

Air Power and the Russian-Georgian conflict of 2008: lessons learned and Russian military reforms

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Russia's short war with Georgia, in August 2008, resulted in a rapid military victory, which surprised many observers and experts. Russia's use of airpower proved a significant factor in achieving its operational goals in what the Russian government described as its 'peace enforcement operation,' including driving Georgia's armed forces from South Ossetia and simultaneously securing Abkhazia. Nevertheless, within only two months Russia had elaborated a far reaching and ambitious military reform and modernization agenda partly reflecting its 'lessons learned' from the campaign in the South Caucasus. The authors examine Russian airpower in the Georgia war in the context of reform plans that also have implications for Russia's future use of airpower in conflict. It highlights some of the operational failings of Russian airpower, what air force commanders identified as the most pressing priorities in enhancing air capabilities, and questions some of the underlying assumptions in this reform process.

The August 2008 military conflict between Russia and Georgia over Georgia's breakaway republics of South Ossetia and Abkhazia marked Russia's first large-scale military operation outside its boundaries since the dissolution of the Soviet Union in December 1991.



Russian IL-76 Medium-Range Transport Aircraft used to carry troops to Sukhumi and Abkhazia

The operation involved the deployment and effective use of naval, land and air assets, each playing an important role in Russia's resounding defeat of the Georgian military. Air power, by crushing Georgian air assets and installations and other key targets, assured Russia control of the land battle. This article discusses the use of air power by Russia, the lessons it has learned from its conflict with Georgia, and the way ahead for Russian military reform as it impacts on the air force.

The use of air power prior to August 2008

Russia's alleged first use of air power against Georgia dates back to 1992, when the conflict between Georgia and its breakaway republic of Abkhazia erupted. While the use of air power was negligible and

indecisive throughout the 13-month conflict, the few Su-25 and Su-27 combat aircraft which flew caused a stir because they were believed, by Georgia, to belong to the Russian Air Force (*Voyenno-Vozdushnyye Sily* – VVS) or at least to be piloted by Russian pilots. Abkhazia's Gudauta air base was then assumed to be under the control of Russia, just as it was assumed in August 2008 despite a Conventional Treaty in Europe (CFE) commitment to have it closed by 2001.¹ On 19 August 1993, a Georgian SA-2 surface-to-air missile brought down a Russian Su-27 fighter aircraft near Gudauta.²

After the cease-fires in South Ossetia and Abkhazia of the early 1990s, and the deployment of Commonwealth of Independent States (CIS) Collective Peacekeeping Forces (mainly Russian) in the Georgian-Abkhaz conflict zone, and Russian, Georgian and Ossetian Joint Peacekeeping Forces in South Ossetia, sporadic skirmishes and incidents continued, but few of them involved the use of air power. Between 1999 and 2004, however, the Organization for Security and Cooperation in Europe (OSCE) observed and corroborated a number of Russian aerial incursions over Georgia's territory. In September 2002, Russia even took the step of reinforcing its fleet of fighter aircraft and bombers in the North Caucasus Military District base of Mozdok as a brief show of force and a threat of intervention against Chechens in Georgia's then uncontrolled Pankisi Gorge region.³ Equally controversial and alarming, in August 2007 a Russian aircraft was believed to have dropped an air-to-surface anti-radar missile from an Su-24 ground-attack

aircraft, which the United States believed was targeted at a Georgian radar station. Russia disagreed with this interpretation, noting a lack of evidence.⁴



MiG-29 Fulcrum

2008 proved to be a turning point in the use of air power. Russia, certainly dissatisfied with the prospects of Georgia one day joining NATO, independence being granted to Kosovo, and an increased level of Georgian bellicosity toward Russia, used air power in a manner that led to a build up of tension between Georgia and Russia. Georgia, intent on regaining its full and complete sovereignty and control over its two breakaway republics, also increased its military pressure on Abkhaz and South Ossetian military and paramilitary forces through the use of air power. Aerial incursions, for example, were reported by both sides. On 5 April, two Georgian Su-25 ground-attack aircraft, observed by the United Nations Observer Mission in Georgia (UNIMOG), flew over the Abkhaz-controlled zone. Local Abkhaz observers reported other aircraft sightings to UNIMOG on 13, 16

and 20 April, and 17 May. On 8 July, four Russian fighter aircraft briefly overflew South Ossetia in an effort, the Russian Foreign Affairs Ministry stated, to “cool heads in Tbilisi and to prevent a military scenario from unfolding.” Prior to the overflight, Georgian President Mikheil Saakashvili had issued an ultimatum to Russia asking for its release of four Georgian soldiers of the Joint Peacekeeping Forces, to which Russia acquiesced. Georgia interpreted the overflight, which coincided with a visit to Tbilisi by U.S. Secretary of State Condoleezza Rice, as a violation of its territorial integrity, and recalled its ambassador to Russia for consultations.⁵ The United States agreed with Georgia, calling Russia’s action a threat “to stability throughout the entire region.”⁶

