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Russian Arms Exports in 2018

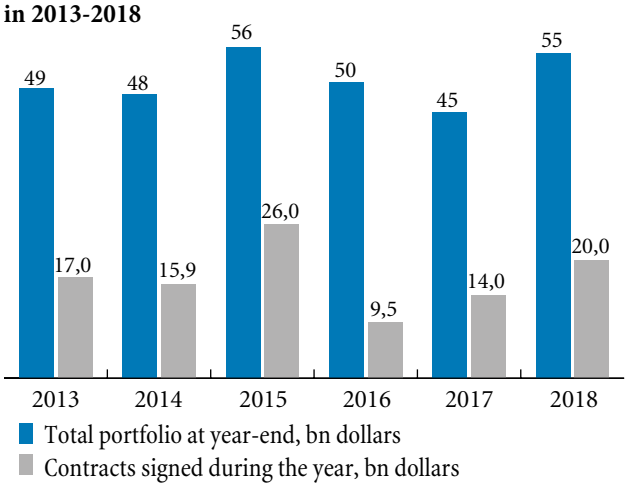
Andrey Frolov

By mid-January 2019, senior Russian officials had announced some of the official arms export figures for 2018. In late December 2018, President Putin said that Russia had sold 16bn dollars' worth of weaponry to foreign customers that year, of which the state-owned intermediary Rosoboronexport accounted for 13.4bn.[1] The company had also signed 19bn dollars' worth of new contracts by early November 2018,[2] while the estimated total for the whole year is 20bn.[3]

The Russian arms contracts portfolio grew from 45bn dollars at the beginning of 2018 to 55bn at the year's end. By subtracting the value of arms deliveries made over the year, we arrive at a rough estimate of the total value of new export contracts signed in 2018: 26bn dollars. We can also deduce that new contracts signed with the CSTO states, free arms transfers, and contracts for the repair and maintenance of previously delivered hardware were worth about 5bn dollars. It's worth mentioning that these figures almost match the record highs set in 2015 (see Figure 1).

Officials have also released a few details about the number of new contracts signed and the schedule of deliveries under those contracts. For example, we now know that Rosoboronexport had made 7bn dollars' worth of deliveries and signed 600 new contracts worth a total of 9bn dollars by August 2018.[4] By November, the number of new contracts had reached 1,100, and their combined value 19bn dollars.

Figure 1. Russian arms export portfolio and new contracts in 2013-2018



Source: CAST

Russian arms exporters' rouble earnings grew in 2018, helped by the weakening rouble (whose average annual exchange rate fell from 58.3 to the dollar in 2017 to 62.92 in 2018). The rouble inflation rate was 4.3 per cent, up from 2.5 per cent the previous year.

Another upsurge in new arms contracts and a bulging portfolio

As already mentioned, the Russian portfolio of arms export contracts grew sharply to a fairly comfortable 55bn dollars, providing for a healthy safety cushion compared to the previous years' average of 45 to 49 billion. That upsurge is largely explained by the successful completion of talks on several large contracts with India. Without that contract, the Russian portfolio would probably have remained flat.

A few details were released during 2018 about the structure of that portfolio. As of late August, North Africa and Asia Pacific (including India and China) accounted for 60 per cent of all outstanding contracts; the Middle East and the Arabian Peninsula for approximately 20 per cent; sub-Saharan Africa 10 per cent; and the CIS 5 per cent.[5] The portfolio itself stood at 45bn dollars at the time, so, in absolute figures, these percentages translate into 27bn, 9bn, 4.5bn, and 2.25bn dollars, respectively. Interestingly, in late September, the portfolio of contracts signed with unspecified "African states" was said to be worth 3bn dollars; the source provided no further details.[6]

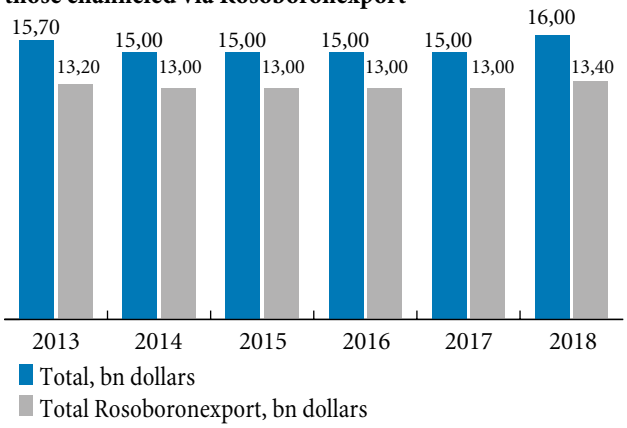
China accounted for 15 per cent of the export contracts portfolio (6.75bn dollars) and 12 per cent of all Russian arms deliveries made in 2018 (1.92bn).[7] In fact, the Chinese share of the portfolio has risen sharply from 5 per cent in 2013 to 14-15 per cent in recent years.[8] Outstanding contracts with Vietnam are worth 1bn dollars (2.2 per cent of the 45bn-dollar total).[9]

Some interesting details were released about the state of Russian-led defense infrastructure projects in third countries in recent years. Rosoboronexport was said to have completed 11 large projects across all the major types of armed services in foreign countries over the period from 2001 to 2018. Another 20 infrastructure projects were under way in more than 10 countries in 2018.[10]

It was also reported that over the past five years, the value of joint R&D programs with foreign partners (focusing

on arms upgrades and the development of new weaponry) was up 35 per cent.[11] But the largest such program, the joint effort with India to develop the FGFA fifth-generation fighter, is now effectively frozen.[12]

Figure 2. Russian arms exports in 2013-2018: total and those channeled via Rosoboronexport



Source: CAST

Key developments and highlights of 2018

The main development of 2018 was the impact of US sanctions under the CAATSA bill on Russian arms exports. US sources estimate the Russian arms exporters' losses as a result of those sanctions at 3bn dollars, mainly in the form of contracts from which the potential buyer has walked away – but Moscow has denied this.[13]

Regardless of the actual figure, there is no denying that the sanctions have caused some real problems. We are aware of at least one contract affected by CAATSA. Indonesia was willing to buy 11 Su-35 fighters from Russia, but the contract depended on credit financing by a commercial bank. That bank, however, did not want to risk the consequences should the US government interpret the loan as the bank's cooperation with Rosoboronexport and slap sanctions on it. As a result, the implementation of the contract was postponed, and Indonesia did not receive any Su-35 jets in 2018.[14]

Even China did not escape unscathed by the CAATSA bill. In fact, it proved its first real victim in September, when Washington slapped the first official penalties under that bill on the People's Liberation Army's (PLA) Equipment Development Department (EDD) and its chief, Gen. Li Shangfu, for buying Russian Su-35 fighters and S-400 SAM systems. It didn't even help that the contracts in question were signed long before the CAATSA bill came into effect.

The sanctions have also caused problems with payments for Russian defense hardware delivered to foreign customers, including such a major global power as India. It was reported in June that Indian payments under most of the arms contracts with Russia suddenly ground to a halt in April 2018 over the CAATSA sanctions against Rosoboronexport, whose foreign trading partners now risk so-called secondary sanctions for doing any business with it.[15] The proposed solutions Russia began to explore included new payment options, such as clearing accounts and currencies other than the US dollar in order to shield Indian banks from the CAATSA threat.[16]

In an indirect admission that the US sanctions have a real bite, there have been several statements to the effect that Russia intends to begin using the rouble and its foreign defense customers' own national currencies – such as the Indian rupee, the Chinese yuan, and the UAE dirham – for future contracts. In fact, the dollar has already been replaced as the settlement currency by one of the national currencies for some of the existing contracts.[17]

In addition to financial risks, there have also been difficulties with logistics. For example, the Russian RO/RO ship *Ural* sailing under a Turkish flag was arrested with a cargo of weapons on a flimsy pretext in Tunisia in February, and released only two months later in April. We believe that problems like these have forced Russia increasingly to rely on its military transport planes and Emergencies Ministry aircraft for defense hardware deliveries to foreign customers. Also, in June 2018, the government issued a resolution authorizing foreign shipping companies to handle shipments of Russian weapons destined for foreign customers in the event of Russia's own companies being unable to do so. It remains unclear though whether and how those foreign shipping companies can evade the US sanctions.

