

# Moscow Defense Brief

Your Professional Guide Inside

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## Packing a Punch



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**Cover Photo:** Combat training fire of Iskander (SS-26 Stone) tactical ballistic missile during the military exercises "Center 2011".

Kapustin Yar, September 2011.

**Photo by:** Vadim Savitsky

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# Russia-2011: Regional Conflicts in Focus

Fedor Lukyanov, editor-in-chief of the *Russia in Global Affairs*

The year 2010 has brought such a tumult in world politics that the impossibility of any meaningful strategies has become quite obvious. Each of the key players can a) try to respond to the constantly changing external challenges as they come, or b) build a hierarchy of priorities, i.e. try to figure out which of these challenges are the most urgent. Russia has always tended to be reactive rather than proactive in its foreign policies. But the situation with priorities has become clearer than it was only recently. The key priority is the settlement of local conflicts along the Russian borders – or at the very least, preventing those conflicts from spiraling out of control.

Those changes have been brought about by shifts in the international environment. One political feature of the global communications system is that there are no more isolated internal processes. Any imbalance in the development of society or state system, regardless of its causes, always begins to resonate with external factors. They mutually reinforce each other, giving rise to political cataclysms. That affects every country, to various degrees and in various forms. Small and relatively weak countries merely become an object for various forces. Big and strong countries try to neutralize those forces or to adjust to them, minimizing the damage to themselves.

For Russia, the forces that can disturb the balance in the domestic political situation are, first and foremost, the various local conflicts along its borders. That is why Russia's foreign policy priority for the foreseeable future is active peacekeeping efforts and creation of instruments that can prevent the conflicts from spiraling out of control if and when they become unfrozen.

So what are the conflicts we are talking about? The situation in the so-called “frozen conflict” zones, which have been in the focus of attention throughout the post-Soviet period, is not uniform. But all of them have a lot of potential to disturb the balance in Russia. Strange as it may sound, the most stable and secure of these conflict zones are Abkhazia and South Ossetia, which Moscow has recognized as independent states while the rest of the world regards them as part of Georgia. Although politically the situation is set to remain deadlocked for many years to come, in terms of security the status quo is much better than the tinderbox situation that existed prior to the war in 2008.

In the Dniester region, too, there is a steady balance of power and interests. Although that particular conflict is thought to be the least difficult to resolve (since it is not compounded by strong inter-ethnic tensions), there is little hope for progress any time soon. Perversely, the main reason for such a state of affairs is that the lack of settlement is not causing anyone any great problems. Previously, hopes were pinned on Moldova's proclaimed goal of European integration. It was expected that for that reason, the EU would become actively involved in searching for a solution. Europe was also eager to score a foreign policy success. But the current crisis in the EU means that there is no time and no resources to expend on peripheral issues. As for Russia, any change in the status quo will bring it more potential problems than new opportunities. True, Moscow is gradually becoming tired of the current situation whereby it is essentially subsidizing the Dniester Region – but no-one is ready to pursue any changes.

The only frozen conflict that could potentially cause huge problems for Russia is Nagorny Karabakh. There is little prospect for that conflict being resolved any time soon. The key obstacle is not the lack of diplomatic options. There are plenty of them, and all of them have been repeatedly discussed. But mutual hostility between the two sides is so intense that neither the Armenian nor Azeri president has the popular mandate to seek a compromise. Even if the two were to try to agree, nothing would come out of it – voters in the two countries would simply reject any negotiated deal out of hand.

Many commentators argue that the settlement efforts being made by Russia in Nagorny Karabakh, especially under President Medvedev, are pointless and doomed to failure. That is not so. Moscow is well aware that any agreement is currently impossible. Its true purpose is to do all it can to prevent the situation from deteriorating, and the mutual hostility from growing even further, which could result in another escalation and even another war.

A military conflict between Armenia and Azerbaijan would present Russia with an impossible choice. It is bound by certain commitments to Yerevan, which it has no right to abrogate. Azerbaijan, meanwhile, is too important to alienate. That is why Moscow will continue to make every effort to maintain the status quo, even if its diplomatic initiatives fail again and again. Here the process is more important than the result.

But apart from these traditional conflict zones, there are larger ones, which can affect Russia very seriously, so Moscow cannot afford to be a passive observer.

## What are the possible risks?

First, there is a risk of major instability over Iran's program to acquire nuclear weapons and over attempts by the United States and Israel to resolve that problem once and for all through the use of force.

A crisis over Iran would be an external shock for all the neighboring regions, including the South Caucasus. Such a crisis could disturb the existing balance in Nagorny Karabakh (Iran is an important partner for both Azerbaijan and Armenia), forcing Russia to make an extremely difficult choice between Baku and Yerevan. Another external shock would be the spread of social and political instability from North Africa and the Middle East to countries that play an important role in the South Caucasus, such as Iran and Syria – or, though much less likely, Turkey. The fall of the Assad regime could fuel regional instability and trigger an influx of ethnic Armenian refugees from Syria.

Another cloud on the horizon is the conflict in Afghanistan. After the inevitable departure of American and NATO troops, the country will probably descend into an “everyone against everyone else” civil war, just as it did in 1992-1995 after the fall of the pro-Soviet Najibullah regime. Only this time around, the internecine conflict could spiral to a much more dangerous scale because each of the warring factions will be backed by competing foreign powers, such as Pakistan, India, Iran, China, the United States, Russia and Central Asian states.

A scenario involving a new consolidation of Afghanistan with the Taliban in charge actually looks less destructive than the one outlined above. The Taliban could try to channel the discontent of the non-Pashtun population towards Afghanistan's neighbors in the north, directing their energies against Uzbekistan, Tajikistan and Kyrgyzstan. That would be a serious problem – but at least it can be solved by strengthening the CSTO and transforming it into a proper military-political alliance. That is exactly what Russian has been pushing for this year.

The worst-case scenario would be a civil war in Afghanistan. It would spur rivalries between the regional powers, especially India and Pakistan. Both have nuclear weapons. The two other big regional powers, Russia and China, will be either unwilling or unable to remain aloof.

A crisis in Afghanistan could therefore trigger a truly global cataclysm.

Russia has only a limited arsenal of instruments to forestall these negative scenarios. Faced with all these risks, a rational strategy should include:

- Stepping up the diplomatic process with Iran and searching for new solutions. Any scenario involving the use of force would bring Russia a lot more problems than any hypothetical benefits (i.e. on the energy markets). We must take into account the lessons learnt from all the military interventions in the late 20th and early 21st century, from Yugoslavia to Libya. Unintended consequences often leave the initial plans in tatters.
- Helping the United States and NATO to stabilize the situation in Afghanistan – but without any direct involvement, because our interests are not really the same. The Western coalition wants to create a favorable military and political situation for its own exit from the country. Meanwhile, the priority for Russia and Afghanistan's own neighbors is to ensure a balance of interests and forces for long-term stability in the country. That task requires greater efforts in building up regional institutions, especially the CSTO and the SCO.
- Strengthening ties with the leading powers in the Asia Pacific region, such as the United States, China, Japan, South Korea and the ASEAN bloc. The best way for Russia to earn itself a reputation as a leading Asia Pacific power is to help in the settlement of the North Korean nuclear problem. Moscow is in a good position because it is seen by all the participants in the process as fairly neutral player. If the current impasse is resolved with Russian help, it would be a serious contribution to regional stability. Such a contribution would be appreciated by all the players in the region; furthermore, it would bring Russia clear economic benefits (transport, transit, energy projects). The recent visit to Russia by Kim Jong-il was a successful step in the right direction.

Twenty years on after the fall of the Soviet Union, Russia is gradually abandoning the stance of a great world power with a role to play in every single corner of the globe. The situation in the Middle East, where Moscow has no real instruments to change the course of events, and where any changes would actually be to Russia's detriment, demonstrates that Russia needs to focus on problems closer to home. Even if it focuses mainly on problems in its own region, Russia will still remain a world power because its region, i.e. the entire Eurasia, is simply too important in the global scheme of things.

# Almaz-Antey 2010 Annual Report

Said Aminov, editor-in-chief of the Vestnik PVO ([www.pvo.su](http://www.pvo.su)) website

The Almaz-Antey Air Defense Concern, a leading Russian maker of air defense weaponry, and its Main System Design Bureau (GSKB Almaz-Antey)<sup>1</sup>, have published their separate annual reports for 2010. The formation of GSKB was completed in 2010; it is now the leading Russian group of designers of air defense and non-strategic missile defense systems.

## Almaz-Antey Air Defense Concern Annual Report

### Development strategy

According to the concern's annual report, in 2010 Almaz-Antey finalized its "Development concept of the air defense concern for the 2015 and 2020 time frame". Plans for the period of 2011-2015 are as follows:

- Complete the development of fifth-generation air defense and missile defense systems, put in place the technological and manufacturing capability for their mass production;
- Continue the program of setting up research and production groups focusing on their individual product areas to optimize the management structure;
- Reduce costs by means of greater standardization of products and economies of scale

During the 2016-2020 period the Almaz-Antey concern plans to launch mass production of advanced new air force and air defense systems, as well as components of a united air traffic control system.

To that end the concern is pursuing two key investment projects. The main project is to build two new plants, one in Nizhny Novgorod, the other in Kirov. They will mass-produce fourth and fifth-generation air defense and missile defense systems. The project was announced several years ago; Vneshekonombank was supposed to provide the bulk of the financing<sup>2</sup>, but the world financial crisis delayed those plans. The federal government has now allocated 4.47bn roubles (150m dollars) to finance the project in return for an additional shares emission by Almaz-Antey – though as of August 2011, the emission has yet to materialize.<sup>3</sup> According to the annual report, in 2010 the concern spent 314.5m roubles on design and survey work related to the construction of the two new plants. Another 481.5m roubles is to be spent in 2011. More than 3bn roubles is to be allocated in 2011 on preparing the two

construction sites (1.85bn in Nizhny Novgorod and 1.23bn in Kirov). Both plants are scheduled for completion in 2015.

The other major investment project is to create the Northwestern Regional Center at the existing Obukhov plant. Almaz-Antey also plans to create an industrial technopark in St Petersburg, hosting five of the concern's subsidiaries: OAO GOZ Obukhov Plant, OAO Radioelectronic Equipment Plant, OAO KB Special-purpose Machine-building Design Bureau; OAO Radioelectronic Equipment Research Institute, and OAO Russian Institute of Radio Navigation and Time. The project will be financed by the five subsidiaries themselves and by investor capital, including a 5bn rouble loan issued to Obukhov Plant by VTB bank in 2010.<sup>4</sup> According to the Almaz-Antey annual report, work on this project began in 2010.

Also in 2010 the company financed the project to create an assembly center at VMP Aviatek plant in Kirov. In 2013 Almaz-Antey expects to launch there a facility that will mount warheads on all the air defense and cruise missiles it makes. According to the annual report, the project is being financed by VMP Aviatek itself.

### Cooperation with the Bryansk Wheeled Chassis Plant

In 2010 Almaz-Antey, in cooperation with ZAO Bryansk Auto Plant and OOO AVERA, set up the Bryansk Wheeled Chassis Plant – Almaz Antey (BZKT) venture, in which it owns a 25-per cent stake. The move pursued the following objectives:

- Produce all the key components of air defense systems in-house
- Set up a lead company producing chassis for air defense systems and providing after-sale service and technical support
- Reduce R&D costs and build up the concern's intellectual property portfolio
- Enable independent decision-making when choosing and improving the chassis component of new and upgraded air defense systems

First results of cooperation between Almaz-Antey and the Bryansk plant were demonstrated in June 2011, when various chassis and trucks were showcased at a special event at the Bronnitsy range of the Russian MoD's former 21<sup>st</sup> Automobile Research and Development Institute.<sup>5</sup> The occasion was used for the first live demonstration of the 5P90S self-propelled launcher of the S-400 Triumf (SA-21) SAM system. The launcher uses the BAZ-6909-022 chassis



made in Bryansk. The company also showcased various future air defense missile systems and radars using BZKT-designed chassis.<sup>6</sup>

## Main projects for MoD customers

1. In 2010 Almaz-Antey completed the designs of a fifth-generation SAM system. The annual report is probably referring to the S-500 system, which, according to then GSKB director-general Igor Ashurbeili (who left the company in early 2011) is designated as Triumfator-M.<sup>7</sup> Media reports claim that the S-500 is expected to be ready by 2015. It will be effective against all types of air targets, including those in near space. Taking into account that GSKB Almaz-Antey uses the Triumfator designation for the S-400 SAM system, it appears that the S-500 Triumfator-M will be an incremental upgrade of the S-400. That was indirectly corroborated by Vladimir Popovkin in an interview he gave back when he was the first deputy defense minister (he was appointed head of the Russian space agency Roskosmos in the spring of 2011). Popovkin said that “in that system [the S-500] the key new element is the missile interceptor, because it will retain 90 per cent of the components used in the S-400, including various equipment, the command and control station, etc. I believe that those S-400 components will remain competitive for another 25 or 30 years. But we do need a new, more ‘energetic’ missile, capable of taking on not only tactical and strategic missiles but even warheads travelling at up to 7 km per second.”<sup>8</sup> Another piece of information, revealed by Igor Ashurbeili, is that the S-500 will use an advanced new X-band active phased array radar.<sup>9</sup>

One of the posters at the already mentioned demonstration event at Bronnitsy showed the launcher of the S-500 system, based on a BZKT chassis (the sign on the poster read “77P6 launcher of the Triumfator-M SAM system”).<sup>10</sup> Judging from that poster, one of the surface-to-air missiles to be used in the S-500 could be a new missile designed by OKB Novator (part of the Almaz-Antey concern) based on an existing family of missiles for the S-300V (SA-12) and Antey-2500 (SA-23) SAM systems.

