO*, 22-28 January 1999, pp1, 3; Interfax, 15 August 2002.

<sup>24</sup> *KZ*, 13 January 1999, p1; *NVO*, 22-28 January 1999, pp1, 3.

<sup>25</sup> *Kommersant*, 23 January 2002, p3.

<sup>26</sup> Dick, *Military Reform and the Russian Air Force*, pp4-5; Interfax, 6 August 2001.

<sup>27</sup> Gordon & Dawes, *Russian Air Power*, pp16, 37; *Krasnyy Voin (KV)*, 14 May 1994, p3.

<sup>28</sup> General Pyotr Deinekin, 'The Russian Air Force', p228; *NVO*, 9-15 August 1997, pp1-3.

<sup>29</sup> Piotr Butkowski, 'Russia's air force looks beyond 2000', *Jane's Defence Weekly*, 25, 3, 17 January 1996, p29; Interfax, 7 January 1997; Interfax, 17 January 1997.

<sup>30</sup> Col-Gen Viktor Mikhaylovich Barynkin, 'Effect of Precision Weapons on Nature of Combat Operations and on Evolution of Military Art', *Vooruzheniye, Politika, Konversiya*, 4 (1995), pp17-21; *NVO*, 14 December 1995, p6.

<sup>31</sup> Gordon & Dawes, *Russian Air Power*, p38.

<sup>32</sup> Steven J Zaloga, *The Kremlin's Nuclear Sword: The Rise and Fall of Russia's Strategic Nuclear Forces, 1945-2000* (Washington, DC and London: Smithsonian Institution Press, 2002), pp224-225. For a detailed look at the history, development and equipment of Long-Range Aviation, see Chapter 6 of *Russian Strategic Nuclear Forces*, edited by Pavel Podvig (Cambridge, MA: The MIT Press, 2001), pp339-398.

<sup>33</sup> *Segodnya*, 14 March 1995, p3; *Russkiy Telegraf*, 11 April 1998, p1; *Saratovskiy Vestnik*, 23 February 1995, p2; *KZ*, 28 August 1997, p1; Thomas Withington, 'Long-Range Aviation', *Air Forces Monthly*, 171, June 2002, pp22-23.

<sup>34</sup> *Kommersant-Daily*, 30 October 1997, p3; Olga Kryazheva, 'Russia's Strategic Bomber Force Growing', *The Weekly Defence Monitor*, 4, 13, 30 March 2000.

<sup>35</sup> Mark Galeotti, 'Russia's military under a new master', *Jane's Intelligence Review*, 9, 9, September 1997, p388; Interfax, 10 June 1997.

<sup>36</sup> Robert S Norris & William W Arkin, 'Russian Nuclear Forces, 2001', *Bulletin of the Atomic Scientists*, 57, 3, May/June 2001, pp78-79; Interfax, 10 September 2001; *Segodnya*, 14 March 1995.

<sup>37</sup> Eric Bannwarth & Lindsay Peacock, 'Ryazan Air Base, Russia', *Air Power International*, 16, December 1995, pp35-41.

<sup>38</sup> Kryazheva, 'Russia's Strategic Bomber Force Growing'; Withington, 'Long-Range Aviation', p22; *The Washington Times*, 26 April 2002.

<sup>39</sup> *RG*, 10 July 1997, p1.

<sup>40</sup> Gordon & Dawes, *Russian Air Power*, p130.

<sup>41</sup> Interfax, 9 September 1997.

<sup>42</sup> *NG* (Independent Military Review supplement), 1, January 1996, p3, translated by S Volynets in *Defence & Security*, No 6, 15 January 1996, pp4-5; *KZ*, 16 July 1997, pp1-2; Interfax, 3 May 1997; interview with Col-Gen Vitaliy Pavlov by Col Sergey Valchenko, *AS*, 8, 1997, pp10-13.

<sup>43</sup> Gordon & Dawes, *Russian Air Power*, p68; *Novyye Izvestiya*, 9 April 1998, p1.

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- <sup>44</sup> Gordon & Dawes, *Russian Air Power*, p69; S Yegorov, interview with Lt-Gen Viktor Denisov, *AS*, June 2001, pp3-6; *NVO*, 10 August 2001.
- <sup>45</sup> See, *inter alia*, Alexander Zhilin, 'Has Russia's Air Force Become Privatized?', *Moscow News*, 14, 10-16 April 1997, p5.
- <sup>46</sup> Two An-12 crashes were particularly costly in this regard: in August 1994, an An-12 crash caused the death of 47 people, for which the Air Army Commander and his Chief of Staff were fired, and in December 1996 another An-12 crash cost the life of the Commander of the Leningrad Military District.
- <sup>47</sup> *Trud-Ukraina*, 26 April 1997, p1; TASS, 15 May 2002; S Yegorov, interview with Lt-Gen Viktor Denisov, pp3-6.
- <sup>48</sup> Dick, *Military Reform and the Russian Air Force*, p7; Interfax, 27 January 1997; *NG*, 30 November 1994, pp1-2; Interfax, 4 July 2001; *KZ*, 21 December 2001. In January 1995, 850 Air Force personnel working at the Lipetsk training centre were homeless, and those with housing for the most part lived in dilapidated barracks. In August 1997, there were 400 servicemen without accommodation at the Engels Air Base. See *Pravda*, 25 January 1995, p8; *KZ*, 27 August 1997, p1.
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- <sup>50</sup> *Kommersant-Daily*, 20 May 1997, p7; *Segodnya*, 24 January 1998, p1.
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- <sup>55</sup> These are: Yu A Gagarin Air War College (Affiliate in Krasnodar), Military Aviation University of Technology (Affiliate in Stavropol), Air Defence University (Affiliate in St Petersburg), Voronezh Military Aviation Engineering Institute, Irkutsk Military Aviation Engineering Institute, Tambov Military Aviation Engineering Institute, Yaroslav Air Defense Anti-Aircraft Missile Institute, Krasnodar Military Aviation Institute, Chelyabinsk Air Institute for Navigators. Sergey Sokut, 'Results: Russian Air Force Achieved Worthy Results Last Year', *NVO*, 22-28 January 1999, pp1, 3; *KZ*, 20 January 1996, p6; *KZ*, 5 February 2002. The Yuriy A Gagarin College teaches air strategy and tactics for commanders and staff officers, air navigators and logistical and communication officers.
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An abridged version of this paper will appear in: Russian Military Reform 1992-2002, edited by Anne C Aldis & Roger N McDermott, London: Frank Cass, 2003.

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ISBN 1-903584-98-1

**Published By:**

**Defence Academy of the**  
**United Kingdom**

**Conflict Studies Research Centre**

Haig Road  
Camberley  
Surrey  
GU15 4PQ  
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