Another part of the Russian strategy to minimize the risks posed by sanctions is to further reduce the transparency of its arms exports. Statements by the traditional Russian arms export newsmakers have become few and far between, and information from Russian sources has become scarce. The Russian government has issued a resolution barring the AO- and OOO-type incorporated companies from disclosing information related to Russian defense procurement or foreign arms contracts. Also, Russian companies are no longer allowed to disclose any details about contracts signed by the Russian legal entities or physical persons who have been put on any of the foreign sanctions lists.[18]

Parliament has also passed amendments to the Russian law regulating the arms trade. The changes allow "corporate commercial and insurance information related to foreign trading operations" to be kept secret. According to the Russian media, the information in question concerns the insurance in Russia and reinsurance in the West of Russian arms export contracts.[19]

Moving on to the positive side of things, the main achievement of 2018 was the finalization of several contracts with India that had been on the table since 2015. Moscow and New Delhi have finally signed a 5.5bn-dollar deal for S-400 SAM systems, a large contract for two Project 11356 frigates, and a deal for Igla-S SAM systems. Several other contracts have yet to be signed, hopefully some time in 2019. These include a contract for local production of the Ka-226T helicopter under Russian license; Russian deliveries and local production of Kalashnikov assault rifles; the lease of another (second) Russian nuclear submarine by the Indian Navy; and a contract for 48 Mi-17V-5 helicopters. These hoped-for new deals are expected to boost Russia's new-contracts total in 2019. On the other hand, Russia has lost the Indian tender for anti-aircraft systems to South Korea's K30 Biho system. Moscow is now working hard to persuade the Indians to reverse that decision.

Other significant events in 2018 include an official Russian confirmation that a foreign customer has expressed interest in the Su-34 (Su-32FN) tactical bomber. The statement did not specify who exactly that customer was.[20] Russia has also confirmed that a third foreign customer wants to buy a batch of Su-35 aircraft, also without specifying the customer's identity.

Another noteworthy development was a large contract for BMP-3 infantry fighting vehicles with Iraq. Deliveries were originally expected to commence back in 2014 but were delayed for various reasons. The deal is potentially one of the largest contracts for Army hardware ever secured by a Russian supplier (estimates of the number of vehicles ordered by the Iraqis range from 300 to 500).

In 2018, the Russian government withdrew from a 1995 agreement with Ukraine on bilateral transfers of defense hardware. The move followed Ukraine's unilateral withdrawal from that agreement in November 2017.

Noteworthy institutional changes in 2018 include a greater remit of the Federal Service for Military and Technical Cooperation. Under a new presidential decree, the agency now has the power to "define the procedure for placing and disseminating information related to military and technical cooperation", as well as "the procedure of formulating the objectives for negotiations with foreign customers".[21]

1. Putin: Russian arms exports to reach 16bn and agriculture exports 25bn in 2018 // Prime, 20.12.2018; Rosoboronexport details 2018 arms exports plans // RIA Novosti, 06.11.2018
2. Nikolsky A. Rosoboronexport sells a record 19bn dollars' worth of weapons to foreign customers despite sanctions // Vedomosti, 02.11.2018
3. Dzhordzhevich A., Safronov I. Tanks not going back // Kommersant, 02.04.2019
4. Rosoboronexport makes over 7bn dollars' worth of deliveries and signs 9bn dollars' worth of contracts in 2018 // Interfax-AVN, 20.08.2018
5. Smitry Shugayev: Russia has found a way to win new arms export customers // RIA Novosti, 20.08.2018
6. FSVTS chief: Russian arms return to Africa // Interfax-AVN, 20.09.2018
7. Shoygu: 12% of Russian arms exports destined for China // TASS, 11.07.2018; China accounts for over 15% of Rostech and Rosoboronexport portfolio of arms contracts // Aviation EXplorer, 06.11.2018
8. Reshetnikov D. Sanctions not depressing demand for Russian weapons. Shugayev on arms trade with China and competition with the US // TASS, 07.11.2018
9. Russian portfolio of Vietnamese arms contracts worth over 1bn dollars // TASS, 06.09.2018
10. Rosoboronexport working on infrastructure projects in more than 10 foreign countries // RIA Novosti, 11.10.2018
11. Putin praises Russia's arms export achievements // RIA Novosti, 06.11.2018
12. Dmitry Shugayev: Russia has found a way to win new arms export customers // RIA Novosti, 20.08.2018
13. https://www.interfax.ru/russia/600936
14. Safronov I., Dzhordzhevich A. Sukhoi sanctions // Kommersant, 05.10.2018
15. Nikolsky A. Sanctions hampering payments // Vedomosti, 24.08.2018
16. Ibid.
17. Several contracts for Russian defense hardware already rely on non-dollar payments – Deputy Prime Minister Borisov // Interfax-AVN, 14.09.2018
18. Companies allowed not to disclose information about Russian defense procurement-related deals // TASS, 17.01.2018
19. Ivanov M., Dzhordzhevich A., Raysky A. An exceptional case // Kommersant, 24.05.2018
20. Russia receives first request for export of Su-34 bombers, says Rosoboronexport chief Aleksandr Mikheyev // Interfax-AVN, 21.08.2018
21. Putin expands remit of the Federal Service for Military and Technical Cooperation // Rambler News Service, 02.07.2018

Russian Ship-based Air Defense Missile Systems

Mikhail Barabanov

The main Soviet and Russian developer of ship-based AA and missile defense systems is the Altair Naval Electronics Research Institute, which became a division of the Almaz-Antey Air Defense Concern in 2002. As part of the Almaz-Antey restructuring in late 2010, Altair was incorporated into the GSKB Almaz-Antey design bureau, which was designated the sole Russian developer of air defense systems. That new outfit was renamed NPO Almaz in 2015 but remained a division of Almaz-Antey.

Most of the Soviet ship-based air defense missile systems developed by Altair used the same guided missiles as their land-based equivalents. All three of the systems Altair developed in the 1970-1980s were ship-based equivalents of land-based systems. The S-300F Fort (the export version was called Rif) was based on the design of the land-based S-300P; the Uragan (Shtil) was equivalent to the land-based Buk; and the Kinzhal (Klinok) to the land-based Tor system. Production of all these ship-based systems ground to halt after 1991 because the Russian Navy had stopped placing orders for new ships. The only exception was the Shtil system, which remained in production under foreign contracts.

The first Soviet medium- and long-range ship-based AA missile system was the 3M41 (S-300F) Fort (NATO designation SA-N-6), equipped with the 3R41 ship-based control system and 5V55RM AA missiles. The system, which had a range of up to 75km (with the same missiles that were used in the land-based S-300PS/SA-10) was first installed for sea trials in 1977 on the Azov large anti-submarine ship, a Project 1134B design (Kara class) upgraded to Project 1134BF specification. The system officially entered into service with the Soviet Navy in 1984; it was the Navy's first multi-channel AA missile system. A distinctive feature of the Fort series is its revolver-type vertical launchers and rotating antenna posts. Mass-produced S-300F systems were installed on four Project 1144 and Project 11442 (*Kirov* class) heavy nuclear-powered missile cruisers; each ship carried two such systems. One system apiece was also installed on four Project 1164 (*Slava* class) missile cruisers. The fourth of these cruisers never entered into service because of the break-up of the Soviet Union.[1]

In 1988, the Navy equipped its S-300F systems installed on the final two Project 11442 heavy nuclear-powered missile cruisers (*RNS Kalinin*, later renamed *RNS Admiral Nakhimov*, and *RNS Pyotr Velikiy*) with the new 48N6K guided AA missiles, which are equivalent to the 48N6 missiles used on the land-based S-300PM SAM system and have a nominal range of up to 150km.[2]

In the late 1980s, Altair developed the 3M48 (S-300FM) Fort-M (SA-N-20), a modified ship-based AA missile complex equipped with a new control system and the latest 5V55RM and 48N6K (SA-20) surface-to-air missiles. The system was also potentially capable of using a naval version of the 48N6DMK, a new missile developed for the S-400 (SA-21) land-based SAM system, equipped with an active radar seeker and boasting a range of up to 250km. The first Fort-M system was installed in the bow of *RNS Pyotr Velikiy*, a Project 11442 heavy nuclear-powered missile cruiser that entered service with the Russian Navy in 1998 (the system still being used in the stern of the ship is the older S-300F). Another two 3M48 systems are to replace the S-300Fs on *RNS Admiral Nakhimov*, a Project 11442 ship currently undergoing upgrades. The *Admiral Nakhimov* will probably be the first ship to receive the new 48N6DMK missiles once the upgrades are completed.[3]

The first export contract for two sets of the Fort-M export version, designated the Rif-M, was signed in 2002 with China, which installed them on two of its Project 051C (*Luzhou* class / Project 988) fleet destroyers that entered service with the Chinese Navy in 2006-2007.

