

THE NEW DEFENCE ORDER STRATEGY

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**ALEXANDER MIKHEEV,
DIRECTOR GENERAL
OF ROSOBORONEXPORT**

A wide range of missions carried out by of missions carried out by Navies calls for providing them with various types of naval hardware and special equipment. The foreign Navies include 225 Russian-built ships. Of them, more than 100 surface ships and submarines carry naval underwater weapons. Rosoboronexport is offering its partners unique solutions to equip and upgrade the weapons of these ships

JSC ROSOBORONEXPORT (Part of the Rostec State Corporation), IN CONJUNCTION WITH JSC SEA UNDERWATER WEAPONS – GIDROPRIBOR CONCERN, HAS LAUNCHED A PROGRAM TO PROMOTE NAVAL MATERIEL AND SPECIAL EQUIPMENT TO THE EXTERNAL MARKET / ASIAN MILITARY REVIEW

NEWS

Naval underwater weapons are in service with the world's major navies. However, only as few as 5 to 7 countries, including Russia, are capable of designing and manufacturing these weapons independently, due to the high complexity and cost of these efforts. A number of weapons produced by JSC Sea Underwater Weapons – Gidropribor Concern, offered by Rosoboronexport, are unrivalled in the world.

Foreign customers are offered a wide range of naval hardware and special equipment. Among them there are torpedoes, mines, anti-mine and underwater anti-sabotage weapons, as well as means of ship's self-defense against underwater weapons.

In the segment of torpedo weapons, the TE-2 universal electric remote-control homing torpedo is offered. It is designed to destroy submarines, surface ships and fixed targets. In addition, a number of newly developed torpedoes, including 533 mm torpedoes and 324 mm small torpedoes, are promising for promotion in the world market.

The MDM-1 and MDM-2 bottom mines are designed to create a mine threat and destroy surface ships and submarines in surface and submerged conditions when used in minefields. The "Shelf" naval shelf mine offered has no counterparts in the world. It can be placed from delivery aircraft, submarines, and surface ships. The "Shelf" mine has a hydroacoustic passive/active detection and targeting system protected from triggering when exposed to natural disturbances and influence sweeps that can detect any submarines and surface ships regardless of the level of their noise and speed. Its unique design makes it difficult for the target to use countermeasures and conduct an evasive action.

Naval mines are not rigidly linked to a particular ship project. Countries whose naval doctrine provides for mine planting are interested in their acquisition. Rosoboronexport



expects get attention to Russian-made naval mines from a wide range of countries in Africa, South-East Asia, and Latin America.

As regards anti-mine weapons and means of ship self-defense against underwater weapons, Rosoboronexport offers the Mayak-2014 sonar systems, MG-74ME self-propelled sonar counter-measure devices, small-sized self-propelled torpedo defense devices, the SHAT-U broadband acoustic sweep as well as the GKT-3M deepwater contact sweep, which is unmatched in the world market. A flexible configuration of the sweep enables its use in single ship-borne, heliborne, paired near-bottom and network versions.

In addition, diver delivery vehicles that can be used from the world's most popular Russian-built Projects 877 and 636 submarines, as well as "Piranha" class midget submarines are considered by Rosoboronexport to be promising for promoting in the global market.

"We also expect a considerable interest in Russia's naval underwater weapons from countries developing their own shipbuilding industry, but having no capability to develop and produce naval weapons. In addition, a number of countries are seeking the competencies necessary to establish the production of these weapons at national industrial enterprises. Rosoboronexport is ready to work in these areas," added Alexander Mikheev. ♦



RUSSIA WILL OFFER "KARAKURTS" WITH "KALIBR" MISSILES FOR EXPORT

/ RIA NOVOSTI, RUSSIA

Russia will offer the multi-purpose artillery missile ships of project 22800 "Karakurt" equipped with cruise missiles "Kalibr" for export. It was announced by Yuri Borisov, Vice Prime-Minister.

"These ships appeared to be very successful: big tonnage, good armament. The most important here is "Kalibr". The corvette features an acceptable price, high speed, it is not big, but compact. I reckon that it has good export potential to a number of countries, especially those in the Pacific Region: Vietnam, China, India, and other countries," said Borisov.

According to Borisov these ships arrive to enter the inventory of the Russian Navy.

"They will go to the Baltics, to the Northern Fleet, to the Caspian, to the Black sea," added Vice Prime-Minister.

The multi-purpose artillery missile ships of project 22800 have been designed by the Central Marine Design Bureau "Almaz". The ships have been equipped with a system of high-precision missile weapons and up-to-date artillery systems, anti-sabotage systems and advanced radiotechnical armaments. The advantages of these ships are as follows: high maneuverability, increased seaworthiness, as well as architecture of topsides and hull made according to stealth technologies.

"Kalibr" missiles have been developed by Experimental Design Bureau "Novator". The range capability of missiles is about 2,5 thousand kilometers, in export version the range is limited to 300 km. The cruise missiles of this type are included into inventory of submarines of project 885 "Yasen" and project 636, a frigates of project 11356, and other surface ships. ♦

NEWS



**SERGEI SHOIGU,
MINISTER OF DEFENSE
OF RUSSIA**

Definitely, a tension in international relations has contributed to strengthening of Russian-Chinese relations, which are based on mutual respect and confidence. Today about 12% of Russian weapons sent for export go to China



SUMMARY OF THE NATO SUMMIT 2018 HELD IN JULY IN BRUSSELS

The regular NATO Summit held on July 11–12 in Brussels raised a keen interest not only in Western countries, but also in Russia. This event was specific one as for the first time it was held in a new building of the NATO's political structure. Also, the summit was attended by Donald Trump. It was the first time when he took part in such an event of the Alliance.

Text by Andrei Frolov

TRUMPS' DEMONSTRATION

Despite the fact that Donald Trump has become the key newsmaker at the summit, making his agenda with such slogans as “European NATO members must pay more” (spend about 4% of GDP for defence needs) and “buying Russian gas by Europe only makes Russia stronger”, the NATO summit's decisions left in the shadow are much more interesting, as well as Trump's invectives that, on closer examination, are valid in some way.

Thus, the appeal to the NATO members to increase defense expenditures should be interpreted not only as the next move in the course of the anti-Russian policy, but rather as an attempt to redefine the U.S. liabilities and to have an option to concentrate resources to stand off China. Although, in 2017, the U.S. budget spent about \$30 bln for European security (5% approx.), the possibility to get rid of some liabilities and shift the responsibility on the European allies' shoulder is not irrational, taking into account, that in 2017, except for the USA, only the Great Britain, Estonia and Greece (and Poland) spent over 2% of GDP for defence needs. The average figure was 1.3% (including Iceland, which does not bear defence expenditures). Meanwhile, NATO uses another less known indicator – the share of expenses for the development (i.e. repair, upgrade and new armaments procurement) in defence expenditures. NATO's targeted indicator totals 20%. The average value for the Alliance reaches 19.27%; the number of countries which exceed this level is much higher – there are 12 such countries (the record-breaker is Luxemburg with its 35%).

In terms of defence expenditures, we should mention another peculiarity. Ac-

cording to its regulations, NATO takes into account expenditures for armed forces and expenditures of other military and security forces, as well as pensions (for military and civil staff, no matter which agency is responsible for payments), plus R & D expenses (it is not necessarily that these expenses should lead to a successful development of weapons), expenses for the military component of the public private partnership, and expenses for NATO's common infrastructure. But, NATO's defence expenditures include neither payments for destruction and damage caused by combat operations, nor expenses for civil defence agencies. NATO's financing activities is another story, by the Alliance's budget is \$1.573 bln, including 22% paid by the U.S. (followed by Germany with its 14%), this is not about an increase in expenses for bureaucracy.

DECLARATIONS AND INTENTIONS

It is necessary to mention the establishment of a corps headquarters with the staff of 400 persons in Romania. The corps headquarters will be subordinate to the command stationed in Naples and will be responsible for the NATO's eastern flank, including coordination of troops deployment and military exercises with participation of up to 100,000 troops. This is part of the “high alert” concept announced during the latest summit, based on the 4x30 initiative: combat readiness of 30 battalions, 30 air squadrons and 30 battleships for 30 days. Moreover, they made a decision to establish two new command headquarters – in the USA and Germany (to be responsible for logistic support), as well as cyber defence units and hybrid threat response teams.

The Brussels NATO Summit's declaration pays particular attention to Russia. For example, it states that for two decades NATO has been working on establishing the partnership with Russia, but Russia's latest activities have led to the degradation of stability, increased the uncertainty and affected the security. It is interesting that NATO estimates its activities as compliant with its commitments, and they are not considered to be contrary to the Russia-NATO Founding Act.

Meanwhile, the Act clearly states that the member countries shall confirm the decision made at the previous NATO summits with regard to Russia and shall continue to reinforce their deterrence capa-



**JENS STOLTENBERG,
NATO SECRETARY GENERAL**

We had a very constructive summit. In two days we have made a few important decisions... to ensure an equitable distribution of the financial burden among the allies. All the allies clearly and unambiguously understood President Trump's address.

bilities (“deterrence” may be referred to as nuclear deterrence) and defence capabilities, including the presence in the eastern part of the Alliance. In doing so, NATO declares that it does not want any confrontation with Russia and does not mean to pose any threat.