Georgian unmanned aerial vehicles (UAVs) conducting reconnaissance missions over the conflict zones, Abkhazia or South Ossetia were also a serious point of contention between Georgia, Russia and local separatist authorities. Between August 2007 and June 2008, the local Abkhaz authorities reported several instances of UAVs flying over the territory under their effective control, and claimed to have shot down up to seven Georgian UAVs. UNIMOG confirmed that, in 2008, Georgia flew UAVs on 18 March, 20 April, 4, 8 and 12 May, and that three of the UAVs – Israeli-made Hermes 450, were shot down, the second one either by a Russian MiG-29 or an Su-27 aircraft using a Vympel R-73 air-to-air missile on 20 April. The Georgian reconnaissance missions and the Abkhaz and Russian air defence actions were both considered by the United Nations to be violations of the

ceasefire regime in place.⁷

Adding to the tension build up, in July Russia carried out exercise *Caucasus 2008*, which featured Russian land, sea and air forces counterattacking unnamed forces that had attacked Abkhazia and South Ossetia, a very useful rehearsal for what was to follow if there ever was one. As a matter of course, Georgia thought the scenario provocative and threatening.⁸ On 6 August, six of Georgia's military aircraft (Su-25s and perhaps a couple of L-39 Albatros jet trainers) flew a reconnaissance mission over South Ossetia, which was seen by the *de facto* South Ossetian leadership as a prelude to a Georgian military offensive against the breakaway region.⁹



Map of Georgia

The use of air power during the five-day conflict

From 8 to 12 August, the Russian air force carried out a few hundred offensive sorties over Georgia (including both breakaway republics) using mainly three types of aircraft: Su-24M frontal bombers, Su-25 ground-attack aircraft, and Tu-22M3

long-range bombers. Targets were carefully selected to avoid unnecessary damage to Georgia's critical infrastructure, transport, communications and civilian industry;¹⁰ however, collateral damage and civilian casualties were caused by aerial bombing. Georgia, which was first to use air power, was severely limited in what it could do due to the small size of its air force and the overwhelming superiority, in comparative terms, of the Russian air force.

Georgia's Su-25s (not much more than a handful) bombed the South Ossetian capital of Tskhinvali at the very beginning of hostilities. At 0800 on 8 August, they bombed the Russian peacekeeping force building

in Yuzni, close to Tbilisi, where they reportedly killed up to 15 Russian servicemen. At around 1230, they hit Dzhava, a small South Ossetian village where notable South Ossetian officials were believed to be. The following day, at around 1330, they attempted to bomb the strategically important Roki tunnel, which links Georgia (South Ossetia) to Russia (North Ossetia), but failed and

lost a second Su-25 since the conflict started. They tried to hit the Roki tunnel again on the 11th, but without any success and this resulted in the loss of an additional Su-25. These, incidentally, were the major aerial engagements of the Georgian air force throughout the five-day conflict.¹¹ As Mark Geleotti later observed, "Russia's rapid assertion of complete air superiority prevented

manned reconnaissance flights and also constrained [Georgia's] use of drones."¹² Russia, however, did not achieve air dominance, as its losses (it officially admitted to the loss of four military aircraft, whereas Georgia claims to have shot down ten or more) adequately attest.¹³

In the absence of any interceptor aircraft, Georgia was heavily dependent on its air defence forces to prevent the Russian air force from achieving air dominance. Thus, air defence had been Georgia's major preoccupation since 1999, when Russian aerial incursions really picked up.¹⁴ In 2003, it started acquiring new air defence systems and modernizing its current capabilities. Ukraine was the key provider on both fronts, providing Georgia with at least one Kolchuga-M passive electronic monitoring radar system, new mobile 3-D air surveillance 36D6-M radars (which Georgia deployed in Tbilisi and Savshevebi, near Gori), upgraded four P-18 Spoon Rest air surveillance radars to the 2-D P-180U version (which Georgia deployed in Alekseyevka, near Tbilisi, Marneuli, Poti, and Batumi), and SA-8 mobile surface-to-air missile (SAM) systems to supplement its ageing Soviet-era systems. Ukraine also modernized Georgia's SA-3 surface-to-air missiles that were deployed in Tbilisi, Poti and elsewhere, and later sold Georgia sufficient Buk-M1 (SA-11) low- to high-altitude self-propelled SAM systems – along with 48 9 38 1 missiles – to equip a battalion of three batteries, each with two self-propelled launcher mounts and one self-propelled loader-launcher. The SA-11s, along with Osa-AK (SA-8B) low-altitude SAM systems and

associated launchers (two batteries' worth) also acquired from Ukraine, were positioned by the Georgian air force in Gori, Senaki, and Kutaisi. Georgia's 2006 setting up in Tbilisi of an Air Sovereignty Operations Centre linking its Kolchuga-M and four civilian air-traffic-control radar networks into a single early warning and command and control tactical system was greatly facilitated by Ukraine's Aerotehnika company.