In August 2010 former GSKB chief Ashurbeili once again commented on the situation with the new air defense and missile defense system. He said that “the [S-500] system will be fairly heavy; based on the need to ensure its own security, to reduce its visibility from space, it will be transportable but not fully mobile... The preliminary designs have already been completed, the system is now at the detailed engineering design stage”.<sup>11</sup> Ashurbeili also revealed information about the future successor of the S-500: “The next air defense weapons that will replace the S-500 will be airborne rather than ground-based. They are already being developed and tested... It will be an aircraft

that will monitor the airspace and not only track targets, but actually disable them.”<sup>12</sup>

2. The annual report says that company’s Izdelie 40N6 has begun its state trials program as part of Izdelie 40R6, scheduled for completion in 2011. The document refers to the 40N6 long-range surface-to-air missile used in the S-400 SAM system. Once the new missile enters service the S-400 will be capable of destroying air targets up to 400km away. This is what Ashurbeili had to say about the work on the 40N6 missile back when he led GSKB: “trials [of the S-400] with this [long-range] missile took about three years, with launches against 15 or so targets. Now that work is complete; preliminary trials were completed on December 26, 2009. The missile has now been submitted for state trials. In Q3 2010 we should complete the state trials program with combat launches and begin mass production in Q4”.<sup>13</sup>

3. Almaz-Antey has drawn up the designs for a command and control station (CCS) and a multifunction radar station (MRS) for a medium-range SAM system. It has assembled a prototype CCS unit and completed its internal trials. The annual report apparently refers to the future Vityaz-PVO SAM system, which GSKB began to develop back in the 1990s<sup>14</sup>, when it was still called NPO Almaz. In an interview last year Ashurbeili gave first details about the state of the Vityaz-PVO program<sup>15</sup>, the successor of the S-300PS (SA-10) SAM system. This medium-range system will use 9M96 missiles. It is being developed using the experience Almaz-Antey gained as part of a project to design an MRS for South Korea’s KM-SAM air defense system. A poster seen at the Bronnitsy demonstration in June 2001, entitled “Use of the BAZ-69092-012 chassis in air defense systems”, showed the 50K6 command and control station and the 50N6A MRS used in the Vityaz-PVO SAM system.<sup>16</sup> Vityaz-PVO is expected to enter service in 2013-2014. Former GSKB chief Ashurbeili said in August 2011 that the only possible reason for a delay is insufficient financing of the trials program for the new missile used in that SAM system.<sup>17</sup>

Almaz-Antey also said in the annual report that in 2010 it completed bench tests of a new naval shipborne short-range SAM system. The company continued trials of various components for the Poliment-Redut naval SAM system; it conducted ground trials of Izdelie 9M96 missiles and assembled Izdelie 9M96D and 9M100 missiles.

The Almaz-Antey concern and its subsidiaries signed 162 contracts with the Russian MoD in 2010. The company has not disclosed the value of those contracts. It did say, however, that its contracts portfolio was up 103.1 per cent compared to 2008 and up 20 per cent from 2009. Most of the MoD contracts were for the delivery of new hardware; their share was 83.6 per cent, up from 75.2 per cent in 2009.

The rest of the contracts were for repair and upgrade of existing weaponry. In 2010 the concern delivered 498 units of military hardware (49 different products in total) to Russian government customers, and completed deep refurbishment of 19 units (5 products). The names of the products have not been disclosed.

## GSKB Almaz-Antey annual report

The biggest event for GSKB was the completion in December 2010 of its reorganization, which included the incorporation into its structure of the design bureaus belonging to Almaz-Antey concern, including MNIIPA, NIIRP, NIEMI and MNIIRE Altair. As a result, the Almaz-Antey concern's share in the GSKB authorized capital increased from 61.8 to 82.5 per cent. Also, in February 2011 the company replaced Igor Ashurbeili, who had served as GSKB director-general since 2000.<sup>18</sup> Ashurbeili had often made outspoken comments in the media, criticizing the Almaz-Antey concern itself and the Rosoboronexport corporation. His departure has been the most notable event for the concern this year. The new GSKB chief is Vitaliy Neskorofov, who had previously served as Ashurbeili's first deputy.

### Main projects for the Russian MoD

1. The annual report says that GSKB is developing an all-purpose long-range SAM system capable of intercepting ballistic targets at high altitude. The system is based on solutions developed for the Triumph SAM system (R&D Project 55R6M). The document apparently refers to the S-500 Triumfator-M SAM system.

2. GSKB is working to improve the S-400 Triumf SAM system. This is apparently in reference to the completion of trials of the 40N6 long-range surface-to-air missile.

3. GSKB is developing a medium-range SAM system for use across the armed forces, based on solutions developed for the Triumf, Poliment-Redut and Buk-3M air defense systems. This is the first appearance of information about the project in a GSKB annual report.

4. GSKB is developing a system of countermeasures against high-precision weapons to be used across the armed forces (R&D Project 42S6). The annual report is referring to the Morfei extra-short range SAM system, which was mentioned by Ashurbeili in an interview.<sup>19</sup> There is next to no official information about that system. According to Internet sources,<sup>20</sup> Morfei consists of a command and control station and a mobile combat unit with a multifunction radar mounted on a BZKT chassis. A view from the side of the

future SAM system's mobile combat unit was shown on the posters designated as 70N6 at the demonstration event in Bronnitsy in June 2011.<sup>21</sup> It can be speculated that the new system will be armed with compact new-generation SAM missiles (probably 9M338K<sup>22</sup>), with a strike range of up to 5km (up to 10 km according to some sources).

The GSKB annual report says that as part of R&D Project 42S6, in 2010 the company developed a set of engineering designs for a multifunction radar station, manufactured some components of MRS units and command and control stations, assembled a prototype MRS unit, a mobile combat unit chassis and transmitter-receiver modules.

5. GSKB is developing an airborne laser system of countermeasures against space-based missile defense elements. The annual report is apparently referring to the Sokol-Eshelon airborne system; its components include the A-60 aircraft, a special version of the Il-76 developed by the TANTK Beriev design bureau. In May 2011 that aircraft (the second prototype, designated as 1A2) was demonstrated to the general public at the TANTK Beriev airfield.<sup>23</sup> The Sokol-Eshelon project was first mentioned in an Almaz-Antey annual report in 2005. It appears that the main purpose of the A-60 is to disable optical-electronic systems of satellites (especially early warning satellites) of the future American missile defense system.<sup>24</sup> GSKB's projects in 2010 also included the development of a future automated air traffic and air defense control system, as well as R&D projects 50R6A (Vityaz-PVO SAM system) and 97L6 (future long-range radar).

On the manufacturing side of its business, in 2010 GSKB delivered to the Russian MoD two 55K6M control stations for the S-400 SAM system and two units of Product 92N6A (multifunction radar station for the S-400<sup>25</sup>).

### Activity on the foreign markets

As part of international cooperation programs GSKB has been negotiating possible contracts for the S-400 SAM system with Saudi Arabia and conducted technical consultations regarding the S-400 with China. GSKB also developed proposals for China regarding the upgrade of previously supplied S-300PMU1 (SA-20A) SAM systems and the 83M6E command and control systems to the Favorite (SA-20B) SAM system specifications. It also developed technical proposals for Algeria regarding the integration of the 54K6E2 control station (S-300PMU2 Favorit) with radar protection measures. As part of the KMSAM R&D project (development and delivery of a multifunction radar for the KM-SAM system) GSKB delivered two multifunction radar stations to South Korea.

- 1 The annual reports are available at the Almaz-Antey concern's website ([www.almaz-antey.ru](http://www.almaz-antey.ru)) and the GSKB Almaz-Antey website ([www.raspletin.ru](http://www.raspletin.ru)).
- 2 On an agreement between Vneshekonombank and the Almaz-Antey Air Defense Concern // Vneshekonombank press release of August 21, 2007.
- 3 Almaz-Antey Air Defense Concern to spend more than 3.5bn roubles on building new plants // Interfax-AVN, August 11, 2011
- 4 *Kiseleva E., Sichkar O.* PVO gathering lands // Kommersant, March 19, 2010.
- 5 Photo gallery on the web page [http://www.missiles.ru/Bronnici-2011\\_foto.htm](http://www.missiles.ru/Bronnici-2011_foto.htm).
- 6 Ibid.
- 7 "Russian engineers think quicker than Russian bureaucrats". Interview with Igor Ashurbeili // Kommersant, April 30, 2011.
- 8 To arms! Interview with first deputy defense minister Vladimir Popovkin // Rossiyskaya Gazeta, July 12, 2010.
- 9 Triumf mark. Interview with GSKB Almaz-Antey director-general Igor Ashurbeili // Izvestiya, April 29, 2010.
- 10 Photo gallery on the web page [http://www.missiles.ru/Bronnici-2011\\_foto.htm](http://www.missiles.ru/Bronnici-2011_foto.htm).
- 11 New missile defense system around Moscow to use the S-500 after 2015 // RIA Novosti, August 15, 2011.
- 12 Designer: Russia's future missile defense systems to be airborne // RIA Novosti, August 15, 2011.
- 13 "Russian engineers think quicker than Russian bureaucrats". Interview with Igor Ashurbeili // Kommersant, April 30, 2011.
- 14 See: *Aminov S.* Commentary to Almaz Antey Air Defense Concern 2009 Annual Report // Eksport vooruzheniy, No 4, 2010.
- 15 "Russian engineers think quicker than Russian bureaucrats". Interview with Igor Ashurbeili // Kommersant, April 30, 2011.
- 16 Photo gallery on the web page [http://www.missiles.ru/Bronnici-2011\\_foto.htm](http://www.missiles.ru/Bronnici-2011_foto.htm).
- 17 Vityaz air defense system to replace the S-300 in 2013-2014 – designer // RIA Novosti, August 15, 2011.
- 18 GSKB Almaz-Antey board meeting // GSKB Almaz-Antey press release of February 4, 2011.
- 19 "Russian engineers think quicker than Russian bureaucrats". Interview with Igor Ashurbeili // Kommersant, April 30, 2011.
- 20 Otvaga web site's message board (<http://otvaga2004.mybb.ru/viewtopic.php?id=48&p=2>).
- 21 Photo gallery on the web page [http://www.missiles.ru/Bronnici-2011\\_foto.htm](http://www.missiles.ru/Bronnici-2011_foto.htm).
- 22 Future Russian air defense systems // BMPD blog (<http://bmpd.livejournal.com/12417.html>).
- 23 A-60 experimental airborne laser combat system up close // BMPD blog (<http://bmpd.livejournal.com/6226.html>).
- 24 Head of Russian MoD's weapons department Anatoliy Gulyayev: "The future Russian air defense system will include airborne laser countermeasures against optical-electronic components of satellites used in America's future missile defense system". See: Voennyi parad, No 2, 2011.
- 25 *Lemanskiy A., Ashurbeili I., Nenartovich N.* S-400 Triumf SAM system: long-range detection, precise tracking, guaranteed destruction of target // Vozhdushno-kosmicheskaya oborona ([vko.ru](http://vko.ru)).