However, a special paragraph is allocated to define why Russia is threatening NATO. Among other reasons, Russia is threatening through the destabilization in the eastern part of Ukraine and the annexation of the Crimea; controversial military activities, including operations in the regions near the NATO borders; deployment of advanced missiles in Kaliningrad Region (these missiles are able to carry both conventional and nuclear warheads); repeated air intrusions into the space of NATO member countries; constant development of military capability in the Crimea; irresponsible statements on nuclear weapons; unexpected military exercises, as well as a growing number of exercises with the presence of nuclear weapons in the exercise scenario. In addition, Russia violates requirements for control and reduction of arms, as well as confidence-building measures; interferes in the election and violates the sovereignty of other countries, implements hybrid activities; holds disinformation campaigns and improper activities in the cyberspace. This document also contains accusations in the use of chemical weapons in Salisbury. This paragraph of the declaration is evidently subjective and has been added on the insistence of the Great Britain (one of a few countries specially mentioned in the declaration).

Along with these insinuations, there is an individual paragraph relating to

the former republics of the USSR such as Ukraine, Moldova and Georgia in terms of their relations with Russia. NATO calls for Russia to withdraw the armed forces “deployed in these countries without consent of [these] states”. Similarly, the document calls for the withdrawal of all armed forces and troops from the territory of Donetsk and Luhansk regions, to stop supporting the Novorossiia republics and to return to the Normandy format. This paragraph also contains a rather interesting proposition that NATO has stated it would support democratic reforms in Moldova and the development of military capability in the republic.

There are some interesting references to the issues related to mass destruction weapons and strategic systems. For example, the declaration contains yet another statement that the anti-missile defence system in Europe does not and will not pose any threat to Russia's nuclear capability but, at the same time, Russia's statements that it will have NATO countries in sights because these countries have anti-missile defence components have destructive features. We should pay attention to references to the use of chemical weapons. Along with Syria, NATO considers Great Britain, Iraq and Malaysia as the countries where such weapons are used.

WORKING ON THE MARGINS OF THE NATO SUMMIT

During the summit, Belgium and the Netherlands signed an agreement for joint operation of the Airbus A400M military transport aircraft. This was an interesting event. The fleet of this type aircraft totals 8 aircraft for both countries' Air Force. Thus, both countries made another step in their course to unite national armed forces. For example, the Netherlands is currently responsible for Belgium's air defence, using the Patriot PAC-3 air defence systems while both countries actually have the united Navy.

As the summit's spin-off, Denmark, Latvia and Estonia established the Northern Multinational Division Command with Canada, Great Britain and Lithuania acting as “participating countries”. This group will tackle the issues related to the Baltic Region, operating two brigades and coordinating military exercises and operations in the region. All these activities are intended to be prepared for the potential conflict which may occur in the Baltic Sea region.

RESULTS AND PROSPECTS

Estimating the summit's results, we should note that the USA is likely to reduce its



**PETRO POROSHENKO,
PRESIDENT OF UKRAINE**

.....
All the speakers – the leaders of 19 NATO member countries – unanimously stated that the support to Ukraine should speed up the future NATO membership for Ukraine. That was an absolutely specific discussion.

military commitments over the longer term provided they maintain their military bases in Europe, and probably, redefine the relationship within the Alliance in favor of more evident bilateral relations. As a result, the NATO will continue to expand with tougher control over some European states and will keep restraining Russia, primarily, by applying economic methods. Such a scenario will strengthen the role of the NATO European countries in maintaining stability in Europe, as we may observe by various bilateral and multi-sided forms of activities evidently manifested in the course of the latest summit.

Meanwhile, NATO demonstrated (probably, involuntarily) that the principle of balance might be applied to the Alliance – you have to spin pedals constantly otherwise you will stop or fall. Vivid examples are the prompt to make Macedonia enter the alliance and actual intentions to let Georgia enter the Alliance. Therefore, Georgia has a chance to become the first former CIS country which enters the Alliance, although the real value of this “acquisition” for NATO over the short and medium-term periods is very questionable. This will become the precedent of accepting a country with evident unsettled territorial disputes and with potential conflicts with neighboring countries.

No doubt, the Trump's appeal to increase defense expenditures of NATO European countries will be responded. Moreover, some NATO European members had announced their plans before the summit in order to increase their defense expenditures, basically, to buy new weapons. ♦



**DONALD TRUMP,
U.S. PRESIDENT**

.....
And I hope that we're going to be able to get along with Russia. I think that we probably will be able to. The people in the hall think the same, but they nevertheless – they really stepped up with their commitment, and expressed it in a way they had never done before.



MILITARY AVIATION.

Export from Russia in 2014–2018



Today, it is evident that 2014 has become the key milestone in Russia's and the world history. Crimea, the beginning of civil war in Ukraine... These events have changed the modus vivendi for Russia and Western countries and resulted in imposing a package of anti-Russian sanctions, including sanctions against Russia's military and industrial complex. And though European countries stopped imposing sanctions in 2014, the USA is regularly extending its sanction lists, adding various Russian defence companies.



Yak-130

Text by **Andrey Frolov**

The U.S. sanctions are drifting away from the issues relating to the Crimea and Ukraine and are referred to internal political aspects of the USA (alleged interfering of Russian hackers in the 2016 election campaign in the USA), as well as to global political issues (collaboration with Iran). By the way, the latter have often been used by the USA as the reason for imposing sanctions on Russian defence companies since as far as the early 2000s.

In 2015, Russia interfered in the Syrian conflict. This also marked the milestone for Russia's policy in the Middle East and for Russian armed forces. Syria has become a training range not only for the modified structure of the Russian army, but also for weapons that have been developed and procured under the State Armaments Programs (for the period until 2015 and until 2020) and, with some minor exceptions, have not been used for combat missions. As of March 2018, according to official data, about 210 different weapon prototypes have passed operational testing in Syria, including experimental and low-batch systems.

All these factors definitely affect Russian arms export. As aircraft equipment usually totals about 50% of all supplies, we will review the export of military airplanes and helicopters from Russia in 2014–2017.

Along with the above-mentioned political factors, the second half of 2014 has marked a sharp fall in oil prices. This affected the customers who usually prefer to

purchase Russian arms (Algeria, Azerbaijan, Venezuela, Iraq). The situation that takes place in Venezuela by 2018 allows to believe that the country is likely to become the marginal consumer of Russian arms, first of all, of aircraft equipment.

Nonetheless, in 2014 Russia signed a number of contracts with the Middle East countries. These contracts started to pay back in later years. For example, Russia signed a large package of contracts with Egypt for at least \$3.5 bln; this country became the first importer of the MiG-29M/M2 fighter aircraft and combat helicopters Ka-52¹. Russia signed a large package of contracts, including the Su-25 attack aircraft for at least \$1 bln; the package was prepared and implemented in record-breaking time to disprove the popular cliché that the Russian military and technical cooperation system is clumsy.

Actually, the military-technical cooperation with Ukraine was frozen. The aircraft building industry was affected through a more complicated logistic structure for supplying turboshaft and turbojet engines manufactured by PJSC "Motor-Sich" to Russia (supplies were terminated only in spring 2018).

Russia continues its course for the liberalization of the MTC system – The Federal Service for Military-Technical Cooperation allowed "Russian Helicopters" to sign contracts with foreign customers for supplying spare parts and service maintenance of combat aircraft.

In 2014, new combat aircraft were mainly supplied to India, which received (according to estimates) 14 assembly sets for licensed assembly of the Su-30MKI fighter aircraft under the 2000 contract, plus 14 Su-30MKI fighter aircraft under the 2012 contract. India has also received six MiG-29K/KUB carrier-based fighters un-



**ALEXANDER MIKHEEV,
DIRECTOR GENERAL
OF ROSOBORONEXPORT**

The products designed for Air Force are traditionally leading products in Rosoboronexport supplies. Since our company's foundation, we have exported over 1,300 airplanes, helicopters and related equipment for about \$65 bln in total

rostec.ru



Su-35



Mi-25

der the 2010 contract. Russia overhauled the long-range anti-submarine aircraft Tu-142ME for the Indian Navy.

Vietnam received first four Su-30MK2 fighters under the 2013 contract for 12 aircraft in total². Nine Su-25 attack aircraft from the inventory of the Russian Air Force were exported to Iraq under a “special” contract in 2014. China is believed to receive one or two military transport aircraft Il-76MD (also from the inventory of Russia's MoD).

In 2014, a considerable part of helicopter transfers – 128 rotorcraft – were identified. Only three Mi-8T helicopters were supplied from the inventory. India received 19 Mi-17V-5 helicopters; China – 20 Mi-17E helicopters; Afghanistan – 30 Mi-17V-5 helicopters³. Moreover, the Mi-8/17 series helicopters were likely to be supplied to Azerbaijan, Peru, Iraq, Indonesia, Kazakhstan, Cameroon, Rwanda, Nepal, and South Korea. Hungary received three Mi-8T helicopters from the inventory after presales repair. In addition, foreign cus-

tomers received several new helicopters Ka-32A11VS (China and Belarus)⁴.