The 3M90 Uragan (M-22 / SA-N-7) medium-range ship-based AA missile system was developed by Altair in the 1970s. It used single-beam launchers and the same 9M38 (SA-11) AA missiles with a semi-active radar seeker and up to 25km range that were developed for the land-based Buk SAM system. The Uragan was installed on the *RNS Provorny*, an experimental large anti-submarine ship retrofitted to Project 61E (Kashin class) specification, and on 13 Project 956 (*Sovremenny* type) destroyers that entered into service with the Soviet Navy in the 1980-1990s. The final four of the Project 956 ships that were delivered to the Russian Navy in 1991-1994 were equipped with a modified version of the system called Tornado (SA-N- 12).

It uses a new 9M317F AA missile, a version of the 9M317 (SA-17) developed for the land-based Buk-M1-2 and Buk-M2 systems and boasting a longer 50km range.[4]

The export version of the Uragan, designated the Shtil (the version supplied to the Indian Navy was called the Kashmir) was installed in the 1990s on two Project 956E destroyers Russia built under a Chinese contract and on three *Delhi*-class destroyers (Project 15, developed with Russian participation) built in India.

The 9M317 AA missiles were also used in the export versions of the Tornado system designated the Shtil-1E and the Uragan-1E; both were exported in large numbers. After 2000, a version of these systems equipped with single-beam launchers were installed on six *Talwar* class (Project 11356) frigates built in Russia under an Indian contract; three *Shivalik* (Project 17) frigates built in India; two modified Project 956EM fleet destroyers built in Russia for the Chinese Navy; and two Chinese-built Project 052B (*Guangzhou* class, Project 968) destroyers that entered into service in 2004.

The Shtil-1E was later modified to use vertical launch hives and the 9M317MFE missile. That version is to be installed on the four modified Project 11356 (*Talwar* class) frigates that will be built in Russia under an Indian contract.

The Russian Navy uses the Uragan-1 with 9M317MF missiles and vertical launchers on three Project 11356R (*Admiral Grigorovich* class) frigates delivered in 2016-2017. In 2017, the system installed on the third ship of the series, *RNS Admiral Makarov*, was successfully tested with the new 9M317MFA missile, which has an active radar seeker.[5]

The 3M95 Klinok (SA-N-9) ship-based close-range AA missile system equipped with 9M330-2 missiles shares many components with the land-based 9K330 Tor (SA-15). It was officially entered into service in 1989. The Klinok is used on Project 11434 (*RNS Admiral Gorshkov*) and Project 11435 (*RNS Admiral Kuznetsov*) heavy aircraft carrying cruisers, two Project 11442 heavy nuclear-powered cruisers, 12 Project 1155 (*Udaloy* class) large anti-submarine ships, one Project 11551 ship *(RNS Admiral Chabanenko*), and two Project 11540 frigates (*Neustrashimy* class).[6]

The export version of the Kinzhal system, called Klinok, has failed to win any foreign customers. In recent years, Almaz-Antey has been marketing the latest 9K331M Tor-M2 land-based SAM system to Russia's own Navy. Test launches of the 9K331MKM Tor-M2KM autonomous turret equipped with the 9M331M surface-to-air missiles installed on the deck of *RNS Admiral Grigorovich*, a Project 11356R frigate, were conducted in October 2016.[7]

The Russian Navy's latest AA missile system is the 3K96 Redut, which is being developed by NPO Almaz for use with the 9M96 medium- and long-range missiles, currently in development and also slated for use with the land-based S-400 and S-350 SAM systems. The 9M96 missiles are equipped with an active radar seeker and have a range of up to 50km for the basic version and 120-150km for the 9M96D. There is also the short-range 9M100, which can engage targets up to 15km away. All these missiles are launched from a vertical hive, with a single hive cell housing one 9M96 or four 9M100 missiles. The first prototype of the Redut complex (the 3K96-3 version) was installed on *RNS Soobrazitelny*, a modified Project 20380 (*Steregushchy* class) corvette delivered to the Russian Navy in 2011. Joint flight tests of the 3K96- 3 with 9M96 missiles commenced later that year. First tests of the 9M96D and 9M100 missiles with the 3K96-3 complex were conducted in 2013-2014.[8]

The 3K96-3 Redut is now deemed fully combat-ready and has already been installed on an additional four modified Project 20380 corvettes. Russia is also building a further five modified Project 20380 ships, two Project 20385 corvettes, and two Project 20386 corvettes; these will be equipped with the Redut as well.

The longer-range version of the system called 3K96-2 Poliment-Redut is used on the new Project 22350 frigates. The first ship in this series, *RNS Admiral Gorshkov*, finally entered into service with the Russian Navy in 2018 after lengthy sea trials. Trials of the Poliment-Redut installed on that ship began in 2015 and were successfully completed in 2018.[9] It is worth noting that before being entered into service, the system was tested in extremely challenging conditions; such rigor was not used even during the Soviet period.

Another five Project 22350 frigates are currently on the ways at various stages of completion. The 3K96-2 Poliment-Redut system includes the Poliment radar with four stationary phased array grids. It uses 9M96, 9M96D, and 9M100 guided AA missiles.

To summarize, the Almaz-Antey Air Defense Concern currently offers a full range of highly advanced ship-based AA missile systems, including short-, medium-, and long-range versions, which are supplied to the Russian Navy and marketed to foreign customers.

1. Voronin V. The universal Fort // Vozdushno-Kosmicheskaya Oborona, 2004, No 1
2. https://bmpd.livejournal.com/1573597.html
3. https://bmpd.livejournal.com/1573597.html
4. http://pvo.guns.ru/naval/m22.htm
5. https://bmpd.livejournal.com/2712705.html
6. http://pvo.guns.ru/naval/kinzhal.htm
7. https://tvzvezda.ru/news/opk/content/201703271444-aoir.htm
8. http://bastion-opk.ru/poliment-redut/
9. https://bmpd.livejournal.com/2085440.html

Viktor Grigoryev, the Shadow Oligarch of the Russian Defense Sector

Alexandra Dzhordzhevich

For a brief period after the break-up of the Soviet Union, much of the Soviet defense industry became privately owned, but the state regained control of the vast majority of the privatized defense companies in the early 2000s, merging them into giant state-owned holding companies. In recent years, there was another U-turn when Rostech, Russia's largest defense holding company, began to promote the idea of selling stakes in its various divisions to private investors. In May 2017, Industry and Trade Minister Denis Manturov said the government was looking for buyers interested in acquiring stakes in two holding companies, Tekhnodinamika and Roselektronika, and two concerns, Radioelectronic Technologies and Techmash (all four are Rostech divisions).

In 2014, Rostech expressed interest in recruiting private-sector managerial talent for senior jobs, and hired several new directors for its various management boards. It put new directors on the board of Radioelectronic Technologies; one of them was Viktor Grigoryev, designated as an independent director.[1] This was the first time the businessman's name was mentioned in the media in relation to Rostech, but the news did not attract much attention at the time. In fact, Grigoryev was already director on the boards of 12 different defense companies, and had several senior managerial positions on his CV.

Born in 1959 in the town of Kuvshinovo, Tver Region, Viktor Yevgenievich Grigoryev graduated from the Kiev Institute of Construction Engineering in 1982. He served as a senior engineer with one of the divisions of the Soviet Ministry of the Merchant Fleet, before becoming deputy chief and then chief of department at the State Committee for IT. In the mid-1990s he joined the Kaskol group of companies. In 2000-2004 he served as its first vice president, and then spent a year as president. His business partner and predecessor at Kaskol, Sergey Nedoroslev, received an offer to lead Moscow Sheremetyevo Airport's strategic development program in the autumn of 2004,[2] but insisted that his departure from Kaskol (of which he was a founder) was not directly related to that offer, and that he had left as a result of an internal corporate restructuring. "I am moving away from running the group on a day-to-day basis and focusing more on its strategy," Nedoroslev said. "Viktor Grigoryev has been the de facto CEO of the group for a long time now."