Russian Mi-8 helicopter taking off

At the start of the conflict, Georgia also had in its inventory a variety of short-range systems in the forms of shoulder-fired missiles (e.g., SA-16) and anti-aircraft guns (e.g., ZU-23-2M and ZSU-23-4 23mm guns), and a few systems believed by Russia to have been provided by Israel (the Spyder-SR short-range self-propelled SAM system) and Turkey (Skywatcher army air-defence early-warning and command and control tactical system). Taken together, Georgia's effort at developing an effective air defence system were taken seriously by Russia and Georgia's air defence assets were targeted accordingly throughout the conflict. During the conflict itself, in the absence of full

spectrum air defences Georgian personnel may have been switching off radars, to avoid detection by Russian aircraft, replicating a tactic first seen in the Balkans in the 1990s. As Said Aminov aptly noted, however, in *Moscow Defense Brief* after the conflict, 'the air-defence system of Georgian attack groups was about the equivalent of a best frontline Soviet divisions during the late 1980s - early 1990s.'¹⁵

Russian air missions started on the morning of 8 August, and involved units of the 4th Army of Air Forces and Air Defence, including the 559th Bomber Aviation (Su-24-equipped), 959th Bomber Aviation (Su-24), 368th Assault Aviation (Su-25), 461st Assault Aviation (Su-25), 960th Assault Aviation (Su-25), as well as 3rd Fighter Aviation (Su-27), 19th Fighter Aviation (MiG-29) and 31st Fighter Aviation (MiG-29) regiments. The 55th (Mi-8, Mi-24) and 487th (Mi-8, Mi-24) Helicopter Regiments also took part in operations.¹⁶ At 0945, Russian aircraft dropped five guided bombs on a Georgian military radar near Shavshebi, north west of Gori (which it attacked again on the 10th at 1145, and the 11th at 0030), and at 1057 three more guided bombs on Georgian military-related facilities, again not far from Gori. At around 1030, Su-24M tactical bombers struck at Georgian ground troops to prevent them from reaching and blocking the Roki tunnel linking Russia to Georgia's South Ossetia breakaway region.¹⁷ Russian aircraft also targeted airfields used by the Georgian air force. On the 8th, they hit Vaziana at 1515, 1700 and yet again at 1730, and Marneuli and Bolnisi, near Tbilisi, at 1630, resulting in the destruction of three Georgian An-2 light transport

aircraft and two L-39 Albatros jet trainers. On the 9th at 1022, they hit Gori, where several helicopters were destroyed, five individuals killed and 26 injured, and, between 1630 and 1730, Marneuli and Bolsini again. Military-related installations in Gori were hit on the 10th at 1000, and so was Vaziani at 0500, where nine individuals lost their lives, and military installations at Gardabani. That day at 0545, and again at 1910, the JSC Tbilviamsherni aircraft final assembly plant (for the Su-25) in Tbilisi was hit by three aerial bombs.¹⁸

On the 9th at 0012 and 0100, aerial bombings were reported in Poti on the Black Sea coast, causing damage to several naval platforms. The Vaziani (at 0020) and Senaki (at 0017) bases were hit too, causing the death of six individuals and injuries to 30 others in the attack against the latter. Gatchiani, located near the Baku-Tbilisi-Ceyhan pipeline, was hit as well by Russian aircraft. The following day, the Russian air force revisited Gori, Poti and Senaki with more aerial bombings.¹⁹ Early on the morning of the 11th, Russian aircraft hit several targets, including several deep inside Georgian territory. At 0305 and 0430, they hit several targets in Batumi, on the Black Sea coast, including Georgia's air command centre, and at 0312 the Georgian military base at Khelvachauri, near the Turkish border. Air attacks were also conducted against a civilian radar near Leninisi at 0437, the Shiraki base at 0500, Georgian tanks in Gori at 0610, the Senaki base at 0715, and the radar at Tbilisi airport and military targets in Gori, the Kodori Gorge and Poti from 0955 on. On 12 August, the last day of open engagements, only Ruisi, a village

to the north west of Gori where Georgian troops were located, was being targeted by Russian aircraft.²⁰

In the final phase of combat operations in South Ossetia, the Russian air force supported ground forces who made effective use of the Uragan MLRS and the Tochka-U missiles and also, possibly, the Smerch MLRS for attacks on Georgian positions in South Ossetia. This operational synergy inflicted sufficient losses on the Georgian troops to bring about their rapid “demoralization and retreat.”²¹ Russia’s General Staff commended the 76th Pskov airborne personnel operating in South Ossetia, and are consequently promoting the further strengthening of air assault battalions and considering giving the airborne troops their own aviation.²² In fact, to fully equip, transport, and coordinate the deployment and integration of these troops into combat operations alongside the 58th Army units represented a demonstration of not only long-range airlift capability involving over 100 airlift sorties, it also revealed improved command and staff arrangements, which had often challenged Russia’s armed forces during the conflicts of the 1990s.²³

In Abkhazia, where Russia unexpectedly opened a second front, air power played a much smaller role, specifically in the capture of the Georgian-controlled Kodori Gorge by Abkhazian and Russian forces. On the early afternoon of 9 August, Russian aircraft provided support to the Abkhaz forces making their way to the Kodori Gorge; they bombed Georgian positions in two villages, Sakeni and Bas-Kvaptchana, in the

Upper Kodori Valley.²⁴ On the 10th, at 0740 and 0845, the Russian Air Force reportedly hit a Georgian signals unit in the village of Urta, and several targets in the Zugdidi district.²⁵ The Kodori Gorge itself was bombed on the 10th and 11th as well.²⁶