In 2014, new combat helicopters Mi-35 were supplied to Iraq (at least eight Mi-35M and six Mi-28NE), Azerbaijan, and Brazil⁵. For aircraft supply summary data, please see Tables 1 and 2.

Despite a fall in oil prices in 2015 and a gradual effect of sanctions, the growth in contracting and the stability of supplies were observed. Certain liberalization of the MTC system has been continued concerning service maintenance of supplied equipment and material resources. For example, JSC “United Engine Corporation” (UEC) was authorized by the Federal Service for Military-Technical Cooperation (FSMTC) for carrying out export supplies of spare parts, components and technical documentation for the previously supplied military products for the period of five years, including the permit to execute works related to maintenance, repair (including upgrading involving research and development works) and extension of service life⁶.

In 2015, new combat aircraft were mainly supplied to India, which received (according to estimates) 12 assembly sets for licensed assembly of the Su-30MKI fighter aircraft under the 2012 contract, plus next eight carrier-based MiG-29K/KUB fighters under the 2010 contract. Four Su-30S fighters were exported to Kazakhstan⁷. Vietnam received four Su-30MK2 fighters⁸. Also 14 operational training aircraft Yak-130 were supplied to Bangladesh⁹. Eight military transport aircraft Il-76TD were supplied to China from the inventory¹⁰.

In 2015, supplies of 89 helicopters were identified; although, the actual number was much higher – not less than 100 rotorcraft. India received 23 Mi-17V-5 helicopters, Peru – 16 Mi-171Sh-P, Azerbaijan – five Mi-17V-5, Bangladesh – five Mi-17V-5. Also, the Russian Mi-8/17 series helicopters were supplied to Indonesia, Cuba, South Korea, Iraq, Angola, Sri Lanka, and Zambia. Four new Ka-32A11VS helicopters were exported to China. Moreover, Algeria began to receive heavy transport helicopters Mi-26T2 (four helicopters were exported in total).

In 2015, new combat helicopters were supplied to Iraq (four Mi-35M and two Mi-28NE). Uganda purchased and received four Mi-24V/Mi-24K helicopters from the inventory.

In 2016, the key event within the MTC system was the signing of three intergovernmental agreements (Goa, 15th October 2016) related to defence industry, includ-

ing an agreement for establishing a joint venture to manufacture multirole helicopters Ka-226T in India (the joint venture is expected to manufacture 140 Ka-226T helicopters, plus 60 helicopters will be supplied from Russia as finished products).

In 2016, Russia began to export new weapons which have never been exported before. First of all, Russia started to export the Su-35 fighter. Among other signed contracts for supplying Russian next-gen weapons and military equipment, particular attention should be paid to the expected contract with Algeria to supply the frontline bomber Su-32 (Su-34).

In 2016, supplies of the Su-30/35 series aircraft showed its usual high growth: customers received 18 new fighters. For example, Algeria instantly received the first eight Su-30MKI(A) fighters under the 2015 contract. Russia started to supply the Su-35 fighters to China; the customer received the first four aircraft (the contract was signed in 2015). The last four Su-30MK2 fighters were exported to Vietnam under the 2013 contract. Two Su-30SM fighters were delivered to Kazakhstan. Probably, individual components and materials were supplied to India for the licensed production of the Su-30MKI fighters. Moreover, the MiG-29 series fighters were delivered to India (six carrier-based fighters MiG-29K/KUB).

Similarly to supplies in the previous years, supplies of the operational training aircraft Yak-130 were intensified. Myanmar, Bangladesh and Belarus receive these aircraft (see Table 1).

The transfer of two passenger aircraft Sukhoi Superjet 100 (Sukhoi Business Jet, SBJ) supplied in VIP versions may be accessed as one of positive events of 2016 as this transfer extended the lineup of exported aircraft.

Supplies of combat aircraft from the inventory of Russia's Aerospace Forces were intensified. Iraq was likely to receive four Su-25 attack aircraft; and about ten modified frontline bombers Su-24M2 were supplied to Syria.

Supplies of helicopters were considerable. Iraq received 10 combat helicopters Mi-28HNE; the first helicopters of the same type were supplied to Algeria (six rotorcraft). The Mi-35M helicopters were supplied to Iraq (not less than three rotorcraft) and Kazakhstan. It is known that the Mi-24 series helicopters were supplied from the inventory – Angola received an unknown number of the Mi-24P helicopters; Cameroon got two Mi-24V/K helicopters.

It is worth to mention the export of transport helicopters. In particular, Algeria and China received heavy helicopters Mi-26. The Mi-17/171 series helicopters



Combat helicopter Ka-52



Yak-130



MiG-35

were supplied to China, Bangladesh, Belarus, Kazakhstan, Angola, Uganda, and Serbia (see Table 1). Moreover, five Ka-32A11VS helicopters were exported to China.

In 2017, data on the share of aircraft equipment in the stock of orders was updated. Aircraft equipment totaled 50% of the stock of orders; the scope of supplies increased from 40–45% to 50%¹¹. It has been reported that contracts were signed to supply 106 helicopters for \$4.7 bln, or 11.75% of the entire stock of orders¹². The year 2017 has marked the beginning of export supplies of the MiG-29M/M2 helicopters and combat helicopters Ka-52 to Egypt.

Speaking of supplies of aircraft equipment at large, we should note that supplies of the Su-30/35 series fighters showed a traditionally high rate: different customers received 18 new fighters and two operational aircraft from the inventory. Supplies of the Su-35 fighters to China continued (10 aircraft were supplied). Algeria received six Su-30MKI(A) fighters, and Kazakhstan – two Su-30SM fighters. Two Su-30K fighters previously owned by the Indian Air Force were eventually delivered to Angola.

The Mig-29 series fighters were supplied to Egypt which started to receive the

According to UAC's annual statement, the corporation is the only aircraft building company in the world that has this large scope of available competences in the field of development and manufacturing of special-purpose aircraft. This allows to build aircraft systems belonging to all basic types (by application), sometimes with the unprecedented level of tactical, technical and economic characteristics

TASS.RU

PJSC "UAC" is going for a considerable share in the global competitive market relating to military aviation as Russia is supplying its aircraft as part of military-technical cooperation. The sales volume of PJSC "UAC" in the global market may reach up to \$117 bln by 2035

www.uacrussia.ru

MiG-29M/M2 fighters (up to 15 aircraft). Similarly to the previous years, the operational training aircraft Yak-130 were exported – Myanmar received the next three aircraft.

Six fighters were supplied to Serbia (from the inventory of Russia's MoD). Syria was likely to receive 10 frontline bombers Su-24M, also from the inventory of Russia's Aerospace Forces. Kirgizia received two military transport aircraft An-26 for free from the inventory of Russia's Aerospace Forces.

Supplies of helicopters were considerable as before. In the segment of combat helicopters, Egypt received the first supplies of the Ka-52 helicopters (19 aircraft); Algeria received six Mi-28NE helicopters. The Mi-25M helicopters were supplied to Iraq, Kazakhstan, Pakistan, Nigeria, and Mali (see Table 1). It is known that the Mi-24 series helicopters from the inventory were supplied – Syria received an unknown number of the Mi-24P helicopters; Tajikistan received one Mi-24V helicopter.

The export of transport helicopters also remained at the appropriate level. Algeria received heavy helicopters Mi-26. The Mi-17/171 series helicopters were sup-

plied to Belarus, Kazakhstan, Pakistan, China, and Kenya. One Mi-8 helicopter was transferred to Tajikistan. Also, six Ka-32A11VS helicopters were exported to China.

For the time being, it is difficult to estimate the 2018 trends. Among other big events this year, we can mention the signing of a significant contract with Indonesia for supplying 11 Su-35 fighters for \$1.1 bln; a contract with Myanmar for six Su-30SME (the first customer purchasing this fighter modification) for \$400 mln and a contract with Kazakhstan for eight Su-30SM (for about \$400 mln). No doubt, we should pay attention to the beginning of supplies of the Mi-26T2 helicopters to Jordan.

On the other hand, 2018 has marked growing negative effects caused by anti-Russian sanctions (first of all, those imposed by the USA). For example, it is known that the above-mentioned contract with Jordan for the Su-35 fighters has been negotiated for a long time as the parties have been trying to define the best funding conditions with sanctions imposed on some Russia's banks. Evidently, the number of such cases will be growing, and the banking sector will be the most vulner-

able, as well as the logistic support sector.

To sum up, we should say that the American, European and Ukrainian sanctions have not affected Russia's export of combat aircraft and equipment. There are no reports that any contracts have been lost through Russia's fault; public data on actual supplies allows to conclude that supplies are maintained at the stable level in 2014–2018. Sanctions are likely to affect contracting; mostly, they make negotiation terms longer and complicate financial arrangements to pay for Russian supplies. With some minor exceptions, no public data on such situations is available.