Kaskol would often acquire new assets or dispose of existing ones. Over the years, it has owned stakes in the space rocket maker RKK Energiya (about 10 per cent), the rocket engine maker NPO Energomash (19.9 per cent), Motorostroitel (over 25 per cent), Gidromash (42 per cent), the MiG-29 and MiG-31 aircraft maker Sokol Aircraft Plant (over 40 per cent), the Volga-Dnepr airline (49 per cent), the Atlant-Soyuz airline (25 per cent), and the ECAR Engineering Center, a joint venture with Airbus. The group has also owned 25 per cent of UUAZ (based in Ulan-Ude, the company makes Mi-8 helicopters and Su- 24 planes); a large stake in the Rostov Helicopter Plant (which makes Mi-28 and Mi-24 helicopters), a 40-per-cent stake in IAPO (the Irkutsk-based maker of Su-30MKI fighter jets), and large stakes in several shipyards: OAO Baltic Plant, OAO Slip, Iceberg, and Lazurit.[3] Grigoryev himself has served on the board of various Kaskol divisions and other companies, such as Gidromash, NPP Zvezda, RKK Energiya, Volga- Dnepr, the Nizhny Novgorod Machinery Plant, and several others.

In 2005 it was announced that Kaskol had acquired a stake in the Atlant-Soyuz airline, whose main customer was the city government of Moscow. In fact, Moscow owned a 51-per-cent in the airline; Grigoryev bought the remaining shares. Atlant-Soyuz did not disclose its financial figures, but based on its passenger numbers, it was regarded as a medium-sized airline. In 2004, it served 263,000 passengers, ranking 27th among Russian airlines. Its international routes served over 214,000 passengers, making it the 15th-largest airline in Russia by that indicator. In the first six months of 2004, Atlant-Soyuz also transported over 15,000 tonnes of cargo, ranking the 4th-largest in Russia. Other market players estimated the company's annual revenues at 70m to 120m dollars.[4]

After a while, however, Atlant-Soyuz began to run up large debts; by 2010, it owed over 5bn roubles. It was soon offered a rescue: the government of the city of Moscow, its main stakeholder, said it was willing to buy out the other shareholders and then spend 1.2bn dollars on 45 new planes for the company.[5] But the plan didn't work out, and in 2011,

the company once controlled by the then Moscow mayor Yuri Luzhkov went out of business.

Grigoryev's career as a public figure began at the Ulan Ude Aircraft Plant (UUAZ). He became a member of the company's board in June 2006, and served in that capacity for almost two years. UUAZ is the only Russian company capable of making both planes (the Su-25 aircraft and its export version, the Su-39) and helicopters (the Mi-8 family and its various branches). Russia's current industry and trade minister Denis Manturov was the company's deputy CEO in 1998-2000,[6] but he and Grigoryev did not begin their close cooperation until the latter's arrival at Kaskol.

During his time as a member of the UUAZ board, Grigoryev also served as a board member of OAO Klimov, also for a two-year period. (Incidentally, he would later re-join the UUAZ board several years after his departure).

In 2003, Denis Manturov was appointed CEO of Oboronprom, and Grigoryev became his first deputy (in charge of helicopter programs) in 2005. The job at Oboronprom was essentially created from scratch specifically for Grigoryev. First, the company set up a helicopter programs division to coordinate efforts in that area by the holding company's various companies, and then Grigoryev was invited to become its chief.

In his first interview as Oboronprom CEO, Denis Manturov said he had specifically asked for Grigoryev. "We were looking for a compromise figure who would also be a highly competent manager, preferably with relevant experience in the aerospace industry. I offered the job to Viktor Grygoryev, whom I had known for a long time; we worked together very closely and productively when he was the head of the Kaskol group of companies. That is why I had first-hand knowledge of Mr. Grigoryev's managerial and personal qualities," Manturov told the interviewer.[7] He added that Grigoryev saw the offer as a chance to continue working in the helicopter industry, because Kaskol had disposed of all its helicopter-related assets shortly before the offer was made. Manturov also stressed that many top managers of Oboronprom's various divisions knew Grigoryev personally, and none of them had raised objections to his candidacy.

The Oboronprom United Industrial Corporation was founded in 2002 as a fully-owned subsidiary of Rostech. Oboronprom owned a 100-per-cent stake in Vertolety Rossii (Russian Helicopters), which controlled the entire Russian helicopter industry. It fully owned the United Engine Corporation, which controlled 85 per cent of the Russian aircraft engine industry. It was also the sole owner of the Avtokomponenty Industrial Holding, which controlled the Dimitrovgrad Auto Components Plant, the Dimitrovgrad Radiator Plant, the Dimitrovgrad Inserts Plant, the Dimitrovgrad Powder Metallurgy Plant, the Dimitrovgrad Instruments Plant, the Dimitrovgrad Lighting Equipment Plant, the Skopinsky Auto Components Plant, the Serdobsky Mechanics Plant, and the Tolyatti-based Industrial Coating Plant. Last but not least, Oboronprom also owned a 50,67- per cent stake in Stankoprom.

In 2017, however, Oboronprom was liquidated, and Rostech assumed direct control of all its former divisions.[8]

Meanwhile, Grigoryev has become an active investor in his own right in recent years. For some reason, he has decided to quit the helicopter industry and switch his attention to the space sector – more specifically, to the Sozvezdiye Concern, which specializes in the development and manufacture of both military and civilian space communication systems. It is also an important company inasmuch as it leads the development of the ESU TZ next-generation Integrated Tactical Command and Control System, which includes various navigation, satellite, and UAV-based observation instruments. In 2007, the basic ESU TZ configuration entered trials, but after a major command staff exercise in 2010, military experts gave the developers a list of over 100 problems with the system that needed fixing. According to MoD sources, several ESU TZ subsystems are once again in service on a trial basis. A total of 40 brigade-size ESU TZ sets, worth over 300bn roubles, are due to be delivered to the Russian forces by 2020.

In August 2017, Sozvezdiye was expected to undergo major structural changes. Its previous CEO, Alexander Yakunin, was replaced by the former NPO Angstrem chief Aleksey Bocharov. The concern's entire management system was to be restructured with the arrival of the new CEO,[9] and several private investors were to acquire stakes. The controlling stake in Sozvezdiye was to be transferred to a joint venture that would be set up by Aleksey Krivoruchko, the then head of the Kalashnikov concern, and Viktor Grigoryev, acting as chairman of the NK Bank board. Rostech was to be left with a 49-per-cent stake in Sozvezdiye.

These plans, however, never came to fruition, and the joint venture was never set up. In June 2018, Aleksey Krivoruchko became deputy minister of defense, so it was deemed that such a joint venture would represent a conflict of interest.

In the early 1990s, small banks with very few branches began to spring up all over Moscow. One of them was the National Space Bank, renamed NK Bank in 1998, when it became a joint-stock company rather than a limited liability company. The bank was founded by three entities: the Space Communications Production Company (NK Kosmicheskaya Svyaz), and two joint-stock companies, Inform-Kosmos and NPO Applied Mechanics. Its head office was at 2 Miusskaya Square in Moscow. It also had a branch at 15 General Dorokhov Street some years ago, but that branch is no longer listed on the bank's website. There are no other branches.

The word "space" in the bank's initial name and its space industry-related founders were no coincidence. Most of NK Bank's clients – 4,000 private individuals and 6,000 corporate clients – are involved with the aerospace industry and the defense sector. Current clients include AAK Progress, Vertolety Rossii (Russian Helicopters), NK Rosneft, and the Ulyanovsk Instrument Design Bureau. The bank is authorized to represent its customers in their dealings with the Customs Service, which is one of its distinctive advantages – but otherwise, it provides a fairly standard set of financial services. The bank's two current shareholders are Viktor Grigoryev, who owns a 90-per-cent stake, and its own board chairman Sergey Smirnov, who controls the remaining 10 per cent.

In the past, Rostech used NK Bank to acquire Fazotron NIIR Corporation, the developer and maker of land-based and airborne radars and air defense systems. Fazotron NIIR has 25 divisions based in Russia, Ukraine, and Belarus. In 2009-2010, it found itself in dire financial straits after running up over 55m dollars in debts to Alfa Bank and Sberbank. Alfa Bank tried to initiate a bankruptcy procedure for the company to get its money bank, but NK Bank intervened. The debts were paid, and bankruptcy was averted.[10]

Viktor Grigoryev's foray into banking did not stop at NK Bank; he is also listed as one of the owners of Tatsotsbank.[11] That bank is much more of a retail banking outfit than NK Bank. Its website states that it was founded back in 1990 using the assets of the Tatarstan republican division of Zhilsotsbank. A new era in Tatsotsbank's history began in 2010 with the arrival of new owners, who promptly appointed Anastasiya Nikolayevna Kolesova (daughter of the former Amur Region governor and CEO of the Radioelectronic Technologies Concern). Kolesova already had a solid record as CEO of a major company: she used to run the Elekon Plant, which had close dealings with Viktor Grigoryev. The bank hired several senior managers, launched a new long-term strategy, and approved the decision to expand its network in Kazan and elsewhere in Tatarstan. At the time of writing, the bank serves over 3,000 companies and individual entrepreneurs, as well as about 40,000 individuals. It specializes in issuing loans and bank guarantees to commercial customers working under government contracts, radio-electronics makers, instrument engineering companies, R&D outfits, and wholesale/retail trade firms.[12]

At about the same time, in September 2017, it was reported[13] that Rostech intended to sell its controlling stake in Tekhnodinamika, which makes aircraft components and equipment (electric power systems, auxiliary power plants, hydraulics, chassis, oxygen equipment, etc). The company's revenues stood at 25.2bn roubles in 2016, when it reported a net profit of 681m roubles. Analysts estimate its 2017 revenues at up to 42bn roubles.