# Tactical Missiles Corporation 2010 Annual Report

Aleksandr Stukalin, deputy editor-in-chief of the *Kommersant* newspaper

The 2010 Annual Report<sup>1</sup> of the Tactical Missiles Corporation (TMC, Russian abbreviation KTRV) contains a lot of interesting details about important Russian military programs involving the development and mass production of guided missile systems.

## Consolidated indicators

TMC was formed in 2002-2003 from Zvezda-Strela, the designer and maker of a wide range of guided missiles. The new corporation took over another 18 companies in the sector, including three large and experienced designers of guided weapons: Vympel, Raduga and Region. Such a concentration of resources has enabled the corporation to achieve a dominant position in the sector. According to TMC's own estimates, it controls about 95 per cent of the market for airborne guided missiles, 50 per cent for naval guided missiles and 100 per cent for aviation bombs.

According to the 2010 Annual Report, the corporation's consolidated revenue was up 8.9 per cent on the previous year to 34.17bn roubles [1.1bn dollars], making TMC the 7<sup>th</sup> largest Russian defense contractor.<sup>2</sup> The growth was

generated by the military side of the company's business, which accounts for about 77.2 per cent of its revenue (26.37bn roubles). About half of that figure (12.31bn) came from export contracts; another half (12.8bn) from domestic arms procurement programs. Among TMC divisions, the main earners were Vympel (8.81bn), Raduga (4.4bn), Region (2.18bn) and the TMC lead company itself, i.e. the former Zvezda-Strela (7.56bn).

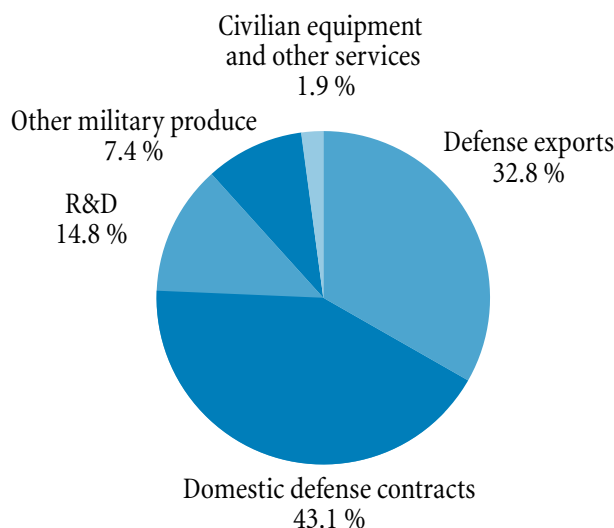
## Lead company: domestic procurement deliveries

Of all TMC divisions, the annual report provides a detailed breakdown of the revenue figures only for the lead company. Deliveries of mass-produced military hardware under the Russian arms procurement program accounted for 43.1 per cent of that company's revenue (3.26bn roubles). The bulk of that figure (96.3 per cent, or 3.14bn roubles) came from deliveries to the Russian MoD of two types of finished product: the Kh-31 (AS-17) air-to-surface guided missiles and the 3M24 (SS-N-25) anti-ship missiles. It is worth noting that while deliveries of anti-ship missiles to the Russian Navy in 2010 remained at 2009 levels (57 and 55 missiles, respectively), Kh-31 deliveries nearly halved from 146 missiles to 75. That is despite the fact that, according to the annual report, in September 2010 the MoD order for these missiles was actually increased by 6 missiles. The fall in the deliveries of the Kh-31 missile resulted in the TMC lead company's revenues from domestic defense contracts shrinking by 19.3 per cent compared to 2009.

In the past two years domestic contracts for the Kh-31 missile significantly outweighed exports. Among other MoD contracts the TMC annual report lists UV-26 counter measures chaff dispensers<sup>3</sup>, the ZI-RK-01-01 automated control system, the ZIP-G part and component kits for the 3M24 missiles, as well as repair of the APP-50 passive jamming automated units.<sup>4</sup>

With regard to the 2010 Russian arms procurement program the TMC annual report notes "a change in the financial policy of the Russian MoD, manifesting itself in timely financing and larger advance payments". That was one of the factors that enabled the corporation to reduce its reliance on credit financing. But in 2011 the MoD's arms

## TMC lead company's 2010 revenue structure



Source: TMC 2010 Annual Report

procurement policy changed once again. TMC Director-General Boris Obnosov has said on the record that as of August 2011 about 30 per cent of the corporation's contracts for the year had yet to be signed, including important orders for strategic systems (he may have been referring to new cruise missiles developed by Raduga for long-range bombers). "All the suppliers are working on these orders, but without the actual contracts signed, they are on their last legs," Obnosov complained.<sup>5</sup>

## Lead company: defense exports

In dollar terms, the Kh-31 missile accounted for 60.5 per cent of the TMC lead company's export deliveries in 2010. The sole customer was Syria. It received the first batch of the Kh-31A (anti-ships) and Kh-31P (anti-radiation) missiles in 2009. By now total deliveries to Syria have reached 87 missiles. There have been no deliveries to Algeria since 2009, when the country received its third batch of the Kh-31A and Kh-31P. The second Algerian batch, delivered in 2008, consisted of 70 missiles.<sup>6</sup>

The 3M24E anti-ship missile accounted for 26.5 per cent of the TMC lead company's export revenue. The remaining 13 per cent came from exports of spare parts, upgrade kits, instruments and ground equipment. Vietnam was the sole foreign recipient of the 3M24E missile in 2010; production of the missile itself remained almost unchanged (16 missiles in 2010 compared to 17 missiles in the first batch<sup>7</sup>). A slight drop in the output of the Kh-31 missile (64, down from 69) resulted from delivery dates on an Indonesian order for five missiles being pushed back to 2011.

## Export portfolio and losses in Libya

TMC exports have traditionally been channeled via contracts with foreign buyers signed by Rosoboronexport and RSK MiG. The TMC divisions that generated the bulk of the export sales are the TMC lead company itself, Vympel, Raduga and Region. The other divisions accounted for less than 1 per cent of the overall TMC export contracts portfolio of about 1.1bn dollars.

The Uran-E (SS-N-25) shipborne anti-ship missile system makes up about a third of TMC's export contracts (339.1m dollars); the Bal-E (SSC-6) mobile coastal missile system accounts for another 20 per cent (221.2m). Overall, missiles and missile systems based on the 3M24/Kh-35 family brought TMC about 699.1m dollars worth of export contracts, which is almost two-thirds of its export portfolio. Airborne weapons made by Vympel brought TMC 189.3m dollars, the Kh-31 guided missiles 69.9m, and smart bombs 57.2 million. Region supplied airborne anti-submarine missiles and the

S-3V Zagon-1 anti-submarine guided bombs to China; they will be fitted onto the Ka-28 naval helicopters<sup>8</sup>. Vympel also supplied anti-submarine missile systems to Vietnam – but the latter two contracts were not large.

The most interesting information in the annual report is that as of early 2011, Libya was TMC's largest customer, with 395.7m dollars worth of signed contracts. At 221.2m dollars, the Libyan contract for the Uran-E shipborne missile system was the largest single export order in the corporation's portfolio. Libya was also the first foreign buyer of the Bal-E coastal missile system<sup>9</sup>; that contract was worth 164.5m dollars. Russia's own Navy has so far bought only a single Bal battery. For obvious political reasons, work on the Libyan contract has had to be put on hold. TMC has also suspended the deliveries to Libya of the KAB-500Kr guided bombs made by Region, and of the OKA-E-1 aircraft weapons preparation system<sup>10</sup> made by the Globus design bureau in Ryazan.

After civil war broke out in Libya in March 2011, Russian President Dmitry Medvedev issued a decree imposing a weapons embargo on the country. All Russian defense contracts with Libya were put on hold. The TMC Annual Report says that "up until the aforementioned events ... the corporation was in the final stages of talks with a Libyan customer regarding a new contract to supply a wide range of airborne weapons worth over 200m euros – that opportunity has now been lost". The company seems to have been referring to a large contract for weapons to be fitted onto Su-35 and Yak-130 aircraft destined for Libya. TMC had also previously mentioned Libya as a potential buyer of its Kh-31P, Kh-31PD, Kh-31A, Kh-31AD and Kh-38M guided missiles.<sup>11</sup>

Russian officials have already spoken about the losses resulting from the decision to suspend deliveries on Libyan contracts. The head of the Rostekhnologii (Russian Technologies) state corporation, Sergey Chemezov, and Rosoboronexport director-general Anatoliy Isaykin estimated the Russian defense industry's lost revenue at 4bn dollars.<sup>12</sup> But informed sources insist that the number of actual defense contracts Russia had signed with Libya while Col Gaddafi was still in power was not that high. TMC's very real (as opposed to potential) losses mean that the company is probably one of the worst-affected by the crisis in Libya among the Russian defense contractors. TMC director-general Boris Obnosov recently estimated those losses at 600m euros, which is about 80 per cent of the company's annual revenue. He described the situation with Libya as "our biggest disappointment in terms of foreign contracts".<sup>13</sup> Another thing to consider is that the company's 2009 annual report named two other countries now affected by the Arab Spring as potential buyers. Egypt was expected to confirm an order for 130m dollars worth of the Uran-E shipborne missile systems, and Yemen for a batch of the Bal-E coastal missile systems.<sup>14</sup> But TMC's 2010 Annual Report contains no mention of those hoped-for contracts.

**Table 1. TMC export contracts**

Contract	Value, million dollars	Deliveries	TMC division
<b>Algeria</b>			
Uran-E SMS	6.67	2011-2012	TMC lead company
Uran-E SMS	31.4	2013	TMC lead company
Kh-31A, P training missiles	6.22	2011	TMC lead company
Racks	8.32	2011	Vympel
Training	0.018	2011	Vympel
Kh-59ME	6.05	2011	Raduga
KAB-500Kr	5.86	2011	Region
«OKA-E-1»	6.5	2011	Globus
Total	71.04	2011-2013	
<b>Vietnam</b>			
Kh-31A for Su-30MK2	49.65	2011	TMC lead company
Airborne weapons	89.17	2011	Vympel
Anti-submarine missile systems	0.17	2011	Vympel
Smart bombs	11.17	2011	Region
3M24E training missiles	4.129	2011	TMC lead company
Upgrade of Kh-29T and L to Kh-29TE	30.513	2011-2012	TMC lead company
Total	184.8	2011-2012	
<b>India</b>			
Kh-35E, option	59.1	2013-2014	TMC lead company
RVV-AE, option	26.2	2013	Vympel
Smart bombs, option	17.68	2012-2013	Region
ZI-RK-01-1 ACS	10.0	2011	TMC lead company
SPTA for 3M24E	9.29	2011	TMC lead company
Total	122.3	2012-2014	
<b>Indonesia</b>			
Kh-31P	6.31	2011	TMC lead company
Airborne weapons	18	2011	Vympel
Total	24.3	2011	
<b>China</b>			
R&D	11	2011-2013	Vympel
AASM, S-3V	22.98	2011	Region
SPTA for «OKA-E-1»	3.07	2011	TMC lead company
Total	37.05	2011-2013	
<b>Libya</b>			
Bal-E coastal missile	164.5	2013	TMC lead company
Uran-E NMS	221.18	2014	TMC lead company

Contract	Value, million dollars	Deliveries	TMC division
KAB-500Kr	5.3	2011	Region
«OKA-E-1»	4.71	2011	Globus
Total	395.7	2011-2014	
<b>Burma</b>			
Weapons for MiG-29	25.14	2011	Vympel
<b>Syria</b>			
Kh-35E for MiG-29M*	37.13	2011-2012	TMC lead company
KAB-500Kr	9.88	2011-2012	Region
Total	47.0	2011-2012	
<b>Turkmenistan</b>			
Uran-E SMS	79.8	2011-2012	TMC lead company
<b>Uganda</b>			
Kh-31P	7.76	2011	TMC lead company
Airborne weapons	30.83	2011	Vympel
Smart bombs	7.27	2011	Region
Total	45.9	2011	
<b>France</b>			
R&D contract	45.2	2014	Raduga
Total	1,078.2	2011-2014	

\*from TMC 2009 Annual Report

Source: TMC 2010 Annual Report

With Libya out of the picture, TMC's largest foreign customers are now Vietnam (184.8m dollars worth of contracts), India (122.3m) and Turkmenistan (79.8m). Deliveries to Vietnam and India are being channeled directly, bypassing Rosoboronexport, because TMC is one of the few Russian defense contractors authorized by the government to sell directly to the foreign buyer.

