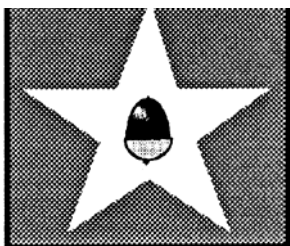


Conflict Studies Research Centre

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Russian Air Force**

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MILITARY REFORM AND THE RUSSIAN AIR FORCE

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MILITARY DOCTRINE

Quoting with approval the early Soviet strategist AA Svechin, Maj Gen IN Vorob'yev reminded the readers of the General Staff journal "Voyennaya Mysl" that, "The army cannot exist without the rudder of a military doctrine."¹ The doctrine provides a system of views officially approved by the state on: the prevention of wars and armed conflicts; the development of the armed forces; the country's preparation to defend itself; the organisation of actions to ward off threats to the military security of the state; on the uses of the armed forces to defend the state's vital interests.

The 1993 doctrine failed to provide the necessary rudder. It proved to be anachronistic, unrealistic and indeed stillborn. Col Gen Manilov, the First Deputy CGS for military reform has been promising a new one for some time: publication should take place soon, probably after the Russians have analysed both NATO's new strategic concept (which they imagine, certainly incorrectly, to be the alliance equivalent of their military doctrine) and the implications of what they regard as NATO aggression against Yugoslavia. However, the presidentially approved national security concept and "Principles (content) of state policy regarding the military-organisational development of Russia for the period up to 2005" give a fairly clear indication of much of the content of the new military doctrine.

There are the usual assurances that Russia regards no state as its enemy and has no territorial designs on any state: Russian armed forces are purely defensive. Russia will seek peaceful means to resolve any differences with other countries (a formulation which a cynic might point out is always used by states unready to go to war yet).

The threat of a major (global) war has receded with the end of the Cold War, but the danger of regional and local wars is perceived to have increased. There also dangers stemming from regionalism or separatism, possibly inspired by ethnic or religious contradictions within the RF. And not a few senior officers, still unable to shake off their Cold War mentality, believe that there is still a threat from the West.² The recent attack on Yugoslavia has confirmed their fears of NATO.

Given the parlous condition of her conventional forces, the main guarantor of Russia against aggression, even against conventional attack, will be the Strategic Missile Troops. "The economic and demographic situation, especially in the Far East, viewed against China's impressive economic growth and military potential, and the intensification of Islamic radicalism in the South are factors that intensify the role of nuclear weapons in Russian military policy," wrote AA Konovalov, the president of the Institute of Strategic Assessments, in July 1998.³ AA Kokoshin, when still Secretary to the Security Council, maintained that Russia cannot afford to maintain, never mind up-date, its Soviet era strategic nuclear forces in a battleworthy state, so there will be an enhanced role for the cheaper and more battleworthy sea and air launched operational-tactical systems - SSNs and Tu-22M

bombers with cruise missiles: as these are not intercontinental systems, they are presumably intended to deter/deal with more regional threats.⁴

These thoughts, and even more, economic realities, are shaping the development of the Russian armed forces. They provide the context in which the reformed Russian Air Force is being shaped.

According to the Commander-in-Chief of the Air Force, Col Gen AM Kornukov, “the main mission of the Russian armed forces is to be ready to conduct local wars and armed conflicts in the World’s contemporary military-political situation. Its participation in regional wars and, consequently, in a large scale conventional war has not been excluded.”⁵

HIGH LEVEL STRUCTURAL REFORMS

The higher level of military organisation has changed radically with forces being eliminated and/or amalgamated to reduce costs and at the same time produce a more rational force structure.

A new strategic command has been formed; the Strategic Missile Troops comprises an amalgamation of the SRF, the Military Space Forces and the Missile and Space Defence Forces. As part of this reform, the Long-Range Air Force is eliminated, with its units becoming the 37th Air Army (Strategic) of the Supreme High Command (SHC) and both it and the ABM troops come under this new strategic command.

Similarly, the Military Transport Aviation loses its separate status and becomes the 61st Separate Air Army (Military Transport Aviation) of the supreme high command.

Another amalgamation unites the Air Force (whose frontal aviation command is now eliminated) and the Air Defence Forces into a single, unified Air Force, thus reducing the number of branches of the armed forces to four; the merger is expected to save over 1bn rubles. It is intended to proceed eventually to a three branch structure, one for each environment. Sensibly, though doubtless many old Air force hands resent it, the newly unified service is based on the former Air Defence Troops structures as the latter alone enjoyed an automated command and control system. The new Commander-in Chief, Col Gen AM Kornukov, is the former commander of the Moscow Air Defence District, but of the new army commanders (see below), all are from the old Air Force save the one in the Far East – and he is a former airman.