The conflict in Syria does not directly affect supplies of combat airplanes and helicopters, except the supplies of aircraft and equipment from the inventory of Russia's Aerospace Forces to the Syrian Army for free. Contracts signed in 2015–2018 are likely to be the result of the previous agreements. The “Syrian effect” may become evident in 2019–2020 by the completion of the negotiations initiated after 30th Sept. 2015 – the beginning of Russia's military operation in Syria. ♦

TABLE 1. AIRCRAFT SUPPLIES IN 2014–2017

AIRCRAFT TYPE	2014	2015	2016	2017
Su-35			4	10
Su-30MKI*	28	12	8	6
Su-30MK2	4	4	4	
Su-30SM/SME		4	2	2
Su-30K (inventory)				2
MiG-29M/M2				15
MiG-29K/KUB	6	8	6	
MiG-29 (inventory)				6
Su-24M2 (inventory)			10	10**
Su-25 (inventory)	9	9	4	
Yak-130		14	9	3
SSJ100***			2	
Il-76TD (inventory)	2**	8**		
An-26 (inventory)				2

* Su-30MKI and Su-30MKI(A) modifications; assembly sets supplied to India are included (in 2014)

** estimates

*** for Thailand AF

TABLE 2. AIRCRAFT CONTRACTS FOR GOVERNMENT CUSTOMERS UNDER THE MTC PROGRAM IN 2015–2018

AIRCRAFT TYPE	2015	2016	2017	2018 (until July 1)
Su-35	24			11
Su-30MKI(A)	14			
Su-30SM/SME	8		14	14
MiG-29M/M2	46			
Su-32*		12		
Yak-130	20		16**	
SSJ100		1		
Be-200ChS		2	2	

* estimates

** estimated value

¹ Egypt to purchase Russian weapons for \$3.5 bln // Nezavisimaya gazeta, 18.09.2014.

² Vietnam receives the first Su-30MK2 fighter under a new contract // bmpd.livejournal.com, 12.12.2014.

³ CAST Center's estimates; Rosoboronexport to complete supplies of Mi-171E helicopter to China // ITAR-TASS, 30.06.2014; Contracts with Pentagon for supplying 63 Mi-17V-5 helicopters will be completed on 29th October // Interfax-AVN, 22.10.2014; N. Novichkov. First 19 Mi-17V-5 helicopters are supplied to India // ITAR-TASS, 12.02.2014.

⁴ Web site: <http://bmpd.livejournal.com/895628.html>

⁵ Iraqi MoD receives the third batch of combat helicopters Mi-35M // RIA “Novosti” 02.10.2014; Terms of delivery are announced for Russian helicopters ordered by Azerbaijan // APA, 05.07.2014; 12 Mi-35M helicopters are supplied for Brazilian AF // “Military-industrial courier”, 12.02.2014.

⁶ UEC receives a license for service maintenance of aircraft engines as part of military-technical cooperation // Interfax-AVN, 12.02.2015.

⁷ A. Nikolsky. Russia supplies arms to friendly countries // Vedomosti, 22.12.2015.

⁸ Web site: <http://bmpd.livejournal.com/166982.html>

⁹ Web site: <http://bmpd.livejournal.com/1619486.html>

¹⁰ Web site: <http://sputniknews.com/business/20160113/1033068959/russian-unnamed-asia-il76.html>

¹¹ Almost one half of Russia's arms export is aircraft // RIA “Novosti”, 15.06.2017; Rosoboronexport reports a sharp rise in the demand for combat aircraft // RIA “Novosti” 16.08.2017.

¹² Rosoboronexport's stock of orders includes supply contracts for helicopters for \$4.7 bln, contracts for supplying 106 helicopters to be accomplished // Interfax-AVN, 19.06.2017.

2014

AIRCRAFT



COUNTRY	SUPPLY	NUMBER	NOTE
INDIA	SU-30MKI (CKD KITS)	14	UNDER THE CONTRACT OF 2000
	SU-30MKI	14	UNDER THE CONTRACT OF 2012
	MIG-29K/KUB	6	UNDER THE CONTRACT OF 2010
VIETNAM	SU-30MK2	4 (of 12)	UNDER THE CONTRACT OF 2013
IRAQ	SU-25	9	OF AVAILABLE STOCK, UNDER THE TERMS OF «SPECIAL» CONTRACT OF 2014
CHINA	IL-76MD	1-2	OF AVAILABLE STOCK

2015

AIRCRAFT



COUNTRY	SUPPLY	NUMBER	NOTE
INDIA	SU-30MKI (CKD KITS)	12	UNDER THE CONTRACT OF 2012
	MIG-29K/KUB	14	UNDER THE CONTRACT OF 2010
KAZAKHSTAN	SU-30SM	4	
VIETNAM	SU-30MK2	4	
BANGLADESH	YAK-130	14	
CHINA	IL-76TD	8	OF AVAILABLE STOCK

2016

AIRCRAFT



COUNTRY	SUPPLY	NUMBER	NOTE
ALGERIA	SU-30MKI(A)	8	UNDER THE CONTRACT OF 2015
CHINA	SU-35	4	UNDER THE CONTRACT OF 2015
KAZAKHSTAN	SU-30SM	2	
INDIA	SU-30MKI (COMPONENTS)	NO DATA	UNDER THE CONTRACT OF 2000
	MIG-29K/KUB	6	
VIETNAM	SU-30MK2	4	UNDER THE CONTRACT OF 2013
IRAQ	SU-25	4	OF AVAILABLE STOCK, UNDER THE TERMS OF «SPECIAL» CONTRACT OF 2014
SYRIA	SU-24M2	~10	OF AVAILABLE STOCK
BELARUS	YAK-130	4	
MYANMAR	YAK-130	3	
BANGLADESH	YAK-130	2	
THAILAND	SSJ 100 (SUKHOI BUSINESS JET, SBJ)	2	FOR VIP TRANSFERS