Apart from Libya, the report singles out two other "problem" countries: Algeria (71m dollars worth of contracts) and Syria (47m). TMC says that "the military-political situation in Algeria and Syria is fairly difficult but not critical. The likelihood of our contracts with these two countries being successfully completed is therefore quite high". Only time will tell how accurate that projection is, especially with regard to Syria. Russia previously saw the country as a reliable if modestly sized market for advanced Russian airborne weaponry.

On the whole, the geography of TMC's exports covers Russia's traditional markets. One interesting exception is Uganda, where demand for new Russian missiles was generated by the purchase in 2010 of the Su-30MK2 fighter jets. Another distinguishing feature of the

company's portfolio is the absence of any Latin American contracts. The annual report states that only one small sale to the region has been secured for 2011-2012: Globus is to deliver testing instruments worth 12.2m dollars to an unnamed Latin American country. Venezuela received its last batch of 70 Kh-31 guided missiles from Russia back in 2008.<sup>15</sup>

## Outlook for export contracts

Venezuela does figure in TMC's plans – not in the contracts portfolio but in the "requests" section. What is more, Venezuelan "requests", worth about 550m dollars, make up about half of TMC's entire requests portfolio. The 2010 annual report does not specify what specific weapons the requests are for – but it does say that "Venezuela requested deliveries of a number of shipborne and airborne weapons systems" back in 2007-2008, and since then the issue "has been the subject of protracted negotiations". So far, the largest requests likely to be converted into contracts are from Vietnam, India and Indonesia, worth about 100m dollars each.

**Table 2. TMC export requests portfolio**

Customer	Estimated value, million dollars	Deliveries	TMC division
Venezuela	130	2013-2014	TMC lead company
Venezuela	190	2013-2014	TMC lead company
Venezuela	230	2013-2014	Vympel
<b>Total for Venezuela</b>	<b>550</b>	<b>2013-2014</b>	
Vietnam	6.6	2011	TMC lead company
Vietnam	98	2013-2014	TMC lead company
Vietnam	1.2	2012	TMC lead company
<b>Total for Vietnam</b>	<b>105.8</b>	<b>2011-2014</b>	
India	40	2012-2013	TMC lead company
India	35	2013	TMC lead company
India	28	2012-2013	Vympel
<b>Total for India</b>	<b>103</b>	<b>2012-2013</b>	
Indonesia	60	2013	TMC lead company
Indonesia	40	2014	TMC lead company
Indonesia	0.5	2011	Vympel
<b>Total for Indonesia</b>	<b>100.5</b>	<b>2011-2013</b>	
<b>Kazakhstan</b>	<b>30</b>	<b>2013</b>	TMC lead company
<b>Lebanon</b>	<b>8.2</b>	<b>2012</b>	
Libya	16	2012	TMC lead company
Libya	15	2012	Vympel
Libya	45	2012-2013	Raduga
<b>Total for Libya</b>	<b>76</b>	<b>2012-2013</b>	
Malaysia	25	2012	TMC lead company
Malaysia	0.05	2011	Vympel
<b>Total for Malaysia</b>	<b>25.05</b>	<b>2011-2012</b>	
<b>Syria</b>	<b>16</b>	<b>2012</b>	Vympel
<b>Turkmenistan</b>	<b>40</b>	<b>2014</b>	TMC lead company
Uganda	0.04	2011	Vympel
Uganda	0.05	2011	Vympel
<b>Total for Uganda</b>	<b>0.09</b>	<b>2011</b>	
<b>Total for main requests</b>	<b>1054.64</b>	<b>2011-2014</b>	

*Source: TMC 2010 Annual Report*

Among other potential customers the annual report names Azerbaijan (Uran-E shipborne missile system) and Ethiopia (Kh-31A and Kh-31P). The corporation is also planning to market its produce in Vietnam.

## R&D

Judging from the TMC presentation at this year's Moscow airshow (MAKS-2011), the TMC lead company is pursuing



new high-precision weapons projects in three key areas. In the general-purpose air-to-surface class it is developing the Kh-38M modular family of missiles (including the Kh-38MLE, with combined inertial and laser targeting), which can be deployed against a wide range of targets. In the air-to-surface class TMC is working on the Kh-31AD, an anti-ship guided missile with improved range and performance, its future anti-radar version, the Kh-31PD, and the Kh-35UE anti-ship cruise missile.<sup>16</sup> TMC bosses predict that the **Kh-35UE** will complete its trials program by the end of 2011, followed by the **Kh-38MLE** in two years' time and by the **Kh-31AD** in 2013-2014.<sup>17</sup>

Corroborating the conclusions drawn from the MAKS-2011 airshow, TMC's 2010 annual report also contains information about the company's three main R&D projects at various stages of completion. The customer for all three is the Russian Air Force, under the federal airborne weapons program.

The first project is the **Gran-K**. A similar designation (Gran-KE) was used at the MAKS-2011 airshow for a new active-passive homing device for the universal **Kh-35UE** anti-ship missile. It was developed by the Detal Urals Design Bureau, one of the TMC subsidiaries.<sup>18</sup> The TMC annual report says that in 2010 a test launch of Product 07 equipped with the Gran-K device was conducted, yielding a "positive result". The Gran-K also passed field trials to test its resilience to jamming during an experiment over the Black Sea, as well as "atmospheric and mechanical" trials. There were a total of 12 trial flights of Product 007 equipped with the Gran-K, with three launches against real targets at the firing range of the Black Sea Fleet's naval base in Feodosia.<sup>19</sup>

The second big project is the **Kh-31AD**. The annual report says that the customer has approved the technical

and performance specifications. One test unit has already been assembled; it is now undergoing bench tests. It was previously reported that the St Petersburg Radioelectronic Systems Institute (a division of the Lenintets company, the maker of the ARG-31/U505<sup>20</sup> active homing device for the Kh-31A<sup>21</sup>) was working on an upgraded version of the device, the U505M, for Izdelie 06AD.<sup>22</sup> The TMC 2010 Annual Report now says that components for the first prototype of Izdelie 06AD have already been produced.

Finally, the annual report says that as part of the company's third major R&D project it has produced three prototypes of Izdelie 65ML (which is probably another name for the **Kh-38ML** missile) with an inert filler HE warhead, and another four prototypes with an inert filler penetrating warhead. The prototypes will be used for preliminary ground trials.

One other important R&D area mentioned in the report is the project to adapt Izdelie 5-78 for use with the MiG-29K/KUB fighters ("78" is the traditional designation of the Kh-35 missile<sup>23</sup>).

Other R&D projects mentioned in the 2010 report include the Statuetka, which covers future short and medium-range air-to-surface weapons and components.<sup>24</sup> As for the LMUR project (Light Multirole Guided Missile)<sup>25</sup>, the annual report says that the contract for it has not been signed. The contract for upgrading the Kh-25MR missile, which was expected to be announced as part of the Russian arms procurement program, has not materialized, either. But TMC has drawn up its proposals for the Future Long Range Aviation Complex program (PAK DA) and for the future attack helicopters program (for the Russian Helicopters corporation).

- 1 TMC 2010 Annual Report // TMC website (<http://www.ktrv.ru/go/?dwl=1&f=751>).
- 2 2010 Ranking of Russian Defense Companies // Eksport Vooruzheniy, No 3, 2011.
- 3 Konkursnyye Torgi electronic paper. Competition 7-37115 of July 17, 2008, UV-26 dispensers (<http://www.gostorgi.ru/2008/7/2008-07-17/7-37115.xml>).
- 4 APP automatic jamming device // TMC website (<http://www.ktrv.ru/production/68/696/700>).
- 5 National security is expensive. Interview with TMC director-general Boris Obnosov // Voenno-promyshlennyy Kuryer, August 17, 2011.
- 6 TMC 2009 Annual Report // TMC website (<http://www.ktrv.ru/go/?dwl=1&f=475>).
- 7 Ibid.
- 8 Ibid.
- 9 National security is expensive. Interview with TMC director-general Boris Obnosov // Voenno-promyshlennyy Kuryer, August 17, 2011.
- 10 OKA weapons preparation system // TMC website, <http://www.ktrv.ru/production/68/696/1017/>.
- 11 TMC 2009 Annual Report.
- 12 Interfax-AVN reports of March 3, 2011 and August 17, 2011.
- 13 National security is expensive. Interview with TMC director-general Boris Obnosov // Voenno-promyshlennyy Kuryer, August 17, 2011.
- 14 TMC 2009 Annual Report.
- 15 Ibid.

- 16 TMC press release of August 3, 2011.
- 17 TMC 2009 Annual Report.
- 18 TMC corporation unveils new homing device for the Kh-35E // FlotProm central naval portal, August 24, 2011. UPKB Detal 2010 Annual Report // TMC website (<http://www.ktrv.ru/go?dwl=1&f=712>).
- 19 List of towns, districts, charities, companies and organizations which have signed sponsorship agreements. Approved by Belgorod Region governor's Resolution No 637 of November 20, 1996. (<http://www.guest-belgorod.ru/index.php?ds=8267>).
- 20 Kh-31 supersonic guided missile // VVS Portal. (<http://www.miralex.me/x31.html>); Radar-MMS. State of affairs and prospects for ARGS in 2006 // Missile Systems portal ([http://www.missiles.ru/Radar-MMS\\_now.htm](http://www.missiles.ru/Radar-MMS_now.htm)).
- 21 *Karpenko A.* St Petersburg's and Leningrad's contribution to the development of missile systems for the Russian Navy. 2002. ([http://bastion-karpenko.narod.ru/Rol-S\\_peterburg-2002.pdf](http://bastion-karpenko.narod.ru/Rol-S_peterburg-2002.pdf)); *Copp C.* Soviet/Russian Tactical Air to Surface Missiles // Technical Report APA-TR-2009-0804. SMAIAA, MIEEE, PEng, August 2009. (<http://www.ausairpower.net/APA-Rus-ASM.html>).
- 22 OAO NII Radioelectronic Systems 2006, 2007 and 2008 Annual Reports. // <http://www.emitent-spb.ru>.
- 23 *Shirokorad A.* Poseidon's weapons // Popular mechanics, No 9, 2005.
- 24 Statuetka – Temp Avia // OAO ANPP Temp-Avia website. (<http://www.temp-avia.ru/kostenko/niokr/stat.html>).
- 25 Luch Design Bureau 2010 Annual Report // [http://www.kb-lutch.ru/ustav/God\\_Otchet\\_2010.doc](http://www.kb-lutch.ru/ustav/God_Otchet_2010.doc).

# Ranking of Top Russian Defense Companies in 2010

Dmitry Vasilyev

The Center for Analysis of Strategies and Technologies continues to publish its annual ranking of the top Russian defense contractors, based on their key financial and operational indicators.

## Sources

The ranking was compiled based mostly on official annual reports and press releases of the largest Russian defense contractors, as well as reports in the leading Russian media. The ranking also made use of information provided directly by the companies themselves. In a number of cases where official figures were not available, CAST used its own estimates.

The structure of the ranking includes the following operational indicators:

- revenues;
- net profit (net loss)
- share of exports in total revenues;
- share of civilian contracts in total revenues;
- number of employees;
- sector: aerospace (AS), naval (N), ground equipment (G), equipment and electronics (EQ), artillery (A), small arms (SA), munitions (M), engines (E), air defense systems (AD), space systems (S); and
- ownership: private (P – state-owned stake less than 25 %), majority private-owned (MP – state-owned stake between 25 % and 50 %), majority state-owned (MS – state-owned stake between 50 % and 75 %) and state-owned (S – companies with a state-owned stake of over 75%).

The ranking does not include:

- Companies working for the Russian nuclear forces or space forces;
- Companies which derive over 80 per cent of their revenues from civilian contracts; and
- Companies whose operational figures are not available and there is not enough information to make an accurate estimate.

## Representativeness

Compared to 2009 the 2010 ranking has become more representative, thanks mainly to the inclusion in the sample of the United Shipbuilding Corporation (OSK). The

corporation's revenue figures in the ranking are an estimate based on remarks by its president, Roman Trotsenko, and 2009 official figures.<sup>1</sup>

Naturally, our estimate of OSK revenues cannot be precise. Nevertheless, we believe that the error margin for that particular set of figures is much lower than the overall margin when estimating the revenues of each individual shipbuilding company in the Russian defense industry. Let us recall that most of the large Russian shipyards are very secretive due to the strategically important nature of their output (such as nuclear submarines). For that reason, in our previous rankings we either omitted those companies from the ranking altogether, or estimated their figures based on their rare press releases or remarks by their senior managers. With the emergence of OSK we now have a fairly accurate picture of the Russian shipbuilding industry's consolidated revenues.