The new Air Force is organized (to anticipate only slightly the completion of the task) into six air and air defence armies, one of which is operationally subordinated to each military district (MD) save Moscow. The Moscow MD is given only an air and air defence corps (the 16th, with a composite air division, two fighter regiments and a composite air transport regiment). However, there is also a Moscow Air and Air Defence District, an operational-strategic formation, coming directly under command of the C-in-C Air Force, as befits the most important strategic direction.

To elaborate on the operational subordination to the MDs. The eight military districts are being reduced to six. Of these, five have been designated “operational-strategic” commands on important strategic directions: Northwestern (LeMD); Western (MoMD); Southwestern (NCMD); Southern (SiMD) and Far Eastern

(FEMD). The commanders of these MDs are responsible for the defence of Russia within their boundaries and are given a very large measure of autonomy in doing so. Each MD is supposed to be able to cope with a local war in its area and it has its dedicated ground and air forces to do this, but it will require reinforcement in order to cope with a regional conflict.⁶

DOWNSIZING AND ITS RESULTS⁷

Rationalizing and optimizing structures is one side of the reforms. The other is downsizing. The remains of the Soviet Air and Air Defence Forces that Russia inherited have been ruthlessly pruned over a period of about a year.

- No fewer than 580 units and sub-units have been disbanded (including the headquarters of five armies/corps, 12 divisions and 70 regiments/brigades). A further 134 have been reorganized and over 600 have been resubordinated.
- Thirty two airfields have been abandoned, as have several ranges, and 310 garrisons have been handed over to local authorities.
- The number of educational institutions has been reduced to ten; the Air Academy, an air defence and an air-engineering university and seven military colleges (now called institutes) where the courses are now reduced from five years to four.
- Unspecified but large numbers of aircraft have been scrapped or cannibalized. In June 1998, about half way through the downsizing process, approximately 600 aircraft “which are in demand” had been released for sale at very competitive prices: these included MiG-23s, MiG-27s, Su-22s, L-39s and transports. Older SAMs, such as S-125 and S-200 are also being put on the market.
- The personnel establishment has dropped from 318,000 in January 1998 (for both services) to a unified strength of 192,700: the final strength aimed at is to be 185,594. As of February 1999, 123,500 positions had been eliminated. All told, 41,350 service personnel have actually been made redundant and 3000 more are to go shortly, the total so far including about 20,500 officers and over 9,000 warrant officers (Russ: praporshchik) who have been transferred to the reserve. These numbers will, when complete, include 15 colonel generals, 54 other one and two stars and around 1,000 colonels.

Russian sources claim that these reforms and reductions have greatly improved the effectiveness of the Air Force. Instead of having a very large and largely ineffective force that cost a fortune to maintain, they suggest that they now have one that is smaller but capable of meeting operational requirements. In a carefully worded statement, General Kornukov has said that the Air Force has achieved the level “required for the efficient meeting of goals in repelling local and regional scale of aggression with the use of conventional arms.”⁸

- The Air Force is coy about its revised order of battle. “The numerical strength of the air fleet is even now quite enough to perform the majority of missions. Moreover, almost no hopelessly obsolete aircraft remain in

the inventory.”⁹ The author follows this cautious formulation by referring the reader to the “most authoritative foreign source”, the IISS “Military Balance”. He suggests that the accuracy of this information should be checked against the Air Force Main Staff assertion that the air fleet now comprises “37-38% fighter aviation, strike aviation 26-28%, frontal bomber aviation 16-17% and ground attack aviation 10-11%.” Annex A shows the breakdown of the Air Force according to the author’s interpretation of IISS data.