The buyer Rostech has found for Tekhnodinamika is Dinamika Group, which also makes various aerospace hardware, including simulators. Dinamika's main stakeholder is Viktor Grigoryev.[14] According to Rostech, this private-public partnership is expected to give the company access to new technologies, attract investment, and strengthen Russia's presence in the global market for aerospace components. The new outfit is expected to assemble under one corporate roof more than 50 research and manufacturing companies that specialize in the development, manufacture and maintenance of plane and helicopter components, avionics, specialist software, simulators, and UAVs. Its corporate priorities include breaking into the global market as a supplier of crucial components to the world's leading aerospace companies, and to make it into the Top 5 industry leaders.

The Dinamika group of companies specializes in the development, manufacture, and maintenance of a broad range of hardware for the aerospace, transport, and defense industries, as well as the education system. It also makes UAVs and aircraft training simulators. Its consolidated revenues stood at 24bn roubles in 2016. Meanwhile, Tekhnodinamika is the Russian industry leader in the manufacture of components for military, transport, and civilian planes and helicopters. Its consolidated revenues stood at 27.8bn roubles in 2016.[15] In early November 2017, its CEO Igor Nasenkov told journalists that he expected a 62-per-cent rise in revenues to 44bn roubles in 2017.

Rostech reportedly expected to finalize the sale of a 75-per-cent minus one share stake in Tekhnodinamika by the end of 2018 by means of a closed competition. In the end, Viktor Grigoryev's business empire acquired that stake in December 2018 for 14bn roubles; he now controls the leading Russian maker of aerospace components.[16]

In April 2018, Viktor Grigoryev once again became the subject of media attention, that time around in connection with the case of OKB Simonov CEO Aleksandr Gomzin, who was arrested on charges of abuse of office as part of a probe launched by the Investigations Committee into the spending of subsidies issued by the Industry and Trade Ministry. More specifically, Gomzin was facing charges of misappropriation of subsidies issued to OKB Simonov in 2014. Following his arrest, 290 OKB staff members signed an open letter asking the senior Russian leadership to intervene. They argued that the charges facing their CEO were unsubstantiated and designed to put pressure on the company's chief designer and its main shareholder. "The purpose of this pressure is illegally to seize control of the company by means of a corporate raid," the open letter argued. [17] The letter further

sought to assure the Russian leadership that should the situation be resolved to their satisfaction, the company would soon launch a new generation of UAVs. A month later, an informed source told a Russian news agency that Gomzin was released from detention on May 21 on a pledge not to flee, and was able to return to his job at OKB Simonov. As for the UAVs mentioned in the open letter, it clearly referred to a program that has been under way for over seven years. The company has regularly reported major progress, but it has yet to deliver a finished product to the customer.

At about the same time, reports came in about tests of Russia's first heavy offensive UAV weighing over 7.5 tonnes. The reports claimed that the UAV in question was the Altair, developed as part of the Altius program. But the following October, the Vedomosti newspaper cited its sources as saying that the Russian MoD had decided to shut down the program, which was led by OKB Simonov. The sources also said that the company had spent over 3bn roubles on the R&D effort since winning the contract for developing a HALE (high altitude, long endurance) drone back in 2011.[18] They added that the UAV technology developed by OKB Simonov as part of the program might be transferred to the Urals Civil Aviation Plant (UZGA), which is co-owned by Viktor Grigoryev.

After a brief lull, the scandal over OKB Simonov flared up again in the spring of 2019. On May 14, the Aviastroitelny District Court in Kazan ordered Aleksandr Gomzin to be taken into custody; he was promptly incarcerated at the city's No 2 remand center. This new development was triggered by fresh allegations of fraud related to the Altair UAV program. According to the Nezavisimaya Gazeta daily,[19] the new charges against Gomzin were brought in connection with a tour of defense industry facilities in Tatarstan by President Putin and Defense Minister Sergey Shoygu. It was said that one of the topics the two discussed with the Tatarstan leader Rustam Minnikhanov was the situation with the Altair UAV. The paper speculates that the new charges against the CEO of OKB Simonov will help the Tatarstan leadership explain the Altair program's lack of progress. Let us recall that as recently as December 2018, the MoD said that "the first flight of the latest version [of the Altair UAV] is expected some time in May or June".

1. https://rostec.ru/content/files/board%20of%20directors.pdf
2. https://www.kommersant.ru/doc/586162
3. http://www.kaskol.ru/company/projects/
4. https://www.kommersant.ru/doc/544138
5. https://www.gazeta.ru/financial/2010/01/13/3311180.shtml?updated
6. https://finparty.ru/personal/denis-manturov/
7. http://www.ng.ru/ideas/2005-11-02/6_vertolet.html
8. https://www.kommersant.ru/doc/3515956
9. https://www.kommersant.ru/doc/3380380
10. https://www.dp.ru/a/2014/05/14/Mirnie_iniciativi
11. http://www.cbr.ru/CREDIT/depend/RB480.pdf
12. https://tatsotsbank.ru/about-bank/about-bank/
13. https://rostec.ru/news/4521060/
14. https://www.vedomosti.ru/business/articles/2017/09/06/732531-rosteh-tehnodinamika
15. https://rostec.ru/media/pressrelease/4521061/
16. https://tass.ru/ekonomika/5404832
17. https://www.interfax.ru/russia/632470
18. https://www.vedomosti.ru/politics/articles/2018/10/08/783129-razrabotka-bespilotnika
19. http://www.ng.ru/economics/2019-05-11/100_drons110519.html

BRAHMOS Supersonic Cruise Missile Program Achieves Major Milestones in 2018-2019

Andrey Frolov

On 22nd May 2019, the world-renowned BRAHMOS supersonic cruise missile program achieved yet another historic milestone when the advanced BRAHMOS-Airborne weapon was successfully test launched from the Indian Air Force's (IAF) Sukhoi-30MKI combat aircraft against a land target. This was the second test firing of BRAHMOS air-launched cruise missile (ALCM) after its maiden successful test from the Su-30MKI against a ship target conducted on 22nd November 2017 in the Bay of Bengal off India's eastern coast.

In the latest test firing, the precision strike weapon "flew to its maximum range" before hitting a land target on the Car Nicobar Islands in India's eastern coast, thereby validating its impeccability as the world's most formidable airborne weapon "to strike from large stand-off ranges on any target at sea or on land with pinpoint accuracy." Incidentally on the same day, the Indian Army too conducted a successful test firing of BRAHMOS land-attack (LACM) version from the Car Nicobar Islands as part of a joint training exercise undertaken by the Indian Army, Navy and Air Force. The LACM was launched for a range of up to 270km and "validated deep penetration capability and accurate engagement of targets in depth," the Indian Army said following the test.

The BRAHMOS-A is the heaviest missile ever launched by a Su-30 family of fighter. Development of the airborne BRAHMOS version for the Indian Air Force began in 2008. The 2.5-ton weapon is lighter than the ship- and land-based BRAHMOS versions. The BRAHMOS-A can engage targets both at sea and on land. Its officially-stated range is approximately 300km.

Designed and developed by BrahMos Aerospace – a joint venture (JV) entity involving India's DRDO and Russia's NPOM, the BRAHMOS supersonic cruise missile has established its supremacy as the world's fastest and deadliest tactical weapon capable of being launched from land, sea, sub-sea and air platforms.

The first demonstration flight of a Su-30MKI fighter carrying a full-scale mockup of BRAHMOS-A was conducted at India's Hindustan Aeronautics Ltd.'s (HAL) Nashik facility on June 25, 2016. The first separation trial of a full-scale BRAHMOS-A mockup from the Su-30 platform followed on October 7, 2016. Two of the IAF's Su-30MKI fighter platforms were modified by HAL to conduct the BRAHMOS-A tests.