In the judgment of the International Crisis Group, Russia’s bombing activities, which caused the collateral deaths of innocent civilians, ‘went well beyond the necessary minimum.’²⁷ One obvious problem was Russia’s use of cluster munitions.²⁸ A non-signatory of the recently adopted Convention on Cluster Munitions, Russia did not refrain from using such munitions against Georgia; so did Georgia, also a non-signatory. While Georgia acknowledged using Israeli bomblets, Russia denied using cluster munitions of any kind. Human Rights Watch investigators, however, found several Russian air-launched AO-2.5 RTM bomblets in Georgian villages.²⁹ To add further credibility to Human Rights Watch’s findings, the Netherlands Ministry of Foreign Affairs officially reported that Gori had been targeted by at least two SS-26 Iskander tactical ballistic missiles, each armed with a cluster warhead containing ten sub-munitions.³⁰

Damage caused by the conflict in Georgia is estimated to exceed US\$1 billion. Georgia lost control over the Upper Kodori Valley and suffered severe military losses, including about a quarter of its main battle tanks, up to 15 naval vessels, a significant portion of its air force assets (Russia claimed to have shot down three of Georgia’s Su-25s) including the bulk of its military and civilian radars, and

186 military personnel, although it is not clear which assets and lives were specifically lost to air attacks and bombardment.³¹ According to most accounts, the major oil (the Baku-Tbilisi-Ceyhan and the Baku-Tbilisi-Supsa) and gas (the Baku-Tbilisi-Erzurum) pipelines transiting Georgia were not hit during the conflict, although there were voluntary and precautionary shutdowns. Georgia, however, reported direct air attacks against the Baku-Tbilisi-Ceyhan pipeline, which could not be proven. The vulnerability of the pipelines transiting Georgia, and Russia's opposition, is likely to affect plans to add new pipelines.³²

Damage to Russia was limited to the military forces engaged in the conflict. Georgia's acquisition of new air defence systems and the modernization of older ones proved its worth – and were perhaps underestimated by Russia – even though Georgian systems could not adequately and entirely cover the country's airspace.³³ Georgian military changes since 2003, however, proved sufficient to deny Russia full air dominance over Georgia. Officially, Russia admitted to the loss of four military aircraft, three Su-25s and one Tu-22M3R, most likely to surface-to-air missiles.³⁴ Details are sketchy:

- On 9 August, an Su-25 piloted by Colonel Sergey Kobylash, a regiment commander, was shot down by a Georgian air defence missile. Kobylash ejected safely.
- The same day a Georgian SA-11 radar-guided surface-to-air missile brought down a Tu-22M3R Backfire bomber

that was being used for reconnaissance purposes near Gori.³⁵ The navigator was killed, but the pilot, Colonel Igor Zinov, survived and was shown in his hospital bed by the Georgian media.

Reportedly, all crew members were instructors from the Valery Chkalov main flight-test center at Akhtubinsk, recruited due to a shortage of ready and qualified pilots.³⁶ Zinov and other Russian servicemen were eventually exchanged for 15 Georgian soldiers.

- The last two Su-25s were shot down on 11 August, probably by surface-to-air missiles.

The overall number of aircraft Russia lost has been challenged by Georgia, which claimed to have shot down between a dozen to over a hundred, depending on the source consulted. Mikhail Barabanov, writing in *Moscow Defense Brief*, and perhaps a more credible source than Georgian officials, argues that Russia effectively lost seven aircraft: one Tu-22M3 long-range bomber, one Su-24M Fencer frontal bomber, one Su-24MR Fencer E reconnaissance aircraft, and four Su-25 attack planes.³⁷ Part of Georgia's success at eliminating Russian aircraft from the sky, according to Barabanov, can be attributed to its effective use of its Kolchuga-M passive radar systems and sound tactical use of its Buk-M1 and Osa-AK SAM systems (this is certainly in contrast to the poor performance of its land forces). Buk-M1 SAMs may indeed have succeeded in taking out no less than three Su-25s and the Tu-22M3, and

the Osa-AK the two Su-24s (Russian officials think that the Buk-M1 was responsible for the acknowledged loss of its four aircraft) – while the fourth Su-25s could have been hit by a Russian shoulder-fired missile by mistake.³⁸

That Georgian air defence systems played such a significant role in the conflict before, for all intent and purposes, being taken out of commission can be explained by the fact that it was Russia's first experience in fighting against new generations, modern, CDS DQ – Is this correct? If it relates to the SAM systems it may be better to say '...fighting against so many new generation, modern SAM systems at once.' and so many SAM systems at once.³⁹ Even if Russia had had very experienced and accomplished combat pilots at hand, and the most modern and technologically advanced aircraft, aerial losses would still be expected. It remains, though, that poorly skilled pilots, bad tactics and old aircraft may have helped Georgian air defence scoring the successes it had.⁴⁰

Lessons learned and Russian military reforms

Russia's President, Dmitry Medvedev, despite the country's success in its military conflict with Georgia, met with senior Russian officers at the Dongus test ground, Orenburg Region, on 26 September 2008 and requested a "precise plan of action for the immediate future" by December 2008. He then set out five key areas for improvement:

1. All combat formations and troop units must be brought to permanent readiness status.

2. The effectiveness of command and control systems must be 'raised'.
3. The system of officer training and education and military science must be improved.
4. The armed forces must be equipped with 'the most modern weapons' with special attention focused on precision munitions.
5. Pay, housing and the social amenities for military personnel must be improved.⁴¹