- Whereas the manning level of each separate force was previously at only 75% or so, the reduced establishment of the unified force is at 99%. It is also, to judge by the number of generals that have gone, a less top-heavy service. This should do something to improve promotion prospects and thus the career structure (an important reform that might improve the prospects of retaining competent officers).
- By reducing the numbers of aircraft in the active inventory, serviceability has been raised to 80%; prior to reform, it was only 45-50% for long-range aviation, 40-50% for frontal aviation, 60-65% for storm aviation and 40% for fighters.¹⁰ The battle readiness of the SAM force is said to be 95-96% and of the radio-technical troops 95-98%.
- The uniting of air and air defence forces undoubtedly makes sense. Previously, cooperation between the two was poor and would probably have resulted in under-utilisation of the latter’s resources in war. It would certainly have led to unaffordable loss of time in organising cooperation in situations where every second counted. Now, the maximum use can be made of all air and air-defence assets in an offensive-defensive mix according to a unified plan.
- According to Col Gen Kornukov, the reorganization, coupled with the re-equipping of some fighters so that they have a ground attack as well as an air to air role and the future introduction of a new multi-role aircraft will increase the capability of the Air Force to support the Ground Forces by a factor of up to 10%. The amalgamation will also increase capabilities for achieving air superiority by 20-25%. As so often with Russian claims, no explanation of the calculation is provided: presumably it is based on the greater synergy that will be achieved and on the conversion of some aircraft, especially MiG-29 (mentioned specifically) and Su-27 to add a ground attack to their air to air capability.¹¹
- The reduction in numbers is also to be compensated for by increasing strategic mobility, with long distance deployment using air-to-air refuelling now being occasionally practised.

THE WAY AHEAD

Col Gen Kornukov obviously believes – or hopes – that the considerable reform and downsizing of his service will not only obviate the need for future cuts but will, through the substantial savings made in running costs, free up money for a modernization and re-equipment programme and improvements in training.

He would like to change the balance of the Air Force. With bomber and ground attack aviation now comprising 26-28% to fighter aviation's 37-38%, the latter is 1.4 times stronger. Historical experience (and, presumably, operational analysis) suggests that this ratio is undesirable. He would like about one third of the Air Force to be able to strike ground targets. While the long-range aviation of the strategic air army can be called upon to support the ground forces, filling the gap, this could be considered a less than optimum use of such assets. As a stop-gap measure, the general favours conversion of the basic MiG-29 fighter to MiG-29UBT and MiG-29SMT standards to increase the aircraft's air to ground capability by a claimed factor of eight (see Annex B). Similarly, though later on, numbers of Su-27 will be upgraded to the Su-27IB version to form the basis of strike and reconnaissance aviation. Employment of air to surface PGMs will also greatly add to the effectiveness of air support to the ground forces, though their current lack of an all-weather capability and their enormous expense will limit their use to attacks on only the most important targets.¹² Work is also proceeding on the 5000 km range, stealthy Kh 101 cruise missile for long-range aviation.

As there is no realistic prospect of receiving funding for new aircraft before 2005, and even after that date money will be tight, faith is perforce being placed in upgrading existing models. The MiG-29 and Su-27 have already been mentioned and after them the old Su-24 will be improved and the Su-25 and MiG-31 will be converted respectively to the SM/TM and BM versions (see Annex B). General Kornukov admits that this is in essence a stop-gap solution. "Already we are lagging behind and we are not going to hide this....(But) we should bear in mind that existing weapons will serve us well until 2005-2007. The weapons are in reliable hands. Of course we would like these hands to be more confident and we would like our people to have more flying and shooting practice. Nevertheless, what we do now is adequate." The C-in-C believes that good designs are already available and only require the money to begin production or, in more advanced cases, perfection. In accordance with the principle of reducing to a minimum the types of aircraft fielded, "There will be one multi-role aircraft, you can call it the Su-34. It has been built and is being tested. It will be the main aircraft of the Air Force. There will be one training aircraft if MiG and Yakovlev-Dondukov design bureaux come to terms."¹³ There will be two SAM complexes, one for short and medium range and one for long range but with short range capabilities as well.¹⁴ The latter, in the form of the S-400 Triumph (with a 400 km range and an advanced ABM capability) has already been chosen. And looking further into the future, there will be "scientific research studies to determine the potential capabilities of the MFI (multi-role) fighter aircraft – the most advanced aircraft of the early 21st Century – to accomplish the support of the troops (within the framework of existing financial possibilities)".¹⁵

PROBLEMS AND PITFALLS

General Kornukov's claim that his aircraft are in "reliable hands" is actually belied by the clear evidence of inadequate training standards. For some considerable time, average flying hours *per annum* have been too low to maintain flying, let alone tactical, proficiency. The Air Force annual average is 21 hours: worst off is frontal (tactical) aviation with 10 hours; strike and long-range aviation managed respectively 20 and 21 hours; transport aviation flew 63 hours for the Air Force but that excludes commercial flying. The necessary minimum is said to be 80 hours a year, though professional airmen would put the figure at 150-180 and it is noted