Another difference from 2009 is that in 2010 official figures were made available by the Instrument-building Design Bureau (KBP). The Tula-based company is one of Russia's largest (and most secretive) defense contractors. We believe that the only large company still missing from the 2010 ranking is the Vega concern, a maker of radioelectronic equipment whose 2009 total revenue was 122.5m dollars. Like OSK, Vega is usually very late to release its official figures.

In the future, this ranking will be even more representative thanks to the decision by several large companies to publish their consolidated figures as opposed to just the results of their lead company. These include NPO Machine-building, the Aerospace Equipment Corporation (KAO), the Sozvezdiye concern, and Motovilikha Plants. We estimate, for example, that NPO Machine-building group's consolidated revenue is about a third higher than the revenue of its lead company. KAO's consolidated revenue is about 650-800m dollars, i.e. four or five times the figure of its lead company. The Sozvezdiye concern and Motovilikha Plants announced their consolidated revenues in 2010,<sup>2</sup> so we have included those figures in the ranking. But for now, releasing consolidated results has yet to become regular practice.

## Key conclusions

Consolidated revenue of the Top 20 companies in the 2010 ranking is 17.84bn dollars, up from 12.25bn the year before. Adjusted for the US dollar inflation figure of 1.64 per cent,<sup>3</sup>

the real increase is a record 44 per cent. After disappointing 2009 results<sup>4</sup>, the 2010 figures demonstrate that the Russian defense industry has recovered from the impact of the world economic crisis.

Among the large holding companies, the most impressive growth was reported by Vertolety Rossii (Russian Helicopters), which is Russia's most well-balanced (in terms of revenue sources) and most successful defense contractor. Let us recall that the group continued to grow even in the crisis year 2009, when the entire industry was in recession. The foundations of that success include not only the hugely popular Mi-8/17 series, but also the launch of mass production of the Mi-28N and Ka-52 attack helicopters for the Russian armed forces.

The share of exports in the consolidated revenues of the Top 20 Russian defense contractors was also up, from 39.6 to 44.1 per cent, suggesting that Russian MoD contracts were not quite as vital for the industry in 2010 as they were the year before. That was only to be expected, given that the world economy and the international defense market have both perked up.

## Analysis by company

Almaz-Antey, the maker of air defense systems, has remained the unquestioned leader of the ranking for several years now. It is followed by the United Aircraft Corporation (OAK) for a second year in a row. As usual, these two groups are far ahead of the rest of the pack. Very little information has been released about Almaz-Antey's exports in 2010. We believe that the group supplied the S-300PMU2 SAM systems to Azerbaijan and the Buk-2SE systems to Syria, although there has been no official confirmation.<sup>5</sup> As for domestic contracts, Almaz-Antey is known to have supplied two S-400 batteries to the Russian armed forces in 2010.<sup>6</sup>

OAK delivered 35 fighter jets to foreign customers in 2009, including 30 Su-30MKI jets to India (20 finished units and 10 assembly kits), two Su-30MK2 fighters to Vietnam and three Su-27SKMs to Indonesia. The Russian Air Force took delivery of four Su-34 tactical bombers, four Su-30M2 fighters, four Su-27SM3 and three MiG-29SMT fighters, plus four Yak-130 jet trainers. OAK also upgraded two Tu-160 strategic bombers and an undisclosed number of MiG-31BN fighters and other aircraft. OAK also continued the T-50 fifth-generation fighter project.

Vertolety Rossii, which came third in the ranking, made 214 helicopters (including 105 military helicopters) for Russian and foreign customers in 2010, up from 183 helicopters the year before.<sup>7</sup> Known deliveries include eight Mi-17 units to Iraq, 10 to Afghanistan, four to Azerbaijan and smaller batches to several other countries. China took delivery of three Ka-28 anti-submarine naval helicopters

and two Ka-31 AEW naval helicopters. Attack helicopter deliveries also included three Mi-35M helicopters to Brazil, four Mi-35Ps to Indonesia, two Mi-35Ps to Peru and four Mi-24Ps from Russian Air Force surplus to Burma. The biggest domestic delivery was another batch of Mi-28N helicopters (15 units) and Ka-52 (4 units) to the Russian Air Force. The Russian armed forces also received several Mi-8 and Ansat-U helicopters; several used helicopters were repaired.

The OSK group came fourth in the ranking. Its biggest export delivery in 2010 was two Project 636M (Kilo class) diesel-electric subs built by Admiralty Shipyards for the Algerian Navy.<sup>8</sup> But the bulk of its custom came from Russia's own armed forces. To the Russian Navy OSK delivered one new Project 677 (Lada class) diesel-electric boat and repaired one Project 667BDRM nuclear missile sub, one Project 20120 and one Project 877 diesel-electric sub, and one Project 956 destroyer. It also delivered several new auxiliary ships. It continued to build Project 955 nuclear missile submarines, which is probably the reason for the high figures reported by its Sevmash and Rubin subsidiaries.

The United Engine Corporation (ODK) and NPCG "Salyut" came fifth and eighth, respectively. The bulk of their defense revenue was generated by sales of the Al-31F turbofan engines for Su-27/30 aircraft destined for exports. There were also several independent export contracts. To China ODK subsidiaries supplied 43 RD-93 turbofan engines for the FC-1 fighter jets and 36 D-30KP2 turbofan engines for the H-6K bombers. The company also reported higher sales to the Russian MoD, which included separate engine deliveries and sub-contracts from aircraft makers.

The Tactical Missiles Corporation (TCM, Russian designation KTRV), which ranked third in 2009, came sixth in 2010, owing mainly to a sharp rise in Vertolety Rossii and ODK revenues, as well as the inclusion of OSK in the latest ranking. KTRV reported a significantly higher share of export contracts in its revenue figures; it appears that the "huge political and morale significance" of the Russian MoD contracts the corporation's chief spoke of in 2009<sup>9</sup> has somewhat diminished. Speaking about the most promising export markets, CEO Boris Obnosov singled out Vietnam.<sup>10</sup>

Uralvagonzavod (UVZ) came seventh. The T-90S main battle tank it makes remains the biggest-selling Russian ground weapon for the fourth year in a row. In 2010 the company delivered the last 20 completed T-90S tanks to India and about 160 assembly kits to be put together at the Avadi plant in India. The Russian Army bought 63 new T-90A tanks in 2010 and upgraded about 200 T-72B tanks to T-72BA specification.

Instrument-building Design Bureau (KBP) came in ninth; almost all of its revenues were generated by export contracts. Those included deliveries of the Pantsir-1 (SA-22) combined SAM and AA artillery system to the UAE and Syria, and Kornet-E (AT-14) anti-tank missiles to Peru and Turkey. Kornet sales also helped to boost the revenues of

Degtyarev Plant (13th place in the ranking; in recent years the company has also reported big earnings from exports of the Igla man-portable surface-to-air missile to Venezuela and other countries). Another 10 Pantsir systems are known to have been delivered to the Russian armed forces in 2010.

The Sozvezdiye concern (10th place in the ranking), created from the Voronezh Communications Research

Institute, has traditionally made the bulk of its revenues from domestic contracts. The company has been chosen as the general contractor for a project to develop various automated communications and control systems for the Russian armed forces. By 2015 Sozvezdiye hopes to double its revenues and increase the share of exports to 30 per cent.<sup>11</sup>

## Ranking of Russian defense companies by defense revenue in 2010

No	Company	Sector	Owner-ship	Defense revenue, million USD		Share of exports, % in total revenue		Share of civilian contracts, % in total revenue		Number of employees	
				2010	2009	2010	2009	2010	2009	2010	2009
1	Almaz-Antey air defense concern (Moscow)	AD / EQ	S	3,946.1	3,254.7	48.0	49.0	11.0	11.0	88,698	90,411
2	United Aircraft Corporation (Moscow)	AS	S	3,443.1	2,707.8	65.0*	60.5	18.4	24.6	95,900	97,500
3	Russian Helicopters (Moscow)	AS	S	1,908.1	811.7	49.0	39.4	28.7	55.3	38,486	37,930
4	United Shipbuilding Corporation (Moscow)	N	S	1,650.5*	n/a	30.0*	n/a	30.0*	n/a	n/a	76,323
5	United Engine Corporation (Moscow)	E	S	1,244.8	683.4	23.9	30.0	55.6	70.0	69,581	73,725
6	Tactical Missiles Corporation (Korolev, Moscow region)	M	S	1,007.7	908.6	50.0*	37.4	10.0*	8.0	n/a	23,323
7	Uralvagonzavod (Nizhny Tagil, Sverdlovsk region)	G	S	725.4	799.5	40.0*	60.0*	60.0*	30.0*	27,627	30,493
8	Gas-turbine Engineering Research & Production Center "Salyut" (Moscow)	E	S	684.8	493.4	20.0*	65.3	5.0*	5.1	n/a	12,214
9	KBP Instrument Design Bureau (Tula)	SA / M / G	S	628.3	n/a	91.5	n/a	0.2	n/a	7,304	n/a
10	Sozvezdiye electronic concern (Moscow)	EQ	S	527.7	n/a	9.4	9.3	4.0	n/a	n/a	6,114
11	NPOmash corporation (Reutov, Moscow region)	M / S	S	438.6	342.8	50.0*	40.0*	5.0*	5.0*	n/a	n/a
12	Severnaya verf shipyard (Saint-Petersburg)	N	P	307.7	303.8	31.0	54.5	10.0*	10.0*	3,561	3,278
13	Degtyarev plant (Kovrov, Vladimir region)	SA / M	P	273.9	232.9	35.0	33.0	9.5	10.1	10,418	10,650
14	Arzamas Machine-Building Plant	G	P	188.7	155.2	29.5	21.1	13.4	12.6	4,193	4,332
15	Kurgan Machine Building Plant	G	P	185.7	102.7	30.8	39.3	21.1	32.8	5,596	5,184



No	Company	Sector	Owner-ship	Defense revenue, million USD		Share of exports, % in total revenue		Share of civilian contracts, % in total revenue		Number of employees	
				2010	2009	2010	2009	2010	2009	2010	2009
16	Almaz shipbuilding company (Saint-Petersburg)	N	P	170.3	118.4	46.0	26.9	10.0*	10.0*	927	830
17	Arsenal Machine Building Plant (Saint-Petersburg)	A / S	P	134.1	80.2	0.3	0.4	7.0	8.0	2,438	2,384
18	Motovilikha plants (Perm)	A	MP	133.3	113.8	40.0*	40.0*	55.0*	55.0*	about 6,000*	n/a
19	Krasnogorskiy optical plant (Krasnogorsk, Moscow region)	EQ	MS	125.5	88.3	8.0	25.1	7.8	10.0*	4,296	4,337
20	Aerospace Equipment Corporation	EQ	MS	117.9	47.2	50.0*	60.0*	30.0*	30.0*	n/a	n/a

\* – CAST estimate.

Notes:

- Russian Helicopters and United Engine Corporation (ODK) – part of Oboronprom group.
- Sozvezdiye electronic concern – 2009 figures only for the lead company.
- NPOmash corporation – 2009–2010 figures only for the lead company.
- Aerospace Equipment Corporation – figures only for the lead company.

**Sources:** annual reports and company press releases; media reports, CAST estimates.

- 1 OSK has signed 86-90bn roubles worth of contracts with the MoD for 2012 – Roman Trotsenko // PortNews, June 18, 2011.
- 2 To live and work with a sense of constant development. Interview with Sozvezdiye director-general Yuri Sidorov // Radioelektronnaya promyshlennost Rossii, June 1, 2011. *Kostin A.* Motovilikha on the defensive // Komersant (Perm), February 17, 2011.
- 3 [http://www.inflationdata.com/inflation/inflation\\_rate/currentinflation.asp](http://www.inflationdata.com/inflation/inflation_rate/currentinflation.asp).
- 4 See the previous ranking in Moscow Defense Brief, No 3, 2010.
- 5 All information about Russia's defense exports is sourced from: Russian arms trade roundup for 2010 // Eksport vooruzheniy, No 6, 2010. For more information please refer to that article.
- 6 All information about Russian MoD weapons contracts is sourced from: *Frolov A.* Russian MoD weapons contracts in 2010 // Eksport vooruzheniy, No 2, 2010. For more information about Russian MoD weapons contracts, please refer to that article.
- 7 Vertolety Rossii has orders for more than 1,500 helicopters // Interfax, May 12, 2011.
- 8 The estimate of Admiralty Shipyard revenues is based on remarks by the company's management. See: Shipyards' revenues to rise by 5.3 per cent // Vedomosti (St Petersburg), March 30, 2011.
- 9 Loaded weapon. Interview with Tactical Missile Corporation (KTRV) Director-General Boris Obnosov // Odnako, February 15, 2010.
- 10 Ibid.
- 11 Corporate program // corporate website ([http://www.sozvezdie.su/aboutt/programmnie\\_pozitsii/](http://www.sozvezdie.su/aboutt/programmnie_pozitsii/)).