The Indian Air Force plans to upgrade a sizable number of its Su-30MKI fighters at the HAL facility in Nashik by the end of 2020 in order to integrate the BRAHMOS-airborne weapons onboard. BrahMos Aerospace hopes to start delivering the advanced BRAHMOS ALCMs to the Indian Air Force by 2019-2020.

Meanwhile, the level of indigenization in the BRAHMOS program has increased to up to 75 per cent with several leading Indian enterprises now producing and delivering various critical components for the weapon. In August 2018, India's Godrej Aerospace, a division of Godrej & Boyce Mfg. Co. Ltd., delivered the first airframe for the air-launched BRAHMOS missile. The company has won an order to deliver 100 sets of airframes for BRAHMOS-A. Godrej Aerospace has been involved in the BRAHMOS program since 2001 as a supplier of various metallic components. It has gradually transitioned to making the entire body of the missile as part of efforts to increase the proportion of BrahMos components produced locally in India.

Besides, India's L&T company is also manufacturing the transporter-launcher canisters (TLC) in which the missiles are stored. It has also delivered the sophisticated Quad launchers (Quadruple Canisterised Inclined Launcher) for the BRAHMOS missile. The Quad Launcher is designed for launching the supersonic cruise missile in an inclined configuration from Indian Navy warships.

In a nutshell, today all BRAHMOS missiles are integrated in India with more than 70% of the missile components being manufactured domestically. 100% of ground support equipment for the weapon complex are also being made in India, giving a major boost to the Indian Government's flagship "Make In India" programme of defence indigenisation.

In 2018, BrahMos Aerospace also conducted successful "life extension" test firings of BRAHMOS which validated the missile's capability to operate from the designated 10 years of lifecycle to the extended 15 years lifecycle flawlessly. The tests also proved the viability of some of the critical sub-systems such as the fuel management system and non-metallic air frame components made from Indian raw materials.

In another major achievement for the programme, the successful test firing of a land-attack BRAHMOS variant at the Pokhran test range in Rajasthan on 22nd March, 2018 validated the weapon's indigenous seeker jointly developed by DRDO and BrahMos Aerospace.

BrahMos scientists and engineers, while focused on improving the basic design configuration of the weapon, are also working on designing a smaller, smarter, stealthier version of BRAHMOS, called BRAHMOS-NG (next-gen) which could be armed on a wider number of modern military platforms, including fighter aircraft and submarines.

There is also a proposal to develop an air-to-air version of BRAHMOS-NG, especially for India's indigenously developed LCA Tejas fighter aircraft. With an estimated range of 300-km, this new AAM would be designed to neutralize targets such as slow-moving aircraft such as AWACS planes, aerial refueling aircraft and transports.

The BrahMos program has made excellent progress in terms of financial gains as well. As of 2019, the Indian Armed Forces have placed firm orders worth US$6.5 billion for various BRAHMOS versions, for delivery by 2023. In 2018, India signed a major contract with Russia to acquire four Project 11356 frigates for Indian Navy. While two of the warships would be built in Russia, the other two would be built at an Indian shipyard in Goa. The new frigates would be capable of carrying BRAHMOS missiles.

BrahMos Aerospace also positively looks forward to exporting the versatile BRAHMOS Weapon Systems as several countries across Continents have expressed strong interest in acquiring the formidable missile for their armed forces. After getting due approval from the Governments of India and Russia, the JV company is ready to fulfill any export order.

Today, the BrahMos JV stands out as the most successful defense partnership program between India and Russia. Besides developing, producing and delivering the existing BRAHMOS land-attack and anti-ship versions to the Indian Armed Forces, the JV entity is progressively working on designing and developing newer, more advanced, futuristic versions of the weapon in order to retain its market leadership position. The number of Indian military platforms capable of carrying various versions of BRAHMOS is also on the rise. The successful operationalization of BRAHMOS in all three wings of Indian Armed Forces and its continued improvements thereupon has opened up excellent prospects for exporting the supersonic cruise missile in the international defense market.

Russian Wheeled MRAP Vehicles

Andrey Frolov

For many years, the BTR family of APCs (BTR-40, BTR- 152, and BTR-60/70/80) and BRDM-1/2 amphibious armored patrol cars were the main Soviet and Russian offering in the market for wheeled armored vehicles. They had many advantages, including simplicity and low price – but by the early 1990s it had become clear that they no longer met modern requirements. Besides, following the break-up of the Soviet Union, the market was flooded by the surplus hardware being sold off by the newly-independent former Soviet states. A few years later, Ukraine began to offer refurbishment and upgrade options for the BTR-80, before launching production of its own version of that APC. The Ukrainians then developed the BTR-4, a next-generation APC of their own design, although the vehicle was plagued by poor manufacturing quality.

Meanwhile, the conflicts in Afghanistan (2001) and Iraq (2003) highlighted a pressing need for next-generation wheeled armor, forcing the West – the United States included – to place large and urgent orders for various mine-resistant (MRAP) vehicles, from the relatively light Iveco LMV to the heavy Oshkosh M-ATV. Their use in the field was deemed an overall success, spurring demand for such vehicles all over the world. In addition to purchasing finished hardware, some states launched local production programs under foreign license. For example, the Barys and Alan MRAP vehicles assembled in Kazakhstan were developed by South Africa's Paramount Group.

In Russia, the MRAP niche had for various reasons remained vacant for a very long time. Russian companies had developed such 4x4 vehicles as the GAZ-3937 Vodnik and the VPK-23114 Tigr-M, but they did not offer a sufficient level of protection and carrying capacity. The new BTR-90 APC never reached mass production. The VPK-7829 Bumerang standard wheeled platform is essentially a wheeled infantry fighting vehicle and has yet to complete trials. There are also various armored vehicles built on KAMAZ and URAL chassis, but they were not specially designed as MRAP hardware and their mine resistance is inadequate.

As a result, the Russian Army's first proper MRAP vehicle was the Rys, a version of Italy's Iveco 65E19WM assembled in Russia from Italian components. A total of 358 vehicles were delivered before cooperation with the Italians ceased after Russia's annexation of Crimea in 2014.

There are no foreign MRAP vehicles being built in Russia at this time, but several indigenous Russian MRAP programs were nearing completion by the time the assembly of Iveco vehicles ground to a halt. There are only two Russian companies that have active programs in this field: the Ural Auto Plant, and Remdizel. The latter has already launched mass production of several families of such vehicles, and there are several versions within each family.

The first to enter mass production was the K-63968 Typhoon-K, a 6x6 modular armored vehicle. Its development began in 2011, and tests of the first mobile prototypes commenced the following year. The MoD placed the first contract for 40 such vehicles in early 2013; another contract for over 100 vehicles followed before the year's end. The Russian forces have used these vehicles for several years in Syria; to the best of our knowledge, there have been no export contracts.

Almost simultaneously with the K-63968, Remdizel launched the K-63969 Typhoon-K model, which is a 6x6 wheeled, solid-body armored vehicle that offers the best level of protection of all Remdizel and other Russian MRAP models. There have been no open-source reports of any domestic or export contracts for these vehicles, but we are aware of interest expressed by some of the Russian MoD branches.

There is also the K-4386 Typhoon-VDV (Rosomakha), a 4x4 frameless wheeled one-box armored vehicle, which has yet to enter mass production. The first prototype batch of these vehicles is expected to complete trials later this year. The K-4386 chassis may be used for a whole range of special vehicles, such as the 2S41 Drok self-propelled 82mm mortar (the Nabrosok-Drok-KSh R&D program) and the Typhoon-PVO personnel carriers for Igla and Verba MANPAD crews (early prototypes were unveiled in May 2019).

Finally, there is the K-53949 Typhoon-K, a 4x4 vehicle that will probably become the main Russian MRAP model. Despite its lower curb weight, it offers the same level of protection as the heavier K-63968.

The first prototype of that vehicle was designed at the company's own initiative in 2015. The model has already completed preliminary trials at Remdizel. Substantial changes have been made to the early design: the first three prototypes were equipped with a hydropneumatic suspension and an automatic gearbox, but it was then decided to revert to a spring suspension and a mechanical gearbox.

In late 2017, the MoD took delivery of the first 10 mass-produced vehicles. In August 2018, it signed a contract for another 59.