that “advanced air forces” fly over 200. These averages conceal important differences. In order to preserve a limited combat capability, ie with each regiment having one squadron of pilots “capable of executing any mission,” cockpit hours are limited to experienced aircrew. Pilots 3rd class mostly do not fly, having to content themselves with often inadequate simulators.¹⁶ Presumably, such pilots would need to be virtually retrained to perform combat tasks in any other than the least demanding environment. It is planned to raise the average, Air Force-wide hours to 28. This will be possible with the reduction in aircrew and the numbers of aircraft, but fuel and possibly spares shortages will continue to be limiting factors and in any case this number will still be too small. It is likely that the accident rate in the Russian Air Force will continue to exceed those of the West in consequence. In 1998, the head of the air safety service said that the Russian Air Force suffered 36 air disasters in which 276 people were killed: the Russians, he wrote, have a crash every 25-30,000 flying hours compared with the USAF rate of one per 80-100,000 hours. Between 60% and 70% of the Russian accidents were ascribed to human error and lack of flying time.¹⁷

Despite General Kornukov’s qualified assurance to the contrary, there must be some doubt about the Air Force’s ability to keep its aircraft in the air. Deliveries of new aircraft have fallen rapidly since the demise of the Soviet Union. Since 1994, the Air Force has received precisely two Su-25TM. Now, Soviet aircraft, like other military equipment, were designed for a much shorter life span than western equivalents: after all, their life was likely to be short in wartime, and the USSR was geared to fight a major war at short notice. Thus, to take a concrete example, the MiG-29’s engine has a warrantied life of only 2000 hours compared with the F-16’s (its nearest western counterpart’s) life of 8000 hours. When the MiG was nearing the end of this period, it was sent back to the factory for a refit and up-grade which amounted to remanufacture. This expensive depot-maintenance system has broken down with the demise of the Soviet Union and the consequent massive reduction in defence spending. For this reason, “the basic mass of aircraft will reach the end of their life between the years 2000 and 2005.”¹⁸ Of course, the rate at which its aircraft wear out will depend on the usage to which the Russian Air Force subjects them. If financial and other constraints were lifted and aircrew were able to fly say the 150-170 hours *per annum* regarded by professionals as necessary to combat efficiency¹⁹, then they will reach the end of their engines’ designed life much faster than they are at current sortie rates. Continued use thereafter will result in a sharp rise in the rate of failures and very considerable expense.

Plainly, given the limited design life of its Soviet-era aircraft, the Russian Air Force needs the modernization programme that has been outlined above. That, however, can only be a palliative. Its equipment is approaching block obsolescence. Only 15% of its strength is fourth generation, while the USAF and other NATO air forces are already fielding the fifth generation with qualities of lower detectability, higher manoeuvrability and qualitatively better engines and on-board equipment and weapons.²⁰

There are also massive infrastructure problems to be overcome, problems which worsen the longer they are neglected. For instance, at least R4 billion initially and thereafter R370 million *per annum* is needed to repair and overhaul the 80 or so airfields that are left in military hands.²¹

The money is certainly not there now. The Air Force requested R13510 million from the 1998 budget but was allocated only R5455 million and received R101.3 million less than that: it was also promised that the R3200 million cost of the

reforms would be funded as a separate item but it only received R1400 million. Moreover, the Air Force's share of the defence budget has been in constant decline for almost a decade, from 20% in 1992 to 9% in 1998 (against a world trend to allocating 30% of defence expenditure to aviation).²² General Kornukov professes to believe that better times are just round the corner. The General Staff does not share his apparent optimism. A recent leaked study, "Forecast of the financial and economic support for the organizational development of the Russian armed forces for the period through 2010", pointed out that the promised 3.5% of GDP for defence would only enable Russia to support its 1.2 million man armed forces if economic growth reached and sustained the level of 8-10% per annum. With a growth rate of only 0.5-1.5%, "optimistic in its own way", the country would have to halve its military strength or risk collapse: as is, with tax collection taking 15% of the (admittedly nominal) GDP, the armed forces are absorbing a quarter of it.²³

Even an economic miracle, of which there is no sign whatsoever, would not necessarily mean the immediate salvation of the Air Force. Russia has already sunk to the status of a second rank power in respect of aircraft production. Even between 1991 and 1996, output fell by 50% in respect of civilian aircraft and by 88-90% for military. With military demand so low, the output of scientific establishments reached a critical level which led to "the disintegration of scientific and industrial collectives whose development took decades." Experimental and design bureaux were working at 50% of their 1990 level with money shortages hindering the development of new aircraft and weapons. They no longer attracted young specialists who saw no future in them but only low pay (half the national average and one tenth that available in commercial enterprises).²⁴ The teams which for so long in the Soviet period successfully compensated for technological backwardness by clever design have now been scattered to the winds.²⁵ Their recreation would be difficult and could well prove to be impossible. Consequently, when those weapons and equipments that were already in the procurement pipeline come out the other end (finance permitting), prospects for the development of the next generation are bleak.