# Uganda: Turning into Central Africa's Military Superpower?

Mikhail Barabanov

Uganda is one of the key powers in Central Africa; it is involved in numerous conflicts in several neighboring states, including the Democratic Republic of Congo and Sudan. Uganda's People's Defense Force, the UPDF, is fighting rebels on its own territory, with frequent forays across the border. Ugandan troops are a key component of the African Union's peacekeeping force in Somalia, the AMISOM, which takes part in the fighting in the country. Uganda is also one of the key sponsors and allies of South Sudan, which recently became an independent nation; the Ugandan government appears to believe that it may well have to become involved in an armed conflict with Khartoum.

As a result of all this, Uganda has become one of the most militarized countries in Africa. The UPDF is over 51,000 strong, not counting the internal security forces and local armed formations. A large part of it is always involved in combat action. President Yoweri Museveni's regime came to power after the rebel National Resistance Army, the NRA, brought down the previous government in 1986. It remains distinctly authoritarian and militaristic. With the military playing an important role in national politics, and with the UPDF always in the middle of some protracted military campaign against rebels at home or abroad, the Museveni regime treats the army's needs as a priority. Military spending is high; in the 1990s and 2000s the country was one of Africa's top importers of weapons. In recent years arms procurement programs have been ramped up even further, turning Uganda into Central Africa's military superpower. Unusually for an African country, Uganda prefers to buy new or seriously upgraded weapons, making its armed forces technologically superior to its neighbors' armies and giving them a significant advantage on the battlefield. In early 2010 Uganda signed a package of contracts for the latest Russian weaponry worth 740m dollars, an unprecedented and truly astounding sum for an African customer.

## Ugandan arms procurement since 2000

In the 1990s, when it was heavily involved in fighting in the DRC, Uganda bought large quantities of cheap and obsolete Soviet weaponry from the CIS and Central European states. But starting from 2000 it has made a gradual shift towards buying new or upgraded hardware, and not only from Russia

or the CIS, but also from Western, Israeli and South African companies.

In 2005 it bought 31 BMP-2 infantry fighting vehicles from Ukraine. The 10 T-72 main battle tanks it acquired around the same time were probably delivered under the same contract, but the precise origin of those tanks is unknown.

Uganda is reported to have bought 14 new BTR-80A armored personnel carriers from Russia in 2005. In 2009 it also purchased 23 T-55AM tanks from Russia by way of Belarus; the contract is reportedly for 31 units in total.

In April 2003 Uganda took delivery of three Mi-24V attack helicopters from Belarus under a 10m dollar contract. In 2004 it received six upgraded Mi-24PN helicopters from Russia under a contract signed the previous year. The helicopters were fitted with Zarevo thermal imagers by Russia's Rostvertol. Uganda is now the only country, apart from Russia itself, to operate the Mi-24PNs. In 2005 Russia delivered to Uganda one new Mi-171 transport helicopter, and in 2009 a newly built Mi-17-1V.<sup>1</sup>

Uganda's participation in international peacekeeping operations brought the need for armored personnel carriers with improved protection against land mines (Mine Resistant Ambush Protected – MRAP class). In 1995 the UPDF bought 10 new Mamba Mk II APCs made by South Africa's OMC; another five were bought in 2004. In 2002 Uganda took delivery of 15 new OMC RG-31 Nyala APCs (the successor of the Mamba) under a contract signed in 1998. In 2005 it bought 31 Buffel APCs from South African army surplus. In 2009 Canada financed the purchase of six GILA APCs, made by IVEMA, for the Ugandan police force taking part in the African Union's peacekeeping operation in Darfur.

Not much information is available about Ugandan purchases of artillery systems. In 2002 the country bought six (12, according to other sources) M-46 130mm towed guns from Bulgaria. That same year it bought nine D-30 122mm howitzers and six RM-70 122mm MLR systems from Slovakia.<sup>2</sup> The country is reported to have bought a total of 40 used pieces of artillery in 2002.<sup>3</sup>

After that Uganda started buying the latest artillery systems from Israel's Soltam Systems, becoming one of the company's biggest customers. In 2002 it bought 18 advanced Soltam M839 155mm/39 towed howitzers. In 2003 it became the first customer for the Soltam ATMOS-2000 155mm/39

self-propelled howitzer mounted on wheeled 6x6 chassis. It paid 5m dollars for three such systems, which were delivered in 2005.<sup>4</sup> In 2009 Uganda bought another three, and in April 2011 Israel's Elbit Systems, which acquired Soltam Systems in 2010, reported that an unnamed African customer had signed a 24m dollar contract for ATMOS-2000 systems. It is quite likely that the customer was Uganda, which probably bought another 12 systems to bring the total it had to 18, which is a standard battery complement.<sup>5</sup> In 2009 the country also bought 18 new CARDOM 120mm mortars from Soltam.<sup>6</sup>

In the past decade Uganda has been buying large quantities of small arms and infantry weapons from China. In 2002 it bought 102 Chinese army trucks. As the country continues to ramp up its rearmament programs its interest in cheap Chinese weaponry is set to increase. According to some reports, Uganda has placed orders for large batches of Chinese-made small arms and ammunition. For its police force it bought three MRAP vehicles from China in 2011. In 2008 the Ugandan Air Force received two Y-12-IV light transports made by Harbin Aircraft Manufacturing Corporation and paid for by a Chinese loan. In 2009 two such aircraft were bought by Uganda Air Cargo Corporation.

In 2004 Uganda signed a 15.7m dollar contract for advanced military communication equipment with America's Harris Corporation.

In another sign of Uganda's growing taste for increasingly advanced and expensive modern weaponry, in 2008 the country signed a contract with Ukraine for four batteries of the upgraded S-125-2D (SA-3) SAM system. It became the first customer for this version of the S-125M, developed by Ukraine's Aerotehnika; what is more, it seems to have part-financed R&D for that project. The first S-125-2D battery was delivered to Uganda in late 2010; the other three are due before the end of 2011.<sup>7</sup>

## The 740m dollars affair

In 2010 bits and pieces of information started to emerge about a large Ugandan weapons contract signed with Russia. The greatest surprise came in April 2010, when it was reported that in March that year Uganda signed a contract for six Su-30MK2 heavy multirole two-seater fighters (made by Russia's KnAAPO).<sup>8</sup> Ugandan officials made conflicting comments, and at first even tried to deny the existence of the deal.<sup>9</sup>

Things were finally clarified in March 2011, when the Ugandan media reported President Museveni as saying at a meeting of the ruling party that the government had taken out a 740m dollar loan from the Bank of Uganda to finance weapons programs. Fighter jets and tanks were mentioned among the weapons bought from an unnamed country –

although Russia was identified as that country almost immediately afterwards. The Ugandan media later found out that some 446m dollars had already been transferred in payment for the tanks and jets.<sup>10</sup>

It is known that discussions of contracts for advanced Russian weapons began after President Museveni's visit to the MAKS air show in Moscow in August 2009. Details were finalized in the spring of 2010. According to Ugandan sources, the main lobbyist of the contract for the Su-30MK2 jets was Col. Moses Rwakitarate, the Ugandan Air Force chief of staff and personal friend of President Museveni's son, Lt. Col. Muhoozi Kainerugaba.

According to media reports, the value of the contract for the six fighter jets is 327m dollars.<sup>11</sup> The first two Su-30MK2 units were delivered to Entebbe by an An-124 transport in late June 2011. Two more are to follow towards the end of the year, and the final two in 2012. The contract also includes a ground simulator and guided air-to-air and air-to-surface weapons (including the Kh-31P anti-radiation missiles and guided bombs).<sup>12</sup>

The remaining 119m dollars out of the 446m already paid by Uganda was probably for the tanks. According to available reports, Uganda has bought 31 advanced new T-90S main battle tanks built by Russia's UVZ. They will be used to equip a tank battalion of an elite brigade of the Ugandan Presidential Guard. All of them are to be delivered in 2011, making Uganda the owner of the most advanced tank fleet in sub-Saharan Africa.

It has not been made clear what the remaining 294m dollars in the 740m dollar contract will be spent on. It is known, however, that Uganda has submitted purchase requests for advanced Russian Buk-M2E (SA-17) and Tor-M2E SAM (SA-15) systems. There have also been reports that Uganda will receive four Mi-35 attack helicopters. It cannot be ruled out that other types of weapons have been ordered as well.

This arms contract, which is nothing short of gigantic by the country's and the whole region's standards, will make Uganda the unquestioned regional leader in terms of military technology. The development is especially significant amid continued instability in South Sudan and the likelihood of a new war between the North and the South, with the latter now fighting as an independent state. In such a conflict Uganda will inevitably fight on the side of the South. Its new Su-30MK2 fighters will be used as the region's "strategic bombers", delivering long-range and high-precision strikes. In that light Uganda's decision to opt for the Su-30MK2 seems an entirely rational move, rather than the extravagant splurge it might have seemed at first glance.

But there are also financial ramifications to consider. After forking out 446m dollars for Russian weapons, the government also approved a highly questionable 300m dollar "emergency" spending increase in the run-up to presidential

and parliamentary elections on February 18, 2011. As a result, the Bank of Uganda's reserves have shrunk from 2.8bn to 2.17bn dollars, which is only 25 per cent above the IMF-stipulated minimum. The Ugandan shilling fell by 12 per cent between April and July 2011; inflation is running at an annualized 16 per cent. That boosted the turnout at the opposition protests in April and May, which came close to disrupting President Museveni's inauguration, and triggered

strikes by retail vendors and public transport workers in July 2011.

On June 14, 2011 Bank of Uganda chairman Emmanuel Tumusiime-Mutebile said in an interview with the Financial Times that he had opposed the use of the bank's currency reserves to finance weapons programs. He also recognized that lack of fiscal discipline was the main reason for growing inflation.

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- 1 From the aviaforum.ru web site, citing figures of the Russian State Customs Committee: [aviaforum.ru/showthread.php?t=14552&page=217](http://aviaforum.ru/showthread.php?t=14552&page=217).
  - 2 SIPRI database.
  - 3 Jane's Sentinel Security Assessment.
  - 4 SIPRI database.
  - 5 ELbit Systems press release of April 6, 2011. See also: Foss C. F. Soltam scoops export order for ATMOS artillery system // International Defense Review, May 2011.
  - 6 SIPRI database.
  - 7 Hewson R. Delivery of first Aerotechnica S-125 upgrade imminent // Jane's Missiles and Rockets, December 2010.
  - 8 Nikolskiy A. Africa chooses Sukhoi jets // Vedomosti, April 5, 2010.
  - 9 Jane's Sentinel Security Assessment.
  - 10 Aliev R. Another weapons scandal in Uganda // [www.periscope2.ru/?digest\\_id=32737](http://www.periscope2.ru/?digest_id=32737).
  - 11 Baribaga J. Uganda: \$740 Million Fighter Jets Scam Sneaks Under the Radar // The East African (Kenya), April 4, 2011.
  - 12 TMC (KTRV) 2010 Annual Report.

# Rosoboronexport's Offset Agreements with India

Viktor Komardin, deputy director-general of OAO Rosoboronexport

Offset deals have become an important instrument of Russia's international arms trade. Such deals have been signed with a number of countries, including Malaysia, Greece, Kuwait, Turkey, Brazil and India. Their terms include the transfer of technologies, infrastructure development, training of specialists, assistance in establishing local production, and other services. Some of the offset agreements signed by Rosoboronexport are quite unique. For example, in Malaysia we set up an aerospace school at the national university, trained a Malaysian cosmonaut and sent him to the International Space Station. The deal was part of the contract for the delivery of the Su-30MKM fighters to the Malaysian Air Force.