Thus, on 14 October 2008, Russia's Minister of Defence, Anatoliy Serdyukov, announced the beginning of a 'new stage' in military reform. These reforms are so systemic, far reaching and ambitious that they arguably constitute the most radical reform of the Russian armed forces since 1945. Serdyukov's military reform will impact on the whole functional basis of the Russian military, ranging from the command and control bodies to the officers training system and personnel numbers. In short, Russia aims to create a professional, permanent combat-ready army, designed for intervention in local conflicts rather than large-scale conventional operations. In doing this, it will move away from its traditional divisional-regimental structure to a brigade-based organization. This will be most apparent in abandoning its four-link command and control system (military district, army, division, regiment) to a new three-link structure (military district, operational command, brigade). These proposed changes, to take effect by 2012, are intended to enhance efficiency by streamlining

the multi-tiered system. Moreover, these reforms also envisage drastic officer cuts. By 2012, Russia's armed forces will be cut to one million servicemen, with around 150,000 serving officers.⁴²

Serdyukov's military reform plan foresees abolishing non-fully manned (cadre) units and switching instead to permanent-readiness units. Thus, the Russian armed forces will cease to be a mobilization-based organization. A key factor in these initiatives will be the streamlining of the officer caste and the strengthening of Russia's conventional military capabilities on the basis of rapid reaction forces within each of its six military districts. Although these plans were clearly under consideration before August 2008, the war in Georgia has had an impact on the precise nature of these military reform priorities. Russian combat operations in South Ossetia witnessed the use of five regimental tactical groups (that is, reinforced motorized-rifle regiments) from the 19th (North Ossetia) and 42nd (Chechnya) Motorized-Rifle Divisions. The command and control of this grouping was not carried out by divisional staffs or even by the staff of the 58th Army (Vladikavkaz), but directly by the staff of the North Caucasus MD using a specially formed group. Therefore, the three-link command and control structure announced as part of Serdyukov's military reforms appears to be a formalization of the scheme used in Georgia.⁴³

Many of these changes will have implications for future Russian air power, as well as revealing some of the weaknesses identified by the Russian planning staffs in the

performance of the VVS during the war in Georgia. Although rapid reaction forces continue to be a vital part of the future structure of the Russian armed forces, Serdyukov decided against forming independent rapid reaction forces, preferring instead to transform existing units. These units are the Airborne Troops (*Vozdushno Desantnye Voiska* – VDV), which 'acquitted themselves sufficiently effectively during the repelling of Georgian aggression in South Ossetia. It is another thing to strengthen such units: a VDV brigade will appear in every military district to carry out urgent missions and action in unpredictable circumstances,' Serdyukov confirmed. Thus, all four existing air-assault divisions in the VDV will survive the reforms, but will be redistributed among all six military districts.⁴⁴

Despite Russia's military leadership assessing the combat performance of its airborne forces highly during the war in Georgia, in August 2008, the MoD pressed for pushing through structural reforms that will see an airborne brigade placed in all six military districts; this will constitute Russia's future rapid reaction forces. Implementation of this reform involves disbanding one of the airborne divisions, the 106th in Tula, and distributing its regiments and subunits among the military districts, thus forming the nucleus of future airborne brigades. Therefore, although the 106th will be dissolved in 2009, this will not affect the manning levels of Russia's airborne troops, at around 25,000. Their unreformed structure in 2008 consisted of two airborne divisions (the 106th and 98th), the 76th Air Assault Division, the 31st Separate Air Assault Brigade,

and the 7th Mountain Division in the Airborne Troops' composition. The Tula Airborne Division consists of three regiments (including an artillery regiment), an air defence missile battery, and support units and subunits, with a total personnel strength of over 5,000 servicemen. Army General Nikolay Makarov, Chief of the General Staff (CGS), addressing foreign defence attachés at the Military Academy of the General Staff in Moscow on 10 December 2008, suggested the VDV may be 'cushioned' from this reform, allowing their traditional battalions and regiments to be preserved. Makarov said Army Aviation units will continue in their subordination to the Air Force, though this could change as a result of further alterations to reform plans, though he expressed his personal view that VDV should be transferred to the ground forces.⁴⁵ However, it is not clear where these newly formed brigades will be based, what their operational axis will cover, nor have the potential future sources of threat been clarified to merit this change in structuring. Until 2008, prior to initiating these changes, Russia's rapid reaction forces were based in European Russia, though in future they will be present even in the Siberian and Far East MDs to protect against unspecified threats. The MoD justify such plans in terms of 'optimizing' and forming a 'new look' Russian military.⁴⁶