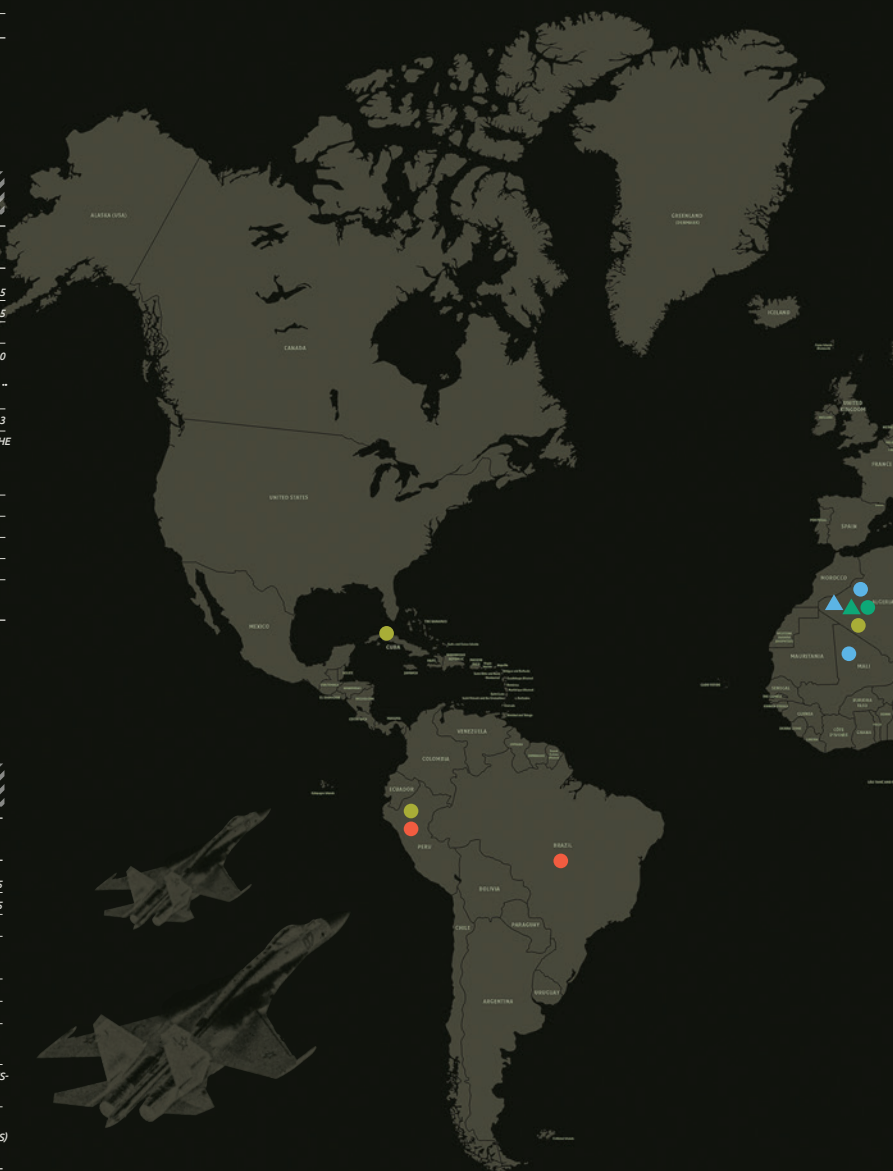
2017

AIRCRAFT

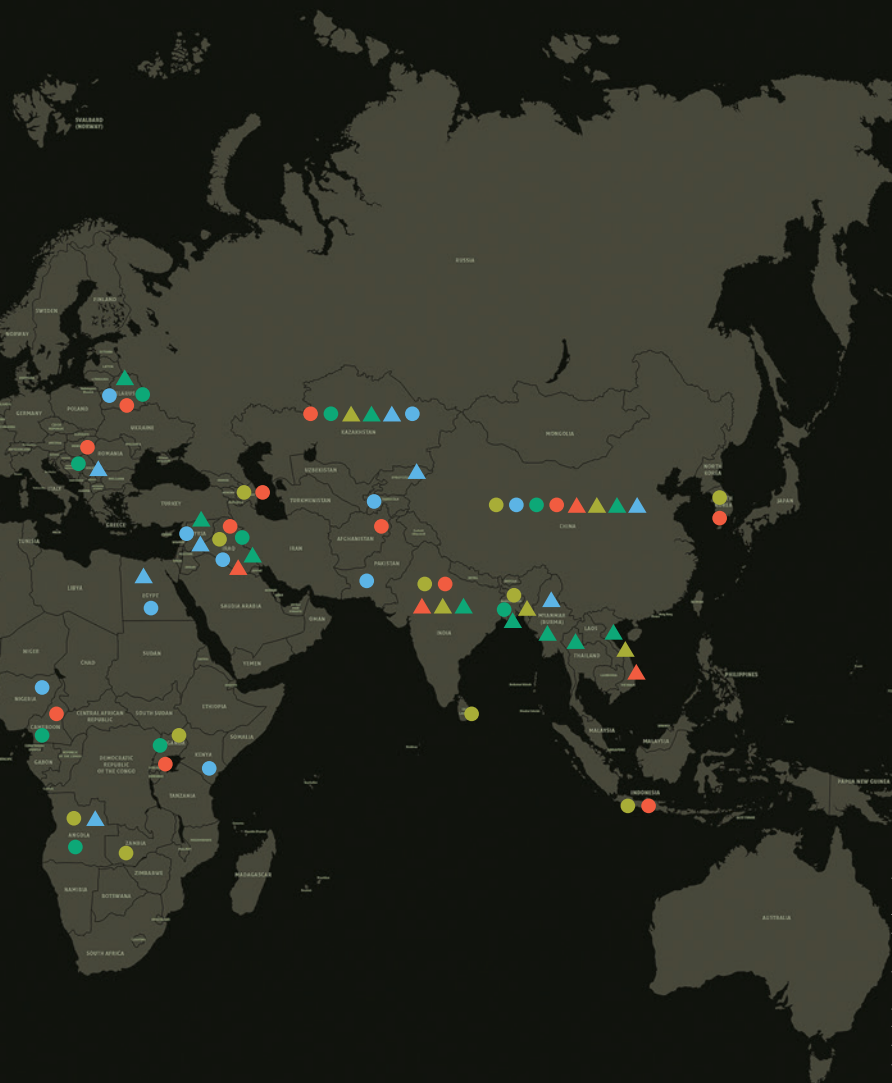


COUNTRY	SUPPLY	NUMBER	NOTE
ALGERIA	SU-30MKI(A)	6	UNDER THE CONTRACT OF 2015
CHINA	SU-35	10	UNDER THE CONTRACT OF 2015
KAZAKHSTAN	SU-30SM	2	
ANGOLA	SU-30K	2	BOTH BELONGED TO THE AIR FORCE OF INDIA BEFORE
EGYPT	MIG-29M/M2	UP TO 15	
MYANMAR	YAK-130	3	
SERBIA	MIG-29	6	OF AVAILABLE STOCK OF THE MOD OF RUSSIA
SYRIA	SU-24M	10	OF AVAILABLE STOCK OF THE RUSSIAN AEROSPACE FORCE (VKS)
KYRGYZSTAN	AN-26	2	OF AVAILABLE STOCK OF THE RUSSIAN AEROSPACE FORCE (VKS) AT NO CHARGE

RUSSIAN AIRCRAFT EXPORT IN 2014–2017



Unfortunately, for various political reasons, we have insufficiently wide access to the markets of the countries of the Middle East. If you do not take into account Egypt, the only major buyer of aircraft in recent years was Iraq



2014

HELICOPTERS



COUNTRY	SUPPLY	NUMBER	NOTE
INDIA	MI-17V-5	19	
CHINA	MI-171E	20	
	KA-32A11BC	4	
AFGHANISTAN	MI-17V-5	30	
AZERBAIJAN	MI-8/17	9	
	MI-35M	4	
PERU	MI-8/17	8	
IRAQ	MI-8/17	NOT LESS THEN 5	NOT LESS THAN 8 MI-35M
	MI-35M	MIN 14	NOT LESS THAN 6 MI-28-NE
INDONESIA	MI-8/17	3	
KAZAKHSTAN	MI-8/17	2	
CAMEROON	MI-8/17	2	
RWANDA	MI-8/17	2	
SOUTH KOREA	MI-8/17	1	
HUNGARY	MI-8T	3	OF AVAILABLE STOCK
BELARUS	KA-32A11BC	1	
BRAZIL	MI-35M	3	

2015

HELICOPTERS



COUNTRY	SUPPLY	NUMBER	NOTE
INDIA	MI-17V-5	23	
PERU	MI-171SH-P	16	
AZERBAIJAN	MI-17V-5	5	
BANGLADESH	MI-17V-5	5	
INDONESIA	MI-8/17	3	
CUBA	MI-8/17	2	
SOUTH KOREA	MI-8/17	1	
IRAQ	MI-8/17	2	
	MI-35M	4	
	MI-28NE	2	
ANGOLA	MI-8/17	1	
SRI LANKA	MI-8/17	-	OF AVAILABLE STOCK
ZAMBIA	MI-8/17	-	
UGANDA	MI-24V/MI-24K	4	
CHINA	KA-32A11BC	4	
ALGERIA	MI-26T2	4	

2016

HELICOPTERS



COUNTRY	SUPPLY	NUMBER	NOTE
IRAQ	MI-28NE	10	
	MI-35M	NOT LESS THEN 3	
ALGERIA	MI-28NE	6	
	MI-26T2	3	
KAZAKHSTAN	MI-35M	4	
	MI-171SH	2	
CHINA	MI-26TS	1	
	MI-171E	2	
	KA-32A11BC	5	
ANGOLA	MI-24P	NO DATA	OF AVAILABLE STOCK
	MI-171SH	4	
CAMEROON	MI-24V/K	2	OF AVAILABLE STOCK
BANGLADESH	MI-171SH	3	
BELARUS	MI-8MTV-5	6	
UGANDA	MI-171E	1	
SERBIA	MI-17V-5	2	

2017

HELICOPTERS



COUNTRY	SUPPLY	NUMBER	NOTE
EGYPT	KA-52	19	
ALGERIA	MI-28NE	6	
	MI-26T2	3	
IRAQ	MI-35M	NOT LESS THEN 3	
KAZAKHSTAN	MI-35M	4	
	MI-171SH	2	
PAKISTAN	MI-35M	4	
	MI-171E	2	
NIGERIA	MI-35M	2	
MALI	MI-35M	2	
SYRIA	MI-24P	NO DATA	OF AVAILABLE STOCK
TAJIKISTAN	MI-24V	1	OF AVAILABLE STOCK
	MI-8	1	OF AVAILABLE STOCK
BYELORUSSIA	MI-8MTV-5	6	
CHINA	MI-171E	1	
	KA-32A11BC	6	
KENYA	MI-17V-5	1	

MIG FIGHTER AIRCRAFT COME OUT OF THE SHADOW

Modified versions of Russian 4th generation MiG-29 fighter aircraft and the newest 4++ generation MiG-35 have been staying in the shadow for a long period of time while their more famous counterparts developed by the “Sukhoi” Design Bureau were thriving. But, the situation has been changing in recent years. Both land-based MiG-29SMT and deck-based MiG-29K aircraft together with its two-seat MiG-29KUB modification not only were purchased for the Russian armed forces, but also made their combat debut in the real environment, taking part in Russia’s military operation in Syria. This allowed to demonstrate their combat readiness and to gain invaluable experience.

MIG AIRCRAFT IN ACTION

For export versions of the MiG-29 aircraft and for Russian MiG-29SMT, the top priority was to enhance their combat performance in comparison to the basic Soviet version. All these aircraft were fitted with the advanced “Zhuk” family radars and more efficient engines, including their flight range extended by 50%. The key advantage was a considerably extended range of guided weapons.

Modified MiG-29 aircraft made their combat debut in November 2016. When Russia’s Admiral Kuznetsov aircraft carrier was cruising to Syria, five MiG-29K/KUB fighter aircraft were included in her air group in addition to standard Su-33 aircraft. Equipped with these aircraft, the rooth North Sea Fleet ship-based fighter aviation regiment had been formed before, in December 2015. In spring 2016, the regiment started its combat training, using deck-based MiG aircraft.