Even though deliveries of MRAP vehicles to the Russian forces commenced only recently, they have already seen real combat. At least one unit of the K-53949 Typhoon-K and one K-4386 Typhoon-VDV were deployed to Syria in 2018. Both were spotted in that country in February.[1] The K-53949 is equipped with an RP-377VM1 electronic jamming system.[2] It was seen near Douma (Eastern Ghouta) immediately after the city's recapture by the Syrian Army. The vehicle was probably one of the 10 K-53949s delivered to the Russian forces in December 2017. The K-4386 Typhoon-VDV, which has yet to complete trials, was spotted in the Tartus area, probably as part of its trials program with the Russian forces. It was the only new-generation Russian MRAP vehicle in Syria equipped with a 30mm gun.[3]

The K-53949 design is also used in the AS-Linza tactical-tier medical vehicle. The vehicle's curb weight is 15 tonnes, and it offers the same level of protection as the K-63968. It is equipped with a Class 1 or Class 2 medical bay. The first prototype was assembled in 2017, and the first Russian MoD contract for 27 vehicles was signed in 2018, for delivery in 2018-2020.

In 2018, the K-53949 chassis was also used to develop a new platform for the Kornet-D anti-tank missile system, equipped with eight guided missiles. Previously, that system was mounted on VPK-233116 Tigr-M chassis.[4] Shortly before that, it was reported that the same chassis was used to develop the Strela tank-fire control vehicle.[5]

The K-53949 was the first Russian MRAP vehicle delivered to foreign customers. In 2016, Remdizel signed a K-53949 promotion agreement with the Russian arms export intermediary Rosoboronexport. In 2017, the vehicle was demonstrated at the IDEX 2017 arms expo in the UAE. The first export delivery was made to Uzbekistan in May 2019.[6] As far as we can tell, some of the assembly operations are handled in Uzbekistan itself, which is a new development for Russian army hardware exports. Based on that information, we can also surmise that the Uzbek contract is for at least several dozen vehicles.

To summarize, it is safe to assert that the Russian school of MRAP vehicles design has come into its own. Several models have entered mass production and even seen real combat. As a result, some of them have already won foreign customers as we are aware of at least one export contract for the K-53949. Given the healthy global demand for 4x4 wheeled MRAP vehicles, more export contracts are sure to follow.

1. https://twitter.com/vezhlivo/status/986541920544612352
2. https://twitter.com/AndreZykov/status/986224314847506432
3. For more details, see: Frolov A. New Russian MRAP Vehicles in Syria // Moscow Defense Brief, 2018, #3
4. https://bmpd.livejournal.com/3312525.html.
5. https://bmpd.livejournal.com/2822210.html.
6. https://dambiev.livejournal.com/1601810.html

Russia's Latest Amphibious Tracked Vehicles

Sergey Abdulov

Over the years, the BMP-3 and BMP-3F infantry fighting vehicles have earned themselves a reputation with the Russian and foreign navies as excellent armor well-suited for amphibious landing operations. For example, in one unprecedented case during an exercise in the early 2000s, UAE marines conducted an amphibious landing operation in BMP-3 vehicles during a heavy storm, with waves reaching 3-4 meters high. Forty-two of the 43 vehicles made a successful landing.

But modern warfare presents ever more stringent requirements. One of them is the ability to conduct "over-the-horizon" amphibious landing operations, when landing vehicles leave the mothership 40-60km from the target and sail at maximum speed to the landing area instead of being dropped off right near the coastline. This reduces the risk of numerous vehicles being destroyed as they try to land. Also, marines must now be equipped with hardware that can provide fire support during landing rather than serve as mere transports.

Russia's Kurganmashzavod and the Special Machinery Design Bureau (SKBM) have developed a whole family of such vehicles using the BMP-3 platform as a starting point. They used many of the standard BMP-3 parts and components, which offers clear advantages in terms of both operation and maintenance. All these vehicles can be airlifted by Il-76MD or equivalent transports. They have an autonomy of up to 7 hours once they leave the mothership, and can make a landing oin difficult and unprepared coastal terrain.

BT-3F APC

One of these latest models is the BT-3F, a versatile armored personnel carrier that meets all modern requirements. It uses a specially adapted BMP-3 chassis.

One of the priorities in the development of that vehicle was a high level of protection. A lot of thought also went into making the vehicle ergonomic and comfortable for its crew and the personnel it carries. It meets all the standard requirements in terms of mobility and interchangeability of components with the basic BMP-3 model.

The BMP-3 and the BT-3F also share excellent protection from conventional weapons as well as from the impact of nuclear explosion, which enables their combined use in combat operations.

The BT-3F is equipped with the 5ETs16U remote-controlled turret. That turret is armed with the Kord 12.7mm machine-gun, a television IR sight unit, and a laser range finder. It is indispensable for engaging lightly armored targets, weapons emplacements, and enemy personnel. Its video monitoring system offers a 360-degree field of view; the image is displayed on separate screens for the driver and for the personnel.

There are several possible configurations for the passenger compartment: in addition to the vehicle's crew, there is enough room for up to 10 commandos in the standard configuration, with an option for extra room for another five. Importantly, the vehicle can be used to haul bulky cargoes and ammunition, or serve as a platform for various hardware and equipment. In fact, this next-generation APC is marketed as a basic platform for a variety of special vehicles.

The 500hp engine gives the BT-3F the same mobility characteristics as the BMP-3, including a 70km/h highway speed and the ability to sail in 2 to 3-meter waves.

Another clear advantage of the BT-3F is its transportability by land, air, sea, and rail. It is even light enough to be hauled by Mi-26 helicopters using external suspension.

Thanks to the use of standard parts and components that are shared with the BMP-3, which has been in service for many years, mass production of the new BT-3F model can be launched at the Kurgan Machinery Plant very quickly, with little to no preparation. Neither will it require much training for crews already trained with the BMP-3 and BMP-3F models. All of these considerations make the BT-3F an attractive proposition for the foreign armed forces that already operate the BMP-3.

BMP-3F infantry fighting vehicle

Another recent version of the BMP-3 model is the BMP- 3F. It is indispensable for rapid response units and marines operating unsupported in hostile territory, especially in coastal areas.

Changes in the BMP-3F design compared to the parent BMP-3 model give it a greater buoyancy and stability at sea. For example, it has a telescopic air inlet pipe and lighter wave deflectors on the main body and turret. Its water-jet propulsors give it a sailing speed of up to 10 km/h.

The vehicle is very stable and maneuverable at sea, capable of sailing in up to 1.25-meter waves, and can shoot accurately in up to 0.5-meter waves. It can remain at sea for up to 7 hours with the engine running.

The BMP-3F also boasts excellent fire power thanks to its 100mm guided anti-tank missile launcher, a 30mm automatic cannon, and three 7.62mm machine guns. Its automated fire control system and highly efficient ammo make it capable of firing both on land and at sea, day or night, using all its weapons systems. The fire control system includes the Sodema IR sight/range finder, which provides reliable target identification and high firing accuracy round the clock and in poor visibility. As an option, the Sodema can be equipped with the AST-B automated target tracking device. Another option for the BMP-3F fire control system is the TKN-AI 24-hour commander observation unit.

Other optional systems and components include:

- TVK-1B driver-mechanic observation unit
- IUSSh-688 chassis information and control system or EPVO driver and operator electronic assist device
- KBM-3M2E air conditioner (driven by the main engine) or an autonomous air conditioner with its own power unit that enables comfortable operation at ambient temperatures of up to +50°C
- MZ PTUR guided anti-tank missile loading mechanism

All these options can be installed without sacrificing buoyancy, thanks to the use of special equipment.

Thanks to its excellent mobility, protection, and firepower, combined with exceptional reliability, simple design, and ease of repair, the BMP-3F is one of the best amphibious fighting vehicles in the market.

2S25M self-propelled anti-tank cannon

The 2S25 is a light amphibious tank / self-propelled anti-tank cannon designed for more challenging tactical roles. These roles include reconnaissance, patrol and escort; action as part of a raid, flanking or advance units; combat in the security zone and maneuvering defense; forced water crossing; amphibious landing operations; operations in forested or mountainous terrain, swamps, or Arctic regions; and area control during peacekeeping operations and internal armed conflicts.

Military planners in countries all over the world have come to realize the need for a light tank to support main battle tanks in modern warfare. The general requirements for such vehicles are as follows:

firepower on par with, or not much inferior to main battle tanks

increased tactical mobility and maneuverability, including the ability to force water barriers at speed

a much better suitability for transportation by air, sea, rail, and road transport

a lower cost compared with the main battle tanks

The Special Machinery Design Bureau's BMP-3 infantry fighting vehicle and its various versions (such as the BMP-3F model designed for the marines, and the BRM-3K amphibious reconnaissance vehicle) are often used in roles that should normally be performed by light tanks. They often struggle in these roles since an infantry fighting vehicle, for all its advantages, is clearly not a tank.