Shortage of money does not only impact on procurement and serviceability, of course. Pay has long been inadequate to attract and retain officers of reasonable quality. There were plans to increase position pay and allowances by 62% in January 1999 and rank pay by 100% by July 2000, but the former promise has already been broken like most of its predecessors and the latter looks dubious too.²⁶ Moreover, in mid-1998 there were still 30,263 Air Force personnel without apartments and about 10,000 were placed in sub-standard housing (never mind those made redundant who are entitled to accommodation on discharge). The average waiting time for a flat is 6-7 years.²⁷ Not surprisingly, morale is low in the face of poor conditions and the pervasive belief that neither the government nor society values or respects its armed forces and officer corps.

CONCLUSION

One can only admire the vigour and determination with which far-reaching reform has been implemented in Russian airpower. From comprising two top-heavy, inefficient, wasteful, largely non-cooperative services of dubious combat efficiency, it has, within little more than a year completed a transition to a single, leaner, more rationally organized, more combat capable single service. This does not, however, mean that it has been transformed. Much of the Soviet legacy still burdens the new

creation. On the personnel side, crime, corruption, dysfunctional interpersonal relations and low morale will continue to affect performance. Training opportunities and therefore standards are still woefully inadequate for all but a select few. The Soviet infrastructure designed to support largely offensive operations predominantly from now independent countries is inadequate within Russia itself to allow for the strategic mobility now seen to be so essential. Block obsolescence threatens the air fleet's viability and the prospects of adequate funding to resolve this problem in the foreseeable future are slight. Even if economic and political progress in Russia eventually make resources available, there must be some doubt about the ability of a fast-decaying military-industrial complex to revive and narrow the rapidly growing technological gap between Russia and the west. One wonders, too, if the operational and tactical concepts suitable for the enormous Soviet-Warsaw Pact forces' offensive strategy are appropriate to the much smaller Russian Air Force of the future: is this issue being faced?

It is possible to talk about reform in Russian airpower but not about its revival. In the air, as at sea and on the land, Russia's conventional forces are still weak. Consequently, reliance on the still relatively effective (though also decaying) nuclear forces will continue for both deterring and prosecuting any serious war. This reliance could be dangerous in a humiliated country which still hankers after great power status and which may well perceive a growing threat.

ENDNOTES

¹ Maj Gen IN Vorob'yev: "Principles of the foundation of a military doctrine" (Voyennaya Mysl' (VM) 11-12/1991).

² See, for instance, Chief of the General Staff Army Gen A Kvashnin in "Restructuring along Suvorov's principles" (Nezavisimoye Voyennoye Obozreniye (NVO) 26/1998). He points out the Russia has 15-20% of the World's predicted oil reserves, 42% of its gas, 43% of its coal and 25% of its timber. "Obtaining access to this potential is of strategic significance for the leading World powers, whose level of dependence on imports of energy and raw material is great and continuing to grow. The desire to lessen and in some way compensate for this dependence stimulates economic expansion. And that, as in the past, is based to a significant degree on military force, which many states still regard as perhaps the main argument. This is an important factor that simply cannot be disregarded."

³ AA Konovalov: "What Russia's nuclear policy should be" (Nezavisimaya Gazeta (NG), 4 July 1998).

⁴ Yu Golotyuk: "Moscow has adjusted its nuclear arguments, at least for the next 12 years". (Russkiy Telegraf, 4 July 1998.) The comment was made to the reporter by Kokoshin.

⁵ Col Gen AM Kornukov: "Win. Suppress. Support". (Armeyskiy Sbornik (AS), 12/1998.)

⁶ Kvashnin, op cit.

⁷ Details of the new organisation given in this section come from: Sergei Sokut: "The Russian Air Force achieved worthy results last year: unification with air defence permitted reducing forces and assets without detriment to the troops' combat effectiveness" (NVO 2/1999); an interview with the new Air Force Commander-in-Chief Col Gen AM Kornukov by Interfax, 10 June 1998.

⁸ Interview with Col Gen AM Kornukov by RIA news agency, 11 August 1999.

⁹ Sokut, ibid.