That is why, for new MiG fighter aircraft, it was rather experimental deployment in order to test aircraft capabilities in the real combat environment. As old Su-33 aircraft used only dumb weapons, more advanced deck-based MiG-29K fighters were spotted during this campaign fitted not only with dumb bombs, but also with the KAB-500Kr guided bombs with the weight of 500 kg. This is just one of the types of multiple guided weapons the aircraft are able to carry.

As soon as the modernization of the Russian aircraft carrier is complete in 2021, the MiG-29K will become the core part of her air group and will be able to drasti-



MiG-29SMT



MiG-29

cally enhance the capabilities of Russia’s ship-based aviation through the capability of guided weapon attacks on not only ground targets, but also sea-surface targets. Equipped with long-range anti-ship Kh-35U missiles, and, in the future, with Russian-Indian supersonic Brahmos missiles, these aircraft will allow the Russian aircraft carrier to become more powerful and multirole operational force in comparison to her current state. The combat experience gained in Syria will also come in handy for Vikramaditya, an Indian aircraft carrier equipped with these aircraft.

Small sizes, good thrust-to-weight ratio and various weapons allow actual and potential owners of considerably small non-nuclear aircraft carriers to offer these fighter aircraft for export.

Soon after testing ship-based MiG aircraft, land-based versions were tested in Syria. In September 2017, three MiG-29SMT were first supplied to Hmeimim airbase operated by Russia. These aircraft took part in the fiercest battles against the ISIS terrorist faction (the terrorist organization prohibi-

ed in Russia), and stayed in Syria until ISIS was defeated in December 2017.

Mainly, the aircraft were deployed to test new onboard weapon systems. The aircraft made 140 sorties, using standard dumb bombs, precision-guided bombs, and air-to-ground missiles. Also, the MiG-29SMT were employed for fighter missions. They made sorties to patrol the air space and escort long-range Tu-22M3 bombers. These operations allowed to test onboard radars and electronic warfare systems in real combat missions.

The “Syrian test ground” contributed to aircraft’s worthwhile experience in the real combat environments. At Hmeimim airbase, a large group of the design bureau representatives were working to get direct feedback from pilots and aircraft technicians, to introduce real-time minor modifications and software updates and to plan works on further large-scale modifications.

Probably, that combat experience was what they needed to turn new modifications of the MiG fighter aircraft into attractive export products.



**SERGEY KOROTKOV,
VICE-PRESIDENT FOR
INNOVATIONS, PJSC UAC**

The MiG-29SMT fighter aircraft has shown its mobility and ease of operation together with high combat performance. Testing combat capabilities of the modified MiG-29SMT frontline fighter aircraft has proved the efficiency of air bombs, guided bombs and guided airborne air-to-surface missiles that provide the hit precision in compliance with the military operational requirements for the system. The design hit precision has already been exceeded



**ILYA TARASENKO,
DIRECTOR GENERAL,
RAC MiG**

The MiG-35 aircraft allows to use the entire range of the existing and developed Russian and foreign-made weapons, including systems for heavy fighter aircraft



**VLADIMIR KOZHIN,
AIDE TO THE PRESIDENT
OF RUSSIA FOR MILITARY-
TECHNICAL COOPERATION**

After signing the contract, we've started supplies, so the first MiG-29M have already been ferried to Egypt. With regard to the number of aircraft to be supplied – about 50 aircraft – these supplies are planned for a few years. Everything will depend on aircraft manufacturers' production output as they are overloaded with orders. I'm sure we will be able to perform our contract liabilities as scheduled



MiG-35

THE MOST PERFECT MIG

As the MiG-29SMT and MiG-29K versions were developed as in-depth modernization of the Soviet MiG-29, the MiG-35 aircraft featuring its predecessor's airframe was developed from scratch in order to become a multirole fighter aircraft able to compete against any modern light fighter aircraft in its class. In 2016, its basic design was completed, and at the end of 2017 the aircraft equipped with the pre-production version of the "Zhuk-A" radar version entered a test phase.

The development of the MiG-35 aircraft has been delayed for a long time mostly because its advanced radar system with the active phased array was not ready. The "Eyes-and-ears" system for the new fighter aircraft will be considerably improved in comparison not only with the basic version of MiG-29, but also with its modified versions.

With this radar system, the light fighter aircraft will be turned into a fearsome fighter able to detect enemy aircraft of the same class at a distance of 200 km (practically, catching up with heavy-class fighter aircraft) and to efficiently fight the enemy beyond visual range (BVR). The MiG-35 will inherit excellent and even improved dog-fight maneuverability that the MiG-29 aircraft was famous for due to the installed thrust vector control RD-33MK engines.

New features such as the radar surface mapping function and optional reconnaissance and target sight airborne pods contribute to the performance of the MiG-35 as an attack aircraft. The aircraft will be able to use not only all available air-to-surface weapons, but also future developments.

NEW MIG COMBAT AIRCRAFT TO ENTER LARGE-SCALE PRODUCTION

In the Soviet era, light MiG-29 fighter aircraft were the best selling aircraft for regular customers interested in the Soviet military equipment. The similar future is likely to await a new generation of these fighter aircraft. Due to a rapid increase in costs and more sophisticated technologies for the development of heavy fighter aircraft, only rich and technologically developed countries can afford such a combat aircraft. Many countries do not need heavy fighter aircraft with a long range and a long loitering time. Customers show a growing interest in light and multirole fighter with low-cost maintenance.

The developed modernization programs successfully tested in Syria allow to turn still multiple but obsolescent fighter aircraft into multirole combat aircraft, such as the MiG-29SMT. It will be much cheaper than purchasing new aircraft. More expensive but unambiguously more efficient MiG-35 aircraft may be the most suitable option for those countries which want to upgrade their fleets of old Soviet fighter aircraft. The execution of a contract for supplying fifty MiG-29M/M2 to Egypt has been started. The entire fleet of Russian light fighter aircraft will be replaced with the MiG-35. Russia is considering an option to sell this model to Kazakhstan which wants to replace their MiG-29. For this purpose, Russia is ready to permit local production in Kazakhstan. The readiness for local production and transfer of technologies may also get other countries interested, in particular, some countries in South-East Asia, South America, and Africa. ♦

EXPORT of Naval Ships

Text by Dmitry Boltenkov



A naval segment is within the order of ten percent of the total amount in the export structure of Russian weapons and military equipment. Russia has several reliable importing partners and long-term and highly profitable contracts concluded in this sphere. A very limited range of international manufacturers are able to win in the competition with Russian shipbuilders in regard to “price-quality” ratio.



Russia as one of the leading exporters of the naval construction products offers a wide selection of ships and submarines, ranging from aircraft carriers and nuclear-powered ocean-going submarine boats to patrol boats. Most contracts include agreements for further servicing, repair and modernization of delivered items, implementation of location and repair systems for Navies of foreign countries.

Such an example of naval ship building in Russia as the project 877 submarine “Varshavyanka” has become a famous brand name on equal terms with the Kalashnikov gun, T-72 tank and MiG-29 fighter.

Russia's military and technical cooperation with many foreign countries in the sphere of naval construction is evident over the last years. We'd like to introduce

an overview of the military and technical cooperation with some advanced customers in this sphere.

VIETNAM

The USSR and Russia as its legal successor state created submarine forces for some countries.

Vietnam was one of such countries. Vietnam concluded a contract with Russia for construction of six submarines of project 06361, development of a stationing site for submarines and the repairing yard in Cam Ranh, weapon sales and training of crew members.

The contract total amount reached 4 billion dollars, of which 2 billion were the costs spent on submarines.

Submarines were built at the Admiralty Shipyards JSC in St. Petersburg within the period of 2010–2016. The Vietnamese party delivered submarines and ships that had been built for this country, using a heavy load carrier Rolldock (Netherlands) for costs reasons. The flags were officially displayed over the fifth and sixth submarines at the Cam Ranh Naval base on

Contracts with Vietnam (top down)
Project 11661K frigates
Project 06361 submarine
Project 12418 guided missile-boat





PROJECT 877 SUBMARINE

(further developed and constructed in project 636)

It has been developed by the Central Design Bureau for Marine Engineering. Boats have been built since 1984 at three shipyards. The total amount of boats to be completed and being under construction is 75.



PROJECT 11661 FRIGATES

The Zelenodolsk Design Bureau developed a project of a patrol ship for export by the end of the 1980s in the USSR. Two ships of this project, namely "Tatarstan" and "Dagestan", were completed in the 2000s for the Russian Navy (Caspian Flotilla). The whole range of various vessels has been developed on the basis of project 11661. Two vessels were built for the Vietnam People's Navy and another two ships are being under construction.

February 28, 2017 confirming the end of the contract implementation. Vietnamese names of submarines are "Ha Noi", "Ho Chi Minh", "Hai Phong", "Khanh Hoa", "Da Nang", "Ba Ria-Vung Tau". A Navy submarine base was developed in Cam Ranh in accordance with the Russian project (Joint Stock Corporation "Shipbuilding & Shiprepair Technology Center") (JSC "SSTC") was the project designer) in 2015.