Manning changes

Consistent with President Medvedev's reform agenda, in November 2008, the VVS announced its plans to eliminate all its divisions and regiments, replacing these with airbases on the basis of squadrons

and reducing its officer staff by 50,000 over a three-year period. By 2012, the VVS will eliminate the rank of ensign, while converting other management posts to civilian status. These changes came into effect on 1 December 2008, indicating the seriousness with which Russia's Defence Minister, Anatoliy Serdyukov, intends to push through such reforms. If implemented successfully, by 2012 the VVS will consist of a strategic-tactical command, strategic air command armed with nuclear weapons, military-transport air command and four air defence and antimissile commands. The existing 340 VVS units and formations will be cut to 180.⁴⁷ Corps and divisions of the Air Defence Forces (*Voiska Protivo-vosdushnoy Oborony* – PVO) will be reorganized into air-and-space defence brigades and the anti-aircraft missile brigades will also be reorganized into anti-aircraft missile regiments. These reforms will be augmented by reforming the supporting structures used to transport supplies to the forces, replacing the existing nine vehicular brigades with 20 battalions serving on constant alert. Although the overall nature of Medvedev's military reform programme is radical and far reaching, the VVS and VDV will arguably be the least affected. However, there are elements of the officer cuts and structural reorganization that will present problems if the reforms are to enhance the future combat readiness of Russia's Air Force. These range from the elimination of key officer and middle ranking posts, whether the MoD can adequately manage the transition to more efficient force structures and the State can afford

to invest in new procurement plans coupled with the social policies and career development that will support professionalising the various structures involved in Russia's air power capabilities.⁴⁸

Plans to eliminate warrant officers (*praporshchik*) from the Russian armed forces, in an attempt to streamline and reduce what Defence Minister Serdyukov describes as a management system resembling an egg with too many Lieutenant Colonels and Colonels in the middle layer, has provoked ongoing controversy within Russia, from both serving and retired officers alike. This is a particularly crucial reform affecting the VVS, since practically all aircraft technicians, for fighters, ground attack aircraft, and bombers, including strategic platforms, hold the rank of warrant officers. They have also comprised the main personnel of aviation's TECh (aircraft maintenance units). According to the military reform programme more than 100,000 warrant officer posts will be abolished, gradually introducing 'professional' sergeants to fulfil their duties. Opponents of the reform question whether the Russian state has either the funds, specialists or the even a well developed programme in place to achieve this transition successfully. In October 2008, when these radical changes were publicly announced, there was no Federal programme yet in place to facilitate the conversion of all sergeants and petty officers to a contract manning system.⁴⁹

Education

Russia's military reform programme will also have an impact on the

extensive and sprawling educational and training establishments used by the VVS. In an effort to streamline these establishments, Colonel-General Aleksandr Zelin, VVS Commander in Chief has said that in future all training and research for the VVS will be carried out by a single centre. On 4 November 2008, during a visit to the Krasnodar-based Air Force School, Colonel-General Zelin envisaged that in several years time it will be the only academy in Russia to train air force pilots. Zelin said: "A single research centre will be created to comprise all other educational establishments and research institutes, which will advance research and train personnel for the Air Force."⁵⁰ Education and training reform will therefore, concentrate on eliminating duplication, designed to serve a new and 'optimized' air force, but it will face challenges in managing and designing adequate training programmes for the new generation of 'professional sergeants' planned to replace the existing warrant officers.

While the reform of the officer caste throughout the armed forces will present organizational challenges, little thought or planning currently exists on how to recalibrate the development of a new mindset and military culture among the junior ranks; the manning systems used within NATO professional armed forces encourage problem solving and initiative further down the chain of command. In short, duties and responsibilities carried out by lower ranks within western models were being fulfilled by officers in the Russian model of personnel management. These changes will present operational difficulties

during the transition period, while Russian Ministry of Defence (MoD) officials may have underestimated the potential impact these reforms may have on the combat capabilities of the Russian military in the short-medium term, as such radical manning transformations usually demand a gradual introduction over a longer period of time.

Such plans to drastically reduce and streamline the VVS educational and training establishments are in stark contrast to the fortunes of the VDV, who appear to have gained more leniencies from the MoD as a result of the war in Georgia. The Ryazan Higher Airborne Troops Command School, celebrating its 90th anniversary in 2008, also admits cadets from throughout the former Soviet Union, China and Africa. Colonel Vladimir Lugovoy, head of the military school, confirmed in November 2008 that the rumoured relocation of the command school from Ryazan to Novosibirsk has been abandoned. This appears linked to the performance of the VDV in the Georgia war, when these troops were again so heavily relied upon by Moscow.⁵¹ Airborne Troops Commander, Lieutenant General Valeriy Yevtukhovich, reported to an extended meeting the VDV military council in Moscow on 18 November 2008, stating that formations and units of Airborne Troops have performed over 160,000 parachute drops in 2008. Colonel Aleksandr Cherednik, head of the VDV information and public relations service, singled out the 76th Airborne Assault Division headquartered in Pskov (commander – Major-General Aleksandr Kolpachenko) as the best formation of Airborne Troops (professionalized

manning), and in particular the division's 104th Airborne Assault Regiment (commander – Hero of Russia, Colonel Gennadiy Anashkin) as the best unit. According to him, the commander's report highlighted combat tasks performed by soldiers from formations and units of the VDV during the operation to 'repel Georgia's aggression in South Ossetia'. As Cherednik stressed:

*'The Airborne Troops Commander particularly noted the courage and heroism of airborne troopers who were among the first to arrive in Tskhinvali to help Russian peacekeepers, their humane treatment of the Georgian population as well as of Georgian prisoners of war.'*⁵²