¹⁰ These figures are taken from Kornukov's Interfax interview, op cit. Sokut, ibid, says that "as of the year's end" (ie, 1998) serviceability was raised to 65-70% (85-90% for long range aviation. Russian statistics, like their Soviet predecessors, seem to be mutable.

¹¹ Col Gen AM Kornukov: "The theory of the structural development of the new Air Force" (NVO 10/1998). Sokut, op cit., quoting Kornukov, says "the primary slogan is, we need multi-functional aircraft. The Su-27IB ... is in first place here".

¹² Kornukov, AS, op cit.

¹³ Kornukov, Interfax interview, op cit. The warning that no new weapons could be fielded before 2005 was given by defence Minister Igor Sergeev in an Interfax interview on 8 February 1999: even then, they would depend on defence absorbing 3.5% of GDP, he said.

¹⁴ Kornukov, in another Interfax interview 11 March 1999.

¹⁵ Kornukov, AS, op cit.

¹⁶ Sokut, *ibid.*, Kornukov, in his 1998 Interfax interview, gives even lower figures for flying time: 5-8 hours in frontal aviation, 15-20 in long-range aviation and up to 50 for the transport pilots.

¹⁷ B Tumanov: "Paying for mistakes" (AS 10/1998).

¹⁸ Maj Gen VE Aleksandrov, Col V B Barayev and Lt Col A A Gerasimov: "The role of aviation in securing Russia's geopolitical interests" (VM 5/1996). According to Lt Gen A Ionov, only 40-50% of existing military aircraft will still be fit for service by 2001 unless funding is improved. (Radio Russia, 14 August 1999.)

¹⁹ Aleksandrov, et al, *ibid.*

²⁰ Aleksandrov, et al, *ibid.*

²¹ Maj Gen N Anisimov, Interfax of 22 May 1999.

²² Sokut, op cit. On the positive side, however, Gen Kornukov told Interfax on 11 March 1999, op cit, that the Air Force is now promised 15% of Russia's defence allocations. "Certainly it is not much, but if this sum is disbursed to us in full we shall be able to handle our tasks".

²³ Vadim Solovev: "Russian armed forces should be halved. Otherwise they will tragically collapse in the next few years" (NG 4 February 1999). It is worth noting that the 1999 budget allocates R9202 billion to defence, ie 2.43% of GDP, rather than the R107 billion which is the minimum necessary for even the reduced force structure to function according to S Mukhin: "Military budget 1999 as a mirror of the crisis" (NG, 4 December 1998).

²⁴ Aleksandrov, et al, op cit. The parlous plight of the military-industrial complex (VPK) is worthy of study in its own right. According to Vladimir Salo, the deputy minister for economics responsible for it, investment has fallen by 20%, 75% of the "active elements" are worn out, it is burdened by debts of R105.6 billion and is owed R25.5 billion by government (a sum equivalent to almost one quarter of the entire 1999 defence budget). See E Titova: "Who will press the button to annul debts to the VPK?" (Business Supplement to "Rossiskaya Gazeta", 16 January 1999.)

²⁵ See, for instance, the MiG-25. When, in 1976, US experts got to examine the Foxbat flown by the defector Snr Lt Belenko to Japan, they derided it for still relying on vacuum tube technology. But it was still the World's highest flying, fastest flying combat aircraft.

²⁶ To put pay scales in perspective, a senior lieutenant, senior pilot, is supposed, from 1 July 1999, to get R2713 per month and a Moscow bus driver gets R2500-4000.

²⁷ Kornukov Interfax interview of 19 June 1998, op cit.

ANNEX A: THE RUSSIAN AIR FORCE ORDER OF BATTLE

Long-range Aviation	191 (a)
<u>Strategic Aviation</u>	66
Tu-160	6
Tu-95MS	60
<u>Long-range bomber Tu-23M3</u>	125
<u>Tanker Aircraft Il-78</u>	20
Frontal Aviation	over 1800 (b)
<u>Strike Aviation</u>	725
Front bomber Su-24	475
Strike aircraft Su-25	250
<u>Frontal Fighter Aviation</u>	415
MiG-29	315
Su-27	100
<u>Reconnaissance Aviation</u>	200
MiG-25R	40
Su-24MR	160
Air Defence Aviation	965 (c)
MiG-31	425
Su-27	275
MiG-23	100
AWACS A-50	20
Military Transport Aviation	340 (d)

Notes

(a) Heavy bombers outside line units: in test units, design bureaux or plants – 8 Tu-95, 6 Tu-160; written off, in store – 40 Tu-22M2; awaiting cutting – 92 Tu-22; in training units – 5 Tu-95, 10 Tu-22M. According to ITAR-TASS, 7 August 1999, 8 Tu-160 will be purchased from Ukraine (paid for through some relief of Ukraine's energy debt) in September 1999; the further acquisition of 10 Tu-95MCs is contemplated.