Zelenodolsk shipyard continued construction of frigates of project 11661 for Vietnam as "Gepard 3.9"-class frigates. Russia and Vietnam signed a contract valued at sum of 700 mln US dollars for construction of the second pair of frigates of this project with reinforced antisubmarine armament on October 7, 2012. To be honest, the construction was delayed due to cancellation of main gas-turbine power units delivery by a Ukrainian manufacturer. The ships were handed over to the customer a year later than the term assigned, it has taken place in November 2017 ("Tran Hung Dao") and in January 2018 ("Quang Trung") respectively.

The information was received, that Vietnam was going to order some frigates equipped with the complex "Kalibr", but with another propulsion system. The first frigate pair was ordered by Vietnam in 2006, and in 2011 it joined the Navy under names "Dinh Tien Hoang" and "Ly Thai To". Their construction cost 350 mln US dollars.

Construction of project 12418 guided missile-boats is continued in Vietnam under a license. Components for boats are

manufactured by the "Vypel" Shipyard JSC in Rybinsk. The contract of 1 billion US dollars value was signed in 2006. Two project 12418 boats were built in Russia within the frame of this contract. Another 10 boats are to be launched in Vietnam. Six boats have been commissioned, two boats are being constructed, four similar boats might be ordered.

The modern Russian "Igor Belousov" (Project 21300) maritime search-and-rescue support vessel was delivered to Vladivostok through Southern seas in 2016. It was presented also in Vietnam that showed interest in this project and asked for its complete set and price.

ALGERIA

Algeria traditionally is not inclined to show off its military contracts. Information on orders made by this country with regard to procurement of submarines and ships is very limited.

Project 06361 submarines are under construction at the Admiralty Shipyards JSC (St. Petersburg). Algeria ordered the second pair of such submarines with the total contract value of 1.2 billion US dollars in 2014. These submarines will be handed over to the customer in 2018 in accordance with the schedule. The first pair of submarines of this project was procured by Algeria for the amount of 600 mln US dollars in 2006, they were delivered in 2010. Three Algerian project 1159T missile-armed corvettes and three project 1234E missile-armed corvettes were over-



PROJECT 11356 FRIGATES

An export version of a vessel has been designed on the basis of project 11351 patrol ship in Russia. Six such vessels have been built for the Indian Navy. Three frigates have been built for the Russian Navy (Black Sea Navy Fleet) and another three ones are under construction.



Contracts with Algeria
Project 06361 submarine (top)
Project 1234EM missile-armed corvette (left)
Project 1159TP frigate (right)



Contracts with India (top down)
Nuclear-powered submarine "Chakra"
(on lease for 10 years) (left)
Project 11356 frigate
Project 877EKM submarine
"S60 Sindhukesari"



hailed and passed an integrated modification at "Severnaya Verf" shipyard in St. Petersburg between 2007–2017. These ships were built in the USSR in 1980s. The guided missile system Kh-35E "Uran-E" was installed during modernization, up to 80% of all ship systems were replaced, new radioelectronic complexes were installed. They were repaired in pairs (one frigate and one corvette), and works were completed in March, 2017. The ships' life cycle was prolonged for a period of 10 years after repair.

Now Russia and Algeria hold negotiations regarding order and construction of four patrol ships of project 22160, so that one of them could be built in Russia and the other three, in Algeria. The ships can be equipped with guided missile system CLUB-N.

INDIA

The Shipbuilding Center "Zvyozdochka" in Severodvinsk is carrying out an overhaul and modernization of the project 877EKM submarine S60 "Sindhukesari" for the Indian Navy. It should be handed over to the customer in 2018 and will become the sixth (since 1997) submarine repaired at the "Zvyozdochka" center for the Indian Navy. The "Zvyozdochka" center helps India to repair submarines of this series at the plant in Visakhapatnam. The diesel-electric submarine S61 "Sindhukirti" for the Indian Navy was repaired and upgraded in Severodvinsk, and works were completed in 2016. Ten submarines of this project were delivered by the USSR and Russia to India in total. The Indian Navy have decided to carry out the second interim overhaul of its four submarines. At least two of them will be repaired at the Shipbuilding Center "Zvyozdochka" and the submarine S60

"Sindhukesari" became the first one among them.

An intergovernmental agreement concerning delivery of the second project 971 nuclear-powered submarine on lease was reached in 2016. It can be assumed that it is referred to the submarine "Samara" being under repair at the Shipbuilding Center "Zvyozdochka". Another possible option might become the "Magadan" submarine of Russian Pacific Ocean Fleet.

Earlier, in 2012 India received on lease the nuclear-powered submarine "Chakra" for 10 years. Being named K-152 in Russia, this submarine had been laid down during the Soviet period and completed under the project 971 "Irbis" in accordance with the contract concluded in 2004. Leasing fees are estimated at 900 mln US dollars. It is remarkable that India was interested in project 885 nuclear-powered submarines being under construction. Unfortunately, such interest was denied.

An intergovernmental agreement concerning construction of four project 11356 frigates for the Indian Navy was concluded in 2016. This country has previously received six similar frigates built in Russia by two series and handed over to the Indian Navy in 2003–2004 and 2012–2013 respectively.

The Shipyard "Yantar" in Kaliningrad is building six ships for the Black Sea Navy Fleet, three of which have been handed over to the Navy. But some problems appeared when the second part of ships were fitted out. Ukraine failed to supply gas turbine power units for these ships that had already been paid by Russia. It is likely, that two of three ships located at "Yantar" will be completed for India (in this case Ukraine is ready to deliver the required units), and another two ships will be built on the customer site. Anyway, no contract for these ships supply has been signed yet.



One such example is the reconstruction of the Soviet aircraft carrier "Admiral Gorshkov" and its transformation into the Indian aircraft carrier "Vikramaditya". In reality, a new ship, the class of which was completely changed, had been constructed on the basis of a hull built in Nikolayev in 1988. The aircraft carrier was handed over to India in 2013

EGYPT

Russia handed over to Egypt a project 12421 guided missile boat R-32 in 2016. The boat was named "Ahmed Fadel" in the Egyptian Navy. It was built in Russia in 2000 and was designed for export purposes; the boat is armed with the guided missile system "Moskit-E". One can only assume that this boat has been delivered to Egypt for information and training purposes in order to arrange further procurement of project 12418 guided missile boats. The boat was officially handed over with the following comments: "provision of assistance to Egypt in the fight against terrorism at sea".

It might be mentioned that military and technical cooperation between Russia and Egypt has become more active in these days. Egypt has bought a large lot of Russian combat planes and helicopters. This country has fought a war using Soviet ships. The world's first successful employment of an anti-ship missile weapons took place on October 21, 1967. Egyptian guided missile boats of the Soviet origin sunk the Israeli torpedo boat destroyer "Eilat" on this day.



Contract with Egypt
Project 12421 P32 guided missile-boat

ARGENTINA

Four patrol ships arrived to this far South-American country in December, 2015. They were rebuilt on the basis of deep-sea tugs of "Neftegaz" series according to the contract with the price of 8 mln US dollars signed in December, 2014.



Contract with Argentina
Patrol ships of "Neftegaz" series

EXPORT OF NAVAL SHIPS

The country's shipbuilding industry is aimed at renewal programs for the domestic military fleet. In 5–10 years Russia will be able to offer to foreign customers a new generation of ships and submarines "in metal"



2015		ARGENTINA	\$ 8 mln
	Supply (four patrol ships)		

COUNTRY, YEAR OF DELIVERY, CONTRACT, COST.

**KAZAKHSTAN****2017**Construction
(minesweeper of the
project 10750E)

n/a

**ALGERIA****2018**Construction
(two submarines
of the project 06361)

\$ 1,2 bln

2017Repair and moderniza-
tion (two ships)

n/a

**CHINA**

?

Construction
(four air-cushion
landing craft
carriers)

\$ 315 mln

**VIETNAM****2017**Construction
(six submarines
of the project 06361)

\$ 2 bln

2017Building-up
deployment
infrastructure

?

2017Construction
(two frigates
of the project 11661K)

\$ 700 mln

2017Supply of components
for missile boat
assembly
of the project 12418

\$ 1 bln

2011Construction
(two frigates of the
project 11661K)

\$ 350 mln

**EGYPT****2016**Supply
(missile boat
of the project 12421)

n/a

**INDIA****2018**Repair
(submarine
of the project 877 EKM)

n/a

2013Construction
(three frigates
of the project 11356)

\$ 1,5 bln

2013Modernization
(aircraft carrier
"Vikramaditya")

n/a

2012Supply (missile boat
of the project 12421)

\$ 900 mln





Contract with China
Project 12232 hovercraft "Zubr"



CHINA

Russia signed a contract on construction of two project 12232 air-cushion landing ships "Zubr" (first this contact had been concluded between China and Ukraine) in February, 2015. Provisions were originally made for construction of two ships in Crimea (town of Feodosiya) at the PO "More" Shipyard, and another two ships, in China. The contract value was 315 mln US dollars.

It should be noted, that Ukraine underbid the price and destroyed negotiations between China and Russia concerning construction of ten amphibious assault ships. Ukraine offered China an unlicensed "Zubr"-class vessels thereat. Russia insisted on ordering more ships. Then, after Crimea returning to Russia, the latter was forced to take on responsibilities for completion of the contract that was not so profitable for the country.