For example, the Indonesian marines have bought a batch of BMP-3F primarily for use as direct fire support vehicles during amphibious landing and coastal operations. For actual landing, the Indonesians still use the old Soviet BTR-50 APCs and the US-made AAV-7 vehicles.

Until very recently, not a single army in the world had an armored fighting vehicle that met all the requirements for a light tank. The first country to have developed such a tank is Russia.

To a specialist, there is no doubt at all that the 2S25 is a modern light tank – in other words, a versatile fighting vehicle that can be used by all branches of the armed forces in the tactical roles for which that category of armored vehicles is the best fit. The new system's potential users include:

- The Army (reconnaissance and anti-tank units, commandant units, alpine units and divisions, combined-services units serving with rapid-reaction or peacekeeping forces)
- The Marines and Navy coastal forces
- Airborne troops (parachute units, airborne assault and commando units and divisions)
- Units assigned to mobile ground-based ICBM
- Territorial defense units

The 2S25M self-propelled anti-tank cannon is capable of performing all the aforementioned roles on the ground, at sea, and in the air.

There are no other amphibious vehicles in Russia or abroad that pack such firepower in a relatively small

package. The 2S25M is equipped with the 2A75M 125mm cannon, which can fire modern armor-piercing subcaliber projectiles, shaped-charge shells, HE-fragmentation shells, and projectiles with remote in-flight detonation. Such ammo is especially effective against enemy personnel, portable anti-tank system crews, unarmored vehicles, and light armor.

These advantages greatly improve the system's combat performance. In terms of its firepower, it is comparable to another new Russian system, the T-90MS main battle tank. The 2S25M can also fire guided missiles with shaped-charge or HE fragmentation warheads capable of destroying even the most heavily-protected armored vehicles at a distance of up to 5km. The new system carries a complement of 40 cannon projectiles, including 22 in the mechanized rounds rack.

The 2S25M is also equipped with a remote-controlled 7.62mm machine-gun. It enables the commander of the vehicle to engage targets with the machine gun while the main weapon is in use by the operator. The total ammo complement of the machine guns is 3,000 rounds.

Apart from the tank cannon that is just as capable as the one used in the T-90MS, the 2S25M also has an almost identical and very advanced fire control system. That system is the Sosna-U, widely regarded as one of the best in the world. It includes a visual and IR-range channels. The commander's panoramic sight also has these two channels. Both sights support automatic target acquisition and tracking. There is also a backup sight in case the main ones go down; it is an optical-electronic instrument, with a vertically stabilized field of view and an autonomous power source.

The 2S25M has a chassis information and control system that makes it much easier to operate and alerts the crew to any malfunctions. The latest frequency-modulation communication system supports technical transmission masking and can be integrated with modern command-and control systems, including automated ones such as the Andromeda-D (developed for the Airborne Assault Troops) or the Army's ESU TZ Sozvezdiye-M2.

The system's undercarriage, engine, and gearbox are shared with the BMP-3 infantry fighting vehicle and the BMD-4M amphibious infantry fighting vehicle. The UTD-29 multifuel, 500hp diesel engine can propel the 18-tonne vehicle with a 3-man crew at up to 70km/h on land and 10 km/h at sea.

The chassis is equipped with a highly efficient independent hydropneumatic variable-clearance suspension. Given the roles for which this vehicle is designed, its ability to press its belly to the ground or the landing platform is hard to overestimate.

Experts believe that the 2S25M self-propelled anti-tank cannon is the world's only modern light tank. The need for such vehicles will continue to grow in the foreseeable future, especially considering the cost of upgraded third-generation main battle tanks.

The family of amphibious fighting vehicles developed by SKBM and Kurganmashzavod offer excellent protection, maneuverability, and firepower; they are also very sensibly priced. There is no doubt that the BT-3F, the BMP-3F, and the 2S25M will be a great success in this category of the global arms market, in which Russia has long enjoyed a strong presence.

«Russian Nuclear Orthodoxy: Religion, Politics and Strategy»*

Giles DuPont

Shortly before the fall of the Soviet Union, Metropolitan Alexii, Russia's future patriarch, organized what was arguably the most powerful ceremony in St. Petersburg's Kazan Cathedral since the building became a museum of atheism following the Bolshevik Revolution.

Before throngs of Russian believers, many trying to recover the foundations of their faith, Alexii oversaw the reinternment of the relics of legendary Russian Prince Alexander Nevsky, the epic military hero lionized for centuries as Russia's savior against Tatar invaders.

It's no coincidence Dmitry Adamsky's book, «Russian Nuclear Orthodoxy: Religion, Politics and Strategy», starts with this powerful opening scene that not only physically returned the relics of the famous prince to the grand St. Petersburg cathedral, but perhaps more powerfully set the stage for a renewal of the alliance between Russia's Orthodox Church and the country's armed forces.

That alliance has only grown stronger during the nearly ten years of Russian military modernization. Now, Orthodox priests routinely bless weapon systems, including nuclear missiles, strategic bombers and nuclear submarines. Its slightly gaudy apotheosis is apparent in orders from Defense Ministry Sergei Shoigu to build an enormous orthodox church on the defense ministry's main fairgrounds outside of Moscow.

The strength of Adamsky's book is the ability to convey the power of those images while soberly picking apart the alliance of church and military, setting out the terms by which he considers Russia to have a military touched by faith. He looks at the inception and operationalization of the relationship in three digestible parts, each of which covers a decade since the end of the Soviet Union. The book pays particularly close attention to the symbiotic relationship between the church and Russia's nuclear forces, a puzzling relationship which hasn't until now found sufficient examination for an English-speaking audience.

For followers of modern Russia, Adamsky points out the role clerics have played on the ground in Russia's modern conflicts. He brings detailed portraits of military priests mobilized with troops and serving on bases, including in the Russian Khmeimim base in Syria. He compares the priests to the Soviet Union's powerful political officers who were responsible for keeping up morale and faith in Communist ideology in the ranks of the Red Army. Of course, the priests don't espouse economic determinism, but Adamsky points out how they use prevailing political rhetoric to justify the cause of the armed forces in Syria and, earlier, in Ukraine.

He has expanded on the role of those clerics and the public statements made by church leaders to paint a picture of the modern-day myth-making the church has endeavored upon. In one example, he notes the concept of the Holy Rus', which was invoked passionately by Patriarch Kirill in the wake of the Ukraine crisis. When Crimea was ultimately annexed, Kirill broadened his reference to the Black Sea peninsula as the place where Holy Prince Vladimir was baptized, making Russia ultimately a Christian country.

Adamsky's own background has provided him with a powerful lense to view the subject. The book proves him to be intimately familiar with rituals of faith and military might in post-Soviet Russia, but balances that intimacy with a cold and analytical eye.

Wonderfully insightful stories lace the arc of the book, expanding on the links forged between the church and the military. In one of them Adamsky explains how Sarov Monastery, which was seized by the Soviets in 1927 became the nerve center for the Soviet Union's nuclear program under Josef Stalin.

The author is right to couch the strengthening of ties between the military and church against the background of a greater expression of religious faith by Russian President Vladimir Putin and his entourage - a phenomenon Adamsky says has given the church the blessing to enter many realms of secular life. Likewise, the military has entered more aspects of civilian life, making the two institutions among the most trusted in Russia today.

The book importantly points out that the church was one of the first champions of Russia's nuclear armament program, and explores the extent to which the church and faith have been instrumental to the military's strategies and operations. Adamsky successfully highlights the irony of the relationship here, noting that the church had never supported ideas of nuclear pacifism or disarmament, in contrast to other Christian denominations.

Some readers may want more details in how the church has come to define strategy and operations in concrete terms, but Adamsky himself notes his approach has been limited by the existing scholarship and available data, and that experts are only now starting to scratch the surface of the interplay between faith and military practice.

Topically, the book finds the right place between the state, the military and faith, all crucial to understand modern Russia. It is a fascinating book for both the expert community entrenched in the study of Russia's military and the casual reader with an interest in Russian.

The book is an engaging and accessible read for anyone interested in the intersection of faith, military might and identity in modern Russia.

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* Adamsky Dmitry. Russian Nuclear Orthodoxy: Religion, Politics and Strategy. Stanford University Press, 2019
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