Russia's VVS on the eve of conflict with Georgia

Russian military authorities, perhaps in support of such ambitious reform programmes, have been much more openly critical of deep social problems existing within the VVS. As many as one in four conscripts who reported for service in the Air Force in autumn 2008 were raised in a single-parent family, while one in 10 had used drugs before service, according to Lieutenant Colonel Vladimir Drik, aide to the Air Force commander-in-chief. These issues were used to explain the alarmingly high proportion of suicidal conscripts serving in the Rostov Force and Air Defence Large Strategic Formation. "According to a survey conducted in the Rostov Air Force and Air Defence Large Strategic Formation, around 25 per cent of the conscripts are liable to commit suicide, or, as psychiatrists say, are at high risk of suicide," said Drik.⁵³ He said about a quarter of these conscripts grew up

without a father or a mother, while 10 per cent had used drugs and abused alcohol before service and an undisclosed number had criminal convictions. While only serving as one illustration of such problems that could be limited to the locality, Drik underscored that this is being witnessed within the wider force structures. He said that, "problems concerning the conscripts in the Rostov Large Strategic Formation, as seen by psychiatrists, exist in other Air Force combined units as well."⁵⁴ As troubling as these statistics are for the Russian armed forces, they accurately reflect wider social problems that are well documented in Russia, which are inadvertently subsumed into the military by conscription: the longer term solution lies in professionalizing the VVS and VDV.



Su-25 Frogfoot ground attack aircraft

The Russian Air Force faces a continued shortage of funds for conducting repairs and purchasing spare parts, consequently the technical condition of the Air Force aircraft fleet remains low, also affected by the significant age of the aircraft. Reportedly, the quantity of combat-ready aircraft in an aviation

regiment varies from 40 up to 60, though it may be lower in some cases. In fact, the central problem facing the Russian Air Force is the technical condition of its aircraft fleet. Pilots having insufficient flight hours results from a lack of spare parts and the declining length of service life of its aircraft.⁵⁵ General Makarov described the low levels of combat readiness within the VVS, during a speech delivered to the Russian Academy of Military Sciences in Moscow on 16 December 2008, he explained: "Of those 150 regiments in our air forces, there are only five ones (sic) permanently combat-ready and capable of fulfilling all tasks set, albeit with limited numbers – operating just 24 aircraft instead of 36."⁵⁶

Frontal aviation (tactical combat aircraft, frontal bombers, ground attack aircraft, fighters and reconnaissance aircraft) accounts for around 1,400 aircraft, of which 900 are reportedly in storage. Modernization programmes for frontal aviation aircraft are being conducted slowly owing to a shortage of resources. The state armaments programme for 2007-2015, foresees a total of 408 frontal aviation aircraft undergoing modernization, as well as introducing 116 new aircraft. This will mainly involve purchasing some new Su-35 fighters and Su-54 frontal bombers, though manufacturing delays have been encountered in both cases.⁵⁷ Should a complete fulfilment of the state armaments programme be achieved by 2015, only four of the 39 currently available frontal aviation regiments will be armed with the newest aircraft, and only a maximum of 18 with modernized aircraft. Moreover, Russia's frontal aviation lags behind the air forces of western

countries in being equipped with modern precision weaponry. The VVS has only recently completed trials using guided munitions with satellite correction, while Russian fighters are not armed with 'over-the-horizon' air-to-air missiles with active radar homing heads. It is expected that a new generation of armaments will reach the VVS no earlier than 2010.⁵⁸

Colonel General Vladimir Popovkin, Russia's Armed Forces chief of armament and deputy minister of defence, outlined the priorities for the VVS following the war in Georgia, confirming that enhancing the future night-fighting capabilities of Russian air power will be a key part of Moscow's military reform agenda:

*'The priorities here are as follows: developing and producing the PAK FA [future frontline aviation system], modernizing the Su-24, Su-25, and Su-27 aircraft, and purchasing new aircraft – the oft-mentioned Su-34. It is very important that we will be buying all aircraft equipment as a package – that is, aircraft together with the ordnance for them. When talking about the modernization of relatively old machines, we mean primarily replacing their avionics. This is so that they can all "see" at night, so the crew can operate on a "fire and forget" basis, and so forth.'*⁵⁹

Russia's armed forces are also behind in global developments and use of UAVs. The VVS currently has at its disposal outdated reconnaissance UAVs like the Tu-141, Tu-143 and Tu-243, though it is reportedly working on modernizing the Tu-143.⁶⁰ In an effort to address this deficiency in the longer term, work is underway in several Russian design bureaus simultaneously on the development of a broad spectrum of various UAVs

(mainly for reconnaissance), with assistance from Israeli companies. In this regard, Russia has reportedly ordered the Ryabinsk-based Lutch Design Bureau's Tipchak UAV system for deployment in conflict zones. The Tipchak system consists of six 50kg drones, transport and launch vehicles, and a guidance and control centre, and the delivery of the first system was expected by the end of 2008.⁶¹ RSK MiG, under a contract with the VVS, is currently working on the creation of the Skat stealth unmanned combat aerial vehicle (UCAV), which was demonstrated in 2007, and flight testing is expected to begin in 2009.⁶² This may partly explain the apparently odd decision to deploy a Tu-22M3 bomber on a reconnaissance mission over South Ossetia, which was lost early on in the air campaign.