Internationally, offset deals are becoming increasingly onerous for the supplier country. Their terms often include:

- Offset commitments worth as much or even more than the value of the actual contract
- Stricter sanctions for delays or failure to fulfill the terms of the offset agreements, with the recipient countries demanding greater guarantees of compliance with the terms of the deal
- Lower multipliers used in calculating the offset value of the projects;
- Clauses requiring local production and allowing exports when the deal involves the transfer of technologies

Offsets are increasingly becoming an important instrument of India's defense procurement procedure; indeed, Indian offset requirements are now some of the most demanding in the world. Russia is trying to comply, but in our view, some of the new Indian offset regulations are counterproductive. They unnecessarily complicate things for the supplier, burdening him with excessive and entirely unjustified legal, organizational and financial commitments. What is more, they are a drag on the development of India's own defense industry.

Unlike the legislation of most other countries, Indian offset rules do not allow the use of multipliers. The country accepts only direct investment in cash or purchase of Indian-made defense products.

Russia is a bidder in most of the newly-announced Indian defense contracts. The aggregate worth of the Russian offset proposals in those bids is about 10bn dollars. Proposals by Rosoboronexport include building additional service

infrastructure in India, launching production of components and finished products in the country under Russian license, conducting R&D projects in areas India is interested in, etc.

During negotiations representatives of the Indian armed forces, as well as our offset partners, express great interest in the Russian proposals. But on many occasions the Indian government (specifically, the Defense Offset Facilitation Agency) turns them down as incompliant with the Indian offset legislation. It is therefore entirely obvious to us that the existing Indian offset restrictions, compounded by ambiguous interpretation of the relevant legislation by members of the Indian tender committees, are preventing our two countries from making the full use of the existing potential in military-and-technical cooperation.

Rosoboronexport has submitted to the Indian government its proposals on simplifying the Indian offset legislation. The essence of those proposals is as follows:

- Allow direct foreign investment in-kind as an offset mechanism (setting up manufacturing, repair, training and other facilities, including the transfer of relevant technologies)
- Broaden the range of allowed offset mechanisms, including indirect offsets
- Allow investment into civilian sectors of the Indian economy, especially high-tech industries such as communications, energy, metallurgy, transport and the space industry, as an offset mechanism
- Introduce a system of multipliers
- Extend the term of the projects being implemented
- Reduce the severity of penalties
- Allow the purchase of Indian civilian produce as an offset mechanism
- When selling defense products made jointly with an Indian partner, count the entire value of the product, and not just the added value of Indian origin, towards the offset targets
- Automatically recognize as meeting the offset criteria those projects which are similar to projects previously approved by the Indian MoD and agreed in the contracts.

If at least some of the above proposals are accepted by India, military-and-technical cooperation between our two countries will see major growth. That will translate into more Russian investment into the Indian defense industry.



**Table 1. Rosoboronexport offset projects**

Project	Offset mechanism	Current status
<b>Kuwait</b>		
Investment project	Direct cash investment	Completed
Development and transfer of technology for deep oil conversion and assembly of a prototype conversion unit	Transfer of technology	Ongoing
<b>Malaysia</b>		
Train a Malaysian cosmonaut and send him to space	Services	Completed
Design and build an Su-30MKM fighters simulator	Design and supply of equipment	Completed
Set up a service center for Su-30MKM fighters maintenance	Design and supply of equipment	Ongoing
<b>Greece</b>		
Build coastal infrastructure for the Zubr air cushion assault landing ships	Supply of equipment and components, training of specialists	Completed
<b>Turkey</b>		
Assembly of the Kornet-E anti-tank missile systems by Turkish specialists from Russian components	Supply of components, assistance in assembly of military hardware	Completed
Marketing services to support exports of Turkish-made hardware (ships) to third countries	Services	Completed
Purchase of defense software developed by Turkish specialists	Purchase of goods from the customer	Ongoing
<b>Colombia</b>		
Develop a new maintenance regime for Mi-17 helicopters*	Services	Completed
<b>Brazil</b>		
Set up a service center for repair and maintenance of the Mi-35M attack helicopters' airframes, components and systems	Supply of equipment, training of specialists	Paper work being finalized
<b>India</b>		
Set up a repair facility at the airbase in Chandigarh to perform repair and refurbishment of key Mi-17V-5 helicopter components.**	Supply of equipment, provision of services (launch of the machinery, training of specialists)	Ongoing
Launch manufacturing of Mi-17 helicopter components in India**	Technical assistance in setting up a manufacturing facility, supply of equipment, provision of services (launch of machinery, training of specialists)	Ongoing
Purchase of components for Su-30MKI fighters from India	Purchase of equipment from customer	Completed
<b>Finland</b>		
100% offset as part of a contract to supply extra-short-range man-portable SAM systems	Proposals being drafted by the Russian contractors (KBM, Kolomna)	Proposals to be submitted by the end of 2011

\* The essence of the project is that instead of undergoing major scheduled repairs after 2,500 flight hours, the helicopters will be inspected by the manufacturer's specialists to extend their service life.

\*\* These projects are part of the general offset agreement attached to the 2008 contract for the delivery of 80 Mi-15V-5 helicopters to India. Subsequently the Indian side changed its interpretation of the provisions of its offset legislation; it now accepts only those offset mechanisms which involve either direct cash investment or purchase of Indian products.

**Source:** TMC 2010 Annual Report

**Table 2. Rosoboronexport offset proposals that did not come to fruition**

## Austria

As part of Russian bids for aircraft contracts Rosoboronexport developed a package of indirect offset proposals (36 projects), including aerospace projects, as well as proposals in areas such as the environment, new materials, and computer, electron-ray laser and X-ray technologies. The proposal was not implemented.

## Hungary

1. Offset program (counter-trade) as part of the Russian bid for a Hungarian MoD contract for army trucks. The Russian proposals were not shortlisted because the suppliers failed to meet a number of requirements for the bid.
2. Offset program (counter-trade) as part of the Russian bid, with the MiG-29 fighters, for a Hungarian fighter jet contract. Hungary eventually opted for Sweden's Saab JAS-39 Gripen offer, abandoning an already initialed contract with Russia.

## Poland

Various offset proposals ("Training Program", "Maintenance Station", "Final Assembly", "Adaptation and Installation of Onboard Electronics") were developed as part of a bid, with the Mi-171 model, for a Polish contract for six helicopters. The proposal was not implemented.

## South Africa

1. Joint design program for Project 636 diesel-electric subs.
2. Joint design of systems and components for diesel-electric subs
3. Assembly of diesel-electric subs at South African shipyards. Rosoboronexport also proposed offset deals for deliveries of T-80U main battle tanks and BMP-3 infantry fighting vehicles. None of the proposals was implemented.

*Source: Rosoboronexport*

# Flight Unit 224: Russian MoD's Commercial Airline

Mikhail Barabanov

Flight Unit 224 (Lyotny Otryad 224) is a very curious entity within the Russian Armed Forces. It is essentially a state-owned commercial outfit offering non-military and commercial air transport services to the government and other customers using aircraft of the Russian Air Force's Military Transport Aviation (MTA) service.

## Flight Unit 224's history

FU 224 was formed as part of the MTA service in 1971 to perform two main tasks:

- Provide transport services for domestic and foreign trips by top Soviet officials. The officials themselves are of course flown by passenger planes operated by a special flight unit that has always been part of Civil Aviation. But the heavy equipment, cars and sundry other stuffs that follow the officials on their trips has to be hauled by military transports.
- International haulage of military and non-military cargos for Soviet/Russian government customers. One of the main types of cargo was weapons and other hardware destined for exports.

In both cases MTA transports had to be used for international flights. That required certain legal arrangements, special training for the crews (including English language training), etc. To address all those issues, the MoD set up Flight Unit 224 within the MTA service, with offices at the MTA headquarters in Moscow.

The unit's fleet is made of transports normally assigned to other MTA formations and re-assigned to FU 224 on a temporary basis. The crews, usually made of the best-trained pilots available, are also rotated using a similar mechanism. Initially FU 224 operated mainly An-12 and An-22 transport aircraft. In the late 1970s those were replaced by the Il-76 and, in the late 1980s, the giant An-124 Ruslans as well. The An-12 and An-22 transports are no longer being used. FU 224 was also assigned a unit number of the civilian Soviet airline Aeroflot. In Soviet times all its planes had a traditional Aeroflot color scheme so as to appear as normal civilian liners.

As its home base FU 224 has always used the Migalovo airfield near Tver, which is one of the main MTA airbases. In 2009 the unit was formally relocated to the Chkalovskoye

airfield near Moscow – but most of its flights still appear to use Migalovo.

The unit has always played a major role in Soviet international air haulage operations, including weapons deliveries to Soviet allies abroad. It was actively involved in supplying the Soviet campaign in Afghanistan in the 1980s. But by that time commercial haulage had already become an important part of its operations. That included transport services provided under contracts with foreign countries, although in Soviet times the unit itself had nothing to do with the actual signing of those contracts.

## On the haulage market

Things changed after the collapse of the Soviet Union. In January 1993 Boris Yeltsin signed a decree authorizing FU 224 to operate as an independent state-owned airline. In April 1993 the government set up the Flight Unit 224 State Airline, with Federal State-Owned Unitary Company (FGUP) status, authorized to work independently on the commercial market. Formally, however, the company remains part of the Russian MoD.

With a large fleet of heavy-lifting Il-76 and An-124 transports equipped with cargo loading ramps, and with almost the entire MTA fleet at its disposal as a reserve, Unit 224 has become an important player on the international market for air haulage of oversized cargos. It has also retained its role in providing air transport services during trips by Russian dignitaries, especially the president himself.

But the bulk of its custom still comes from Russian government customers who need international air transport services. An especially important area is weapons deliveries under Rosoboronexport contracts. In essence, FU 224 is an element of the Russian international arms trade system. In that light, periodic speculations in the foreign media about alleged secret deliveries of Russian weapons to foreign customers under state contracts look quite naïve.

Meanwhile, commercial contracts with foreign customers are becoming an increasingly important part of FU 224's business. Heavy transports equipped with loading ramps are in great demand on the international haulage market. That is especially true of the An-124; Unit 224 is one of the very few carriers (along with Volga-Dnepr, Polet and

Antonov Airlines) operating these aircraft. The Il-76 also remains a popular workhorse, used quite heavily in the 1990s and 2000s on flights between China and Russia.

In the 1990s FU 224's commercial operations helped to keep the Russian Military Transport Aviation flying despite painful budget cuts. The revenues it generated were used to finance the rest of the cash-strapped MTA service. Unit 224 flights also helped MTA pilots to clock up the required minimum number of flight hours, since the rest of the units could not afford to buy enough fuel. Finally, international flight experience and familiarity of the pilots with many foreign airfields had some practical uses for the Russian Air Force.

In another step towards commercialization, the company's status was changed in 2009 from FGUP to JSC, a joint-stock company, although it is still fully owned by the Russian MoD.

As of early 2011, Flight Unit 224 operated five An-124 and An-124-100 transports and 18 Il-76MD's, all belonging to the Russian Air Force's MTA service.

### NATO contracts

In recent years FU 224, acting as a fully commercial venture, has been working to win new foreign customers for oversized military cargo haulage. It is now offering its services directly to the armed forces of leading Western nations, capitalizing on the fact that their own military transport fleets are stretched by military campaigns all across the globe.

In January 2011 FU 224 received a Foreign Operations Specifications clearance from America's Federal Aviation Authority for Il-76md and An-124-100 charter flights between Russia and the United States. It then chose a local partner company from among the participants of America's Civil Reserve Air Fleet (CRAF) program, and applied to the United States Transport Command (USTRANSCOM) to become a participant of the CRAF program. In early September 2011 the Transport Command decided that Flight Unit 224 should be included in the program, and that the company should submit to a mandatory audit, which is scheduled for early 2012.

The French, meanwhile, are not fully satisfied with the air transport services they receive under NATO's Strategic Airlift Interim Solution (SALIS) program. The program relies on An-124-100 transports leased from Russian and

Ukrainian civilian airlines. In late 2010 the French MoD announced its own independent contract, inviting bids from accredited brokers. France's ICS company, which represented Flight Unit 224, was announced the winner. It has now signed a four-year contract for air transportation services with the French MoD. In April-September 2011 FU 224's An-124-100 transports performed more than 100 flights from France (from airbases in Vatry, Mont-de-Marsan, Pau and Istres) and the United Arab Emirates (Al Dhafra) to Afghanistan (Kabul, Bagram and Kandahar) and back, hauling a total of over 8,000 tonnes of cargo.