(b) Total number of frontal aviation aircraft includes around 250 MiG-29, Su-24, Su-25 and Su-27 which are part of conversion training and combat application centres. In addition, up to 1000 MiG-23, MiG-27 and Su-22 are in store.

(c) Total number of combat aircraft includes 165 MiG-23 in the inventory of military colleges. In addition, around 300 MiG-23 and MiG-25 are in store.

(d) In addition up to 250 passenger and transport aircraft are in separate units outside Military Transport Aviation.

ANNEX B: UP-GRADING OF KEY AIRCRAFT

Su-25SM²⁸

The Su-25 was developed and built in the mid '70s as a ground attack aircraft to operate up to 100 km in the enemy's depth in a hostile air environment and VFR conditions. It supplemented the Su-17M, Su-24, MiG-27 and Tu-22 and would be provided with top cover by MiG-21s and MiG-23s. Conditions have changed. The ground-based threat has increased with the deployment of AAA larger than 20mm and the spread of new SAMs like Strela, Igla and Stinger. There has been a shift to the market economy. The Air Force has been downsized. And the threat has changed from being global to being regional/local. In this new environment, the Su-25 is becoming the main ground attack aircraft in local wars and the demands on it are changing. Its tasks are now said to be:-

- Ground attack in VFR and IFR conditions, by day and by night;
- SEAD and attacks on enemy C2 systems;
- Precision strikes;
- Escort for other Su-25s;
- The defence of home airfields;
- Air-to-air engagements with enemy helicopters, transport aircraft and tactical aviation;
- Close air support for airborne assaults;
- Attacking enemy airborne, airmobile and amphibious units;
- Attacking enemy naval units up to destroyer-size;
- Flight training.

The basic Su-25 cannot adequately cope with these tasks, which broaden the range of its application. A new build (of the Su-25TM) is out of the question for financial reasons. The Air Force is therefore going for an upgrade of its existing fleet. (With a service life of 3,000 hours, a Su-25 could expect to fly for 25 years at a rate of 110-120 hours *per annum*, but, of course, flying time has been drastically reduced for many years now so there is plenty of life left in the basic aircraft.) Work on the Su-25SM began in 1998. The modernization programme involves the total replacement of the old avionics package, the reconfiguration of the cockpit and the introduction of PGMs. New features will include the following improvements.

- The "Pantera" on board system, using a high-performance digital computer. This will offer: a tenfold increase in navigational accuracy, making accurate attacks possible in a single pass; the maximum automation of target search, identification and engagement; the use of laser and TV-guided PGMs; new modes of attack with standard weapons (including blind bombing); the use of various types of weapons in a single attack; the reduction of pilot workload through the "installation of a modern data display and control suite and the automation of combat use modes."
- The RLPK-25SM radar sighting system based on the "Kopyo" radar. In its air-to-air role, the Kopyo can track eight targets and enable two to be engaged simultaneously to a range of 57 km.
- A pod mounted ECM package will be available, comprising an ESM and target designation system and active jammers.
- The automation of the input of flight data (navigational and combat) and automated monitoring of the serviceability of on-board systems will reduce man hours spent on maintenance by 25-30% compared with the basic Su-25.

The upgrade is expected to more than double the effectiveness of the aircraft for the modest price of \$2.5-3 million a copy. The Russians hope that other user countries could be interested in improving their Su-25s too; over 400 have been sold abroad.

MiG-29SMT²⁹

As a fourth generation fighter, the MiG-29 is claimed to be somewhat better in close combat than the F-15C, 15% better than the F-16 and 40% superior to Mirage 2000; in long-range battle, it is supposedly 20% better than Mirage 2000 and overwhelmingly superior to the F-16.³⁰ However, other countries are modernizing their fighters and even introducing the fifth generation, so this performance is not adequate for the future. Moreover, with the Air Force being downsized, it is no longer acceptable to have a tactical aviation fighter with only a limited performance in the ground role. A new aircraft is not yet affordable.³¹ Therefore, investment will be put into upgrading the MiG-29 to the SMT version, with fifth generation avionics, or perhaps to something less but ensuring the same capability at a cost less than the \$4 million per copy that the SMT variant will cost. The main emphasis will be in making the aircraft truly multi-role.

Some of the salient characteristics of the MiG-29SMT are as follows.