Fighting 'blind'

Russia's experiences with Georgia's air defence systems will force the Russian air force to devote a lot more attention to 'the suppression of enemy air defences (SEAD), including the renewal of tactics, electronic weapons and increased military training in this area.'⁶³ The shooting down of the Tu-22M3, which had entered service in 1983, has highlighted several needs for improvement, including 'new navigation equipment, cockpit upgrades, new electronic warfare equipment, self-defensive aids, [and] GPS-guided weapons,' if the aircraft is to remain a viable asset to the Russian Air Force for the foreseeable future.⁶⁴

Night vision capability was also critically lacking as the following story pointedly illustrates.

Lieutenant-General Anatoliy Khrulev, Commander of the 58th Army, was rescued by a helicopter piloted with the aid of third-generation night vision glasses. It was only possible to evacuate the army commander safely by helicopter and only at night. This operation, a standard occurrence in a NATO force, was successful thanks to a fortunate confluence of circumstances and the flight skills of the pilot of a Mi-8MTKO, Lieutenant Colonel Ivan Gnetetskiy. Prior to his tour of duty in the North Caucasus, he was given GEO-ONV1-01 night vision glasses to test, allowing him to take off from a helicopter pad near Dzhava in night conditions despite Georgian rockets being fired, flying in mountainous terrain, avoiding high-tension electric lines, and delivering the wounded commander to Beslan, North Ossetia. Yet, despite the positive publicity generated by this rescue mission, the use of night vision equipment by the VVS and VDV was woefully inadequate.⁶⁵

In 1998, several experimental type-Mi-8 and type Mi-24 'night' helicopters were introduced for a number of Russia's security departments. The VVS conducted testing of army aircraft, which confirmed their unique characteristics. And the Federal Security Service (FSB) Interior Ministry (MVD) later sent their 'night hawks' into battle in Chechnya. The VDV only allotted one purely reconnaissance helicopter for large-scale counter-terrorist operations. During the second Chechen campaign, which began in 1999, there were helicopter sorties conducted using night-fighting capabilities, during which rebel bases, 'bandit groups' passing through the

mountains, fire points, weapons caches, and many other targets were discovered. As much as two-thirds of the targets discovered were destroyed by FSB flown 'night helicopters'. Neither the VVS nor VDV were able to use night fighting Mi-24VK's and Mi-24PK's adapted to night-time battle while conducting the anti-terrorist operation. Consequently, they were put almost directly into reserve, and now they are getting ready to decommission them altogether. A squadron of Mi-24's were modernized according to the PN configuration, night cannon, using tank infra-red sights installed on the helicopters, failing to utilize the experience of working with the Mi-24VK and Mi-24PK. Naturally, the Mi-24PN was simply unable to fight at night. These were not deployed in South Ossetia. However, the State Arms Programme plans the procurement of thousands of various night vision systems based on third-generation technology.⁶⁶

These deficiencies in Russia's night-fighting capabilities are being addressed in military reform plans, which seem invigorated by Russia's operational experience in Georgia. VVS Commander-in-Chief, Colonel-General Aleksandr Zelin, confirmed in December 2008 that the VVS had received its first deliveries of the Mi-28N (Night Hunter) helicopter. The Military helicopter factory, Vertolety Rossii, also reported that its tests of the Mi-28N were to be completed in December 2008, and that it had supplied around 15 of these platforms to the VVS, with more to follow. The Mi-28N Night Hunter is designed for destroying tanks, armoured hardware and low-speed air targets. It has a 30-mm-calibre gun, the Ataka-B

anti-tank missile system, air-to-air missiles and other armaments.⁶⁷

Colonel-General Vladimir Popovkin, chief of armament and deputy minister of defence, noted the problems of introducing GPS devices into Russia's military inventory:

*'I would first note that the GPS system has never been part of our armoury, although a certain number of such navigation devices were purchased during the first Chechnya campaign. On the whole the development of the devices that will utilize the global navigation system is complete. It is now a matter of augmenting the satellite grouping and a matter for industry, whose potential determines the timeline within which these devices will be produced in the requisite quantity. And the third component is the ability of commanding officers to organize the instruction of service personnel in working with these devices. Like with mobile telephones, people need to be made familiar with them so they become a routine weapon, just like a submachine gun, and so they use them naturally, not when they are forced to. We are buying more than 3,000 such devices a year, and today – at the least on the southern borders users have no navigation equipment problems.'*⁶⁸

Conclusion

In the months and years to come, Georgia intends to enlarge its air force and improve its air defence system to cover the whole country, hopefully with the assistance it expects to receive from friendly countries.⁶⁹ This is important to Georgia as the strategic vulnerability of its energy infrastructures became obviously apparent during the August

conflict.⁷⁰ Georgia's challenge, given its losses, is enormous and will cost a lot to remedy. Russia's challenges, in contrast, are much more manageable and have a reasonable chance to be met. Should they be fully carried out as described in this article, they would result in a much improved and capable armed forces. The VVS still has much to learn from its recent experience facing modern air defence systems, but any improvement in its performance will depend on more than technological fixes. Education, training, the retention of its best, most experienced pilots, and the development and validation of new techniques, tactics and procedures in SEAD activities will continue to play an important role in the ability of the VVS to perform its mission.

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- ⁹ 'La guerre en Géorgie...une nouvelle fable de La Fontaine', *Navires & Histoire*, No. 50, October/November 2008, p. 8.
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²⁶ 'La guerre en Géorgie...', pp. 14-15.

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