Britain chose not to participate in SALIS from the very beginning, opting instead for its own contracts for airlifts of heavy military cargos. FU 224 has been bidding for these contracts in partnership with Britain's ACS brokers since 2010. In 2010 it won contracts for seven flights from RAF Brize Norton to the Falklands, Nairobi and Kandahar. So far this year it has won nine flights from Prestwick to Bergen (Norway) and from RAF Brize Norton to Kandahar.

Cooperation between FU 224 and the American and NATO militaries seems set to expand. This means that the Russian Air Force's MTA service is already working for the armed forces of leading Western nations as part of this little-known partnership program.

### Technology refresh

In 2008 the Russian MoD approved and launched a large-scale upgrades program for its reserve fleet of An-124 aircraft. FU 224 is taking part in the program; its responsibilities include:

- Compiling a list of requirements to the MoD's An-124 transports the company needs for its international operations
- Procuring equipment necessary to comply with ICAO requirements
- Investing into modernizing the reserve stock of D-18T turbofan engines
- Maintenance of the aircraft leased out to FU 224, financed from the company's own funds
- Profitable commercial operation of the aircraft leased out to the company
- Training of MTA flight crews working for FU 224

According to preliminary estimates, the program will enable FU 224 to operate 10 upgraded An-124-100M transports by 2015, and to continue to increase its fleet by leasing more An-124's still remaining in the MoD's reserve.

# Losses of Russian Aircraft during the First Chechen War in 1994-1996

Mikhail Lukin, Kommersant Publishing House

The table listing Russian aircraft losses in the 1st Chechen War covers the period from September 1994 to October 1996. That is slightly longer than the duration of the ground campaign, which lasted from December 1994 to August 1996. Information was sourced from reports in the traditional news media and web sites, statements and reports by government agencies, and accounts of first-hand witnesses.

The table includes three types of incidents:

- incidents involving loss of life;

- incidents involving loss of aircraft;
- incidents resulting in the aircraft involved being subsequently written off.

The table includes incidents caused by direct enemy action (i.e. fire from the ground) as well as other causes, such as pilot error or mechanical failure. It includes aircraft belonging to the Russian armed forces as well as other Russian militarized agencies (Interior Ministry and the Border Service).

No	Date	Type	Side number	Location	Unit	Casualties	Details	Crew
1	27-Sep-94	Mi-24V		Terskaya village, Chechnya	325th Independent Transport and Attack Helicopter Regiment	1	Came under fire from the ground, overturned and caught fire during emergency landing	A. Andreyev, R. Valeyev
2	14-Dec-94	Mi-8T	27 Red	Between Samashki and Novyy Sharoy (Chechnya)	325th Independent Transport and Attack Helicopter Regiment	3	Came under fire from the ground and emergency-landed. Commander and navigator killed by the rebels on the ground, the mechanic died in captivity	Lt. Col. Nikolay Leskov, Capt. Oleg Shaplygin, Sr. Lt. Sergey Devyatkov
3	14-Dec-94	Mi-8		between Samashki and Novyy Sharoy (Chechnya)	Unknown	1	During a rescue operation the Mi-8 helicopter piloted by Lt. Col. Leskov came under fire from the ground; one of the soldiers on board was killed	
4	20-Dec-94	Mi-8MT		Petropavlovskaya (Chechnya)	685th Independent Combined Air Regiment of the Interior Ministry's Internal Troops	5	The helicopter, which was on a medical mission, was shot down from a RPG as it was hovering before landing	Maj. Aleksandr Gasan, Sr. Lt. Oleg Smirnov, Capt. Anatoliy Savchuk
5	5-Jan-95	Mi-8MT		Kargalinskaya (Chechnya)	2nd Independent Air Squadron of the Internal Troops' Eastern District	4	Shot down from a RPG as it was completing an attack against a ground target; exploded and burnt out	Maj. Aleksey Bryzgalov, Sr. Lt. Andrey Azarov, Sr. Lt. Aleksey Sharov
6	25-Jan-95	2 Mi-24V		Goryacheistochikovskaya (Chechnya)	178th Independent Attack Helicopter Regiment	6	Collided with the Tersky ridge during a flight at low altitude	Maj. Aleksandr Lubchinskiy, Maj. Sergey Siforov, Capt. Petr Vakhrushev, Sr. Lt. Aleksandr Kazakov, Sr. Lt. Sergey Charkin, Sr. Lt. Yevgeny Filipenko



No	Date	Type	Side number	Location	Unit	Casualties	Details	Crew
7	3-Feb-95	Su-24M		Southeast of Chervlennaya village (Chechnya)	4th Pilot Combat Training Center	2	The aircraft flew into the side of a mountain as it was flying at low altitude in thick fog. Possible cause: navigation equipment failure	Col. Aleksandr Kasyanov, Lt. Col. Aleksandr Petlyakov
8	4-Feb-95	Su-25		Chechen-Aul (Chechnya)	368th Attack Air Regiment	1	Shot down from a ZSU-23-4 Shilka system during an attack against a ground target; pilot missing	Maj. Nikolay Bairov
9	4-Feb-95	Su-25	25 Red	Chechen-Aul (Chechnya)	368th Attack Air Regiment	0	Seriously damaged during an attack against ground targets after coming under fire from the ground, but managed to reach an airfield. The airplane was written off	Lt. Col. Yevgeny Derkul'skiy
10	February or March 1995	Mi-24		Gudermes (Chechnya)	Unknown	0	Sustained serious damage after coming under fire from the ground, emergency-landed, was later written off	
11	16-Mar-95	Mi-24		Gilyany (Chechnya)	55th Independent Attack Helicopter and Command Regiment	3	Shot down from the ground	Maj. Vyacheslav Tsymbalov, Sr. Lt. Sergey Mikhaylov, Sr. Lt. Aleksandr Yakimov
12	30-Apr-95	Mi-24		Gilyany (Chechnya)	Unknown	0	Damaged by fire from the ground, emergency-landed in Dagestan, aircraft later written off	
13	5-May-95	Su-25		Benoy (Chechnya)	368th Attack Air Regiment	1	Shot down from the ground	Lt. Col. Vladimir Sarabeyev
14	23-May-95	Mi-24		Chechen-Aul (Chechnya)	55th Independent Attack Helicopter and Command Regiment	3	Pilot lost control in mid-flight, the helicopter crashed. Possible cause: fire from the ground or mechanical failure	Capt. Yuri Ovcharenko, Capt. Andrey Biryuchinsky, Sr. Lt. Oleg Krasnov
15	4-Jun-95	Mi-24		Nozhay-Yurt (Chechnya)	325th Independent Attack Helicopter Regiment or 367th Independent Transport and Attack Helicopter Regiment	2	Shot down from the ground	Capt. Karpov, Lt. Vladimir Khokhlachev
16	11-Jun-95	Mi-8MT		Shatoy (Chechnya)	325th Independent Transport and Attack Helicopter Regiment	5	Shot down from a ZU-23-2 air defense system during landing	Maj. Nikolay Malko, Capt. Viktor Shcheglov, Sr. Lt. Nikolay Belet'skiy
17	27-Sep-95	Mi-8MT		Khankala (Chechnya)	825th Independent Helicopter Regiment (part of the combined helicopter regiment of the Far-Eastern Military District)	1	During landing the helicopter started to rotate due to damage to tail rotor control cables, fell down and caught fire. Possible cause: fire from the ground	Capt. Viktor Malko, Warrant Officer Sergey Stelmakh

No	Date	Type	Side number	Location	Unit	Casualties	Details	Crew
18	5-Dec-95	Mi-24		Karabulak (Ingushetia)	112nd Independent Transport and Attack Helicopter Regiment	3	Lost control in mid-flight and crashed	Maj. Dmitry Dolzhenko, Capt. Valeriy Bulatov, Sr. Lt. Yuri Yefremov
19	1995	Mi-8T		Kharada (Dagestan)	Federal Border Service	0	Fell onto its side during landing in mountainous terrain	Sergey Osinov
20	25-Jan-96	Mi-24	07	Budennovsk (Stavropol Territory)	487th Independent Attack Helicopter and Command Regiment	2	A tail rotor blade detached in mid-flight, the helicopter lost control and fell. Versions include prior damage sustained when the helicopter came under fire in Chechnya	Capt. Aleksandr Ratkin, Sr. Lt. Aleksandr Artyushkin, Sr. Lt. Yuri Busygin
21	4-Apr-96	Su-25		Toyskoye (Chechnya)	368th Attack Air Regiment	0	Hit by fire from the ground during an attack against ground targets; the pilot successfully ejected	Maj. A. Matviyenko
22	14-Apr-96	Mi-8MT	108	Vinogradnoye (Chechnya)	70th Independent Combined Special Air Regiment of the Interior Troops	4	Came under fire from the ground, quickly descended (lost control according to another version), crashed into an electricity pylon	Maj. Aleksandr Kalabushkin, Capt. or Sr. Lt. Aleksandr Karseko, Lt. Ilya Garanin
23	5-May-96	Su-25UB		Urus-Martan (Chechnya)	368th Attack Air Regiment	2	Shot down as it was completing an attack maneuver, presumably from a man-portable SAM system	Col. Igor Sviridov, Maj. Oleg Isaev
24	29-May-96	Mi-8MTV	115	Engenoy (Chechnya)	10th Independent Air Squadron of the Interior Troops' Siberian District	2	Hit by a guided rocket while on the ground, exploded and burnt	Maj. N. Pichugin
25	20-Jun-96	Mi-8MT		Tsentoroy (Chechnya)	Unknown	1	Shot down by fire from the ground	Sr. Lt. Dmitry Orekhov
26	31-Jul-96	Unknown		Yalkhoy-Mokhkh (Chechnya)	Combined Helicopter Regiment of the Far Eastern Military District	0	Hit by a guided missile while on the ground	Khomutov, Anatoly Ivanov, Oleg Shaplov
27	6-Aug-96	Mi-8	116	Grozny (Chechnya)	6th Independent Air Squadron of the Interior Troops' North Caucasus District	1	Damaged by fire from the ground, performed emergency landing. Completely destroyed during an exchange of fire that lasted several hours	Maj. Vladimir Fomin, Capt. Sergey Zaboyev, Aleksey Redchuk

No	Date	Type	Side number	Location	Unit	Casualties	Details	Crew
28	6-Aug-96	Mi-8	87	Grozny (Chechnya)	6th Independent Air Squadron of the Interior Troops' North Caucasus District	0	Landed during a rescue operation near a damaged Mi-8 helicopter piloted by Maj. Fomin; came under fire and sustained damage. Could not take off again and was completely destroyed during an exchange of fire that lasted several hours	Maj. N.Reva, Capt. Oleg Kitchak, Capt. Aleksandr Korolev
29	6-Aug-96	Mi-8	55	Grozny (Chechnya)	6th Independent Air Squadron of the Interior Troops' North Caucasus District	0	Landed near two damaged Mi-8 helicopters during a rescue operation, came under fire and burnt	Maj. L.Lobanov, Capt. Igor Katerlina
30	August 1996	Unknown		Grozny (Chechnya)	Unknown	0	Sustained serious damage after coming under fire from the ground	
31	August 1996	Unknown		Grozny (Chechnya)	Unknown	0	Sustained serious damage after coming under fire from the ground	
32	18-Aug-96	Mi-8	52	16 km north of Samashki village (Chechnya)	Interior Troops	2	Fire on board after being hit from the ground, burnt after emergency landing	Maj. A.Chizhov
33	22-Sep-96	Mi-8		Sputnik settlement (North Ossetia)	Interior Troops	3	Crashed during landing due to equipment failure during a flight from Khankala (Chechnya)	Valeriy Parfenov
34	3-Oct-96	Mi-8MT	03	Mesker-Yurt (Chechnya)	368th Independent Combined Air Squadron	7	Crashed during a flight from Mozdok to Khankala	Maj. Petr Pogalov, Capt. Aleksandr Drozdenko
35	1996	Mi-8		Shatoy (Chechnya)	325th Independent Transport and Attack Helicopter Regiment or 487th Independent Attack Helicopter and Command Regiment	0	Crashed and caught fire after being hit from the ground	Capt. Oleg Dray, Oleg Lyashenko

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