- The ferry range will be increased to 2400 km (3500 km with external tanks), making it comparable to heavy aircraft such as Su-27. Combat radius will become 1550 km in the air-to-air role and 1100 km in the ground attack role. The number of wing hard points will also be increased from three to four in order to allow for the fitting of external fuel tanks without reducing the combat load. This removes the main criticism of the MiG-29 – lack of range.
- The N-019MP radar will be modernized, introducing a mapping mode based on the synthetic aperture principle to increase the accuracy of guidance. The radar works in the centimetric waveband, so it will be unaffected by precipitation, making it all-weather capable. It will have an MTI mode capable of detecting even small targets moving as slowly as 15 kph.
- The ground attack capability will be enhanced in other ways. Target data received in real time from the Ground CP (eg, from a recce aircraft) can be transmitted to an attacking MiG and missiles launched and guided to the target without the intervention of the pilot. This greatly increases both survivability and effectiveness against ground targets as the aircraft need no longer reduce speed at low level in order to identify and engage the target in a single pass. The aircraft can deliver the Kh-31A PGM or the Kh-31P ARM.
- The MiG-29SMT can be used to fly reconnaissance missions with a real-time data link to the ground, either direct or via satellite or an A-50 AWACS. The ground controller can place a marker on the cockpit's TV screen where he wants a higher definition picture and the pilot can accordingly reduce the area of radar coverage down from 77x77, through 50x50 and 24x24 to 15x15 km square. When employed in the reconnaissance role, the aircraft needs no escort as it is fully capable of self-defence.
- "With regard to air-to-air missions, dual-target operation has been retained, as is the full missile potential (ie, the RVV-AE active radar missile, the R-73 missile, etc.)"
- "Regata" diagnostic equipment will be fitted so that it will be possible to determine when servicing becomes necessary rather than, as previously, automatically sending the aircraft back to the factory after a given number of hours.

- The radar cross-section can be reduced by a factor of ten to one square metre by applying a new protective coating.

It has been decided not to go down the route of seeking super-manoeuvrability. This is not, it is said, purely on cost grounds. "New equipment changes the ideology of combat." Previously, the search for greater manoeuvrability was driven by the need to get on to the enemy's tail. This is now less necessary as AAMs like the R-73, guided by a helmet-mounted target-designator, will go where you want them to go. With the possibility of all-aspect attacks, it is not cost-effective to fit TVC engines to give super-manoeuvrability as this is useful only on limited occasions.

An order for modernizing in-service MiG-29s has been confirmed by the MoD, although there are (as always) difficulties with funding. "The original decision envisaged the production of 10-15 MiG-29SMT this year, but realistically the number is likely to be about five."³²

The electronic intelligence of the MiG-29SMT will enable it to accept any missile, including foreign ones. This will make the upgrade attractive to countries which have already purchased MiG-29s.

MiG-31M

In respect of its flight and technical characteristics, the MiG-31 is not outstanding, being heavy and difficult to handle. However, its on-board systems and weapons, it is said, make it the best interceptor in the world, and the only one that can engage a small target like a cruise missile against the earth's background. Moreover a command MiG-31M has the capability to control up to five flights of four aircraft in a mini-AWACS role if airborne or ground-based C3 systems are down or unavailable; the capability is adequate for combating bomber aviation (the MiG-31's role), if not for coping with the complexities of the air superiority battle. Several hundred are in service, so it is worth modernizing them to the M variant (which is more or less ready). It needs a ground mapping radar and missiles with a range of 200 km.³³

ENDNOTES

²⁸ Technical detail from Aviapanorama, Jan-Feb 1999.

²⁹ Technical detail from Aviarynok, February 1998.

³⁰ Russia's Arms Catalogue, Volume II.

³¹ In an interview for Vestnik Vozdushnogo Flota (VVF), Mar-April 1998, Gen Kornukov said that the fifth generation Su-34 could become the basis of frontal aviation, but no deliveries of any new aircraft at all could start before 2001. In another VVF interview (Nov-Dec 1998), he said of MiG's "virtually sixth generation" MFI: "Whether or not it will be taken into service is a matter for the future, but it will be developed and tested come what may. If everything goes according to plan, the aircraft could be up in 10-12 years time". The Air Force is even less encouraging about Sukhoi's experimental fifth generation S-37, first flight tested in September 1997. The programme has been dismissed as "not a priority" and "pushing ahead with this aircraft is unjustified". (Aviarynok, February 1998.)

³² NVO 26/1998.

³³ Aviarynok, February 1998.

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