SPECIAL FEATURES OF THE RUSSIAN MILITARY EXPORT SHIPBUILDING

A strong point of the Russian shipbuilding industry is its capability for implementation of complete engineering projects. There were two such projects implemented, involving integration of ships built in the USSR and reconstructed with due consideration of modern technologies and customer's requirements (India).

One such example is the reconstruction of the Soviet aircraft carrier "Admiral Gorshkov" and its transformation into the Indian aircraft carrier "Vikramaditya". In reality, a new ship, the class of which was completely changed, had been constructed on the basis of a hull built in Nikolayev in 1988. The aircraft carrier was handed over to India in 2013.

Another export project to have been implemented for India was completion of the nuclear-powered submarine K-152 "Nerpa". One more project 971 nuclear-powered submarine customized according to Indian requirements might be possible for modernization at present.

One more strong point in Russia's shipbuilding industry is that it renders technical aid in construction and building of ships in other countries. For example, India has been building her aircraft carrier "Vikrant" with technical help from Russian side.

Apart from construction of ships and submarines, Russia also carries out development and construction of inshore naval deployment sites. At the Cam Ranh Naval base (Vietnam) ship-repairing yard X-52 has been built. Quite a few inshore facilities were constructed in India. So, Russia offers comprehensive projects for ship building and infrastructure development.

Also one of the strongest points of Russian shipbuilding industry is considered to

be its ability to apply the experience gained in the process of implementation of export contracts in programs aimed at modernization of ships for the Russian Navy. In this connection, having developed some repair and modernization technologies on Indian project 877EKM submarines, the Shipbuilding Center "Zvyozdochka" began to repair submarines of this project for the Northern Fleet. Two submarines, "Kaluga" and "Vladikavkaz" have been returned to the Navy after their reconstruction recently.

JSC "Sevmash" uses experience obtained during modernization of the aircraft-carrier "Admiral Gorshkov" and its conversion to the air-carrier "Vikramaditya", in the process of modernization of the aircraft cruiser "Admiral Nakhimov".

Unfortunately, Russia does not have submarines equipped with air-independent propulsion power plants (VNEU) at the moment. This fact significantly complicates its position in the market of modern submarines. Development of a Russian air-independent propulsion power plant is still stuck, and there is no reasonable basis to expect commissioning of the project 677 submarine equipped with the air-independent propulsion power plant in the years to come. Meantime, submarines equipped with an air-independent propulsion power plant might be of high interest for traditional customers of Russian submarines, such as China, India, Algeria, and Viet-



Modernization and transformation of Soviet-built aircraft-carrier "Admiral Gorshkov" into aircraft-carrier "Vikramaditya" (India)

nam. Another serious disadvantage is absence of completed projects related to ships known as "dock assault helicopter ship" (DAHS – DVKD). Amphibious transport docks are considered to be a compulsory part of the Navy in many countries at present.

It should be noted, that there is an arms market based on the principle of present availability. It is needless to say, that such second-hand weaponry is cheaper. Russia is an active seller of weapons available in the segment of aircraft and armored force vehicles. Unfortunately, our country is almost not presented in the marine market based on the same principle of availability. Some decommissioned from the Navy submarines "Vologda" and "Novosibirsk" were offered to foreign countries in 2014. But they didn't find their owners. Anyway, the Russian Navy does not possess any ships for export at present.

RESULTS AND PERSPECTIVES

AFRICA & THE NEAR EAST

When sanctions were imposed against Libya, Russia has lost this naval engineering tech customer. The current state of this country does not allow to consider it as a potential importer. On the other hand, if the field marshal Haftar is able to take the control over the territory of at least a part

of the country, then some orders for construction of patrol boats and vessels might be expected.

The market in Syria and Yement, former customers of the naval engineering in the USSR, has been lost for evident reasons.

Persian Gulf countries have never ordered naval engineering in the USSR/Russia, excluding Iran. Iran bought three project 877 submarines in the early 1990s. As things stand, we can expect renewal of the military and technical cooperation with this country after sanctions lifting.

During the period of segregation, Iran found a way for development of its own military industry, began to build combat ships and submarines and is mainly interested in navy technology.

In the meantime, such countries as the United Arab Emirates and Saudi Arabia might become future-oriented consumers for both submarines and combat ships.

It's well-known, that a project 22160 patrol vessel was offered to Saudi Arabia.

CENTRAL & SOUTH AMERICA

In its time the USSR has been delivering its military ships to Cuba and Nicaragua. Nicaragua ordered two guided-missile boats and four patrol boats in Russia in 2013, but after that no information came on contract implementation. Cuba tries to modernize its Navy by its own strength and means.

There are some countries in Latin America which can become prospective customers in future. At present there are no ships of Russian build in service there. Delivery of four patrol tugs for the Argentina Navy can be considered as the first step in this quite advanced market. Venezuela has also been planning to buy a batch of project 0636 submarines. Various types of patrol ships, including frigates of "Gepard" type, as well as research ships and boats can be promoted in this region.

Chile and Argentina have a serious program for searching works in the Antarctic region. Russia has a huge experience in construction of ice-breaking ships. So these countries can be interested in such vessels.

FAR EAST

In the early 1990s China became again an importer of Russian weapon and military technologies. The USSR delivered to China a lot of weapons and technologies in the 1950s, but this process stopped after relations between the countries were broken off.

China began active modernization of its military forces in the early 1990s. The country needed both military shipbuilding

samples and military technologies. Russia delivered four project 956EM torpedo boat destroyers and 10 project 0636M submarines in the 1990s. China has been rendered all possible support in design of new ships for the Chinese People's Liberation Army Navy. Nowadays, the People's Republic of China is still interested in military and marine technologies. On the other hand, the country tries to procure finished products as few as possible.

SOUTH-EAST ASIA & MIDDLE EAST

India and Vietnam continue to be partners of Russia. Some countries, such as Malaysia and Bangladesh, are interested in Russian military & marine project designs. Negotiations with Sri-Lanka concerning the procurement of one frigate of project "Gepard 5.1" have been almost completed. Unfortunately, Bangladesh and Thailand have bought submarines for their fleets in China.

Negotiations with Indonesia are being held regarding delivery of some Russian submarines since 2013.

Special attention should be paid to the fact that countries of this region carry on active policy of technologies transfer and military vessels construction at their own shipyards.

The Philippines can be considered as a prospective partner country. Submarines and various patrol ships of Russian build might be of interest for this country.

Export deliveries of combat ships and submarines constructed in the 1990s and 2000s helped shipbuilding yards and design bureaus in the struggle against degradation and perishing. New ships designs have been developed, such as project 11356 frigate and project 636 submarine. These ships have been constructed not only for export, but also began service in the Russian Navy.

The market of key consumers of maritime products (Algeria, Vietnam and India) is quite full at present. Also, these countries buy ships from other manufacturers as well.

The author can not predict any new big export contracts for Russia on construction of ships and submarines in the nearest future. But such situation has its advantages, because the country's shipbuilding industry is aimed at renewal programs for the domestic military fleet. In 5–10 years Russia will be able to offer to foreign customers a new generation of ships and submarines "in metal". ♦

“ATTRACTING FOREIGN INVESTMENTS IS NOT AN EXTRAORDINARY EVENT, BUT IT’S ROUTINE AND REGULAR WORK”

In the exclusive interview to the ‘New Defence Order. Strategy’ magazine, Andrey TSYGANOV, Deputy Head of Russia’s Federal Antimonopoly Service (FAS) speaks on the business environment in Russia, laws and marketing tasks to be accomplished today in order to attract foreign investments.



– What do you think of Russia as a country being attractive for foreign investors?

– Russia is very attractive for foreign and Russian investors, because Russia’s economy has the enormous potential, the richest mineral resources, a variety of climatic zones, access to the largest transnational global transportation chains connected with all corners of the world, and, of course, such an important resource as available qualified personnel. Besides, Russia is a market with a large sales volume – 150 mln consumers in our country and about 200 mln consumers including the CIS countries.

For the past 20 years, all institutional and legal environments for convenient and safe investing in our economy have been formed. Russia has a well-developed legal base and established legislation. Russia takes a rightful place in the world’s rankings for property rights protection and investment protection. According to Doing Business indices, every year Russia climbs several positions up, and now, for example, holds the leading position among the BRICS countries.

Moreover, until now some Russia’s resources have been underestimated, for instance, the land, production resources, and manpower. It is evident that with smart investing, this situation gives an option for gaining extra profit.

– Except the fuel and energy industry, which industries Russia can and shall attract foreign investors to?

– Natural resources are limited and therefore unique and especially valuable; that is why, they are initially

attractive. But we are not talking about oil and gas only. Which country has, for example, so many land resources located in favorable natural and climatic conditions in comparison to Russia? Or such a variety of the periodic table’s elements which Russian mineral resources offer?

– Which countries show the biggest interest in the Russian market?

– The global investment market is arranged in such a way that we cannot identify any distinct national or geographic priorities. This market does not consider the national identity. Investment companies are the global market players; they are investing in different countries and regions, as well as in different industries.

Basically, they combine retirement and insurance funds, private investments and corporate savings, or bank money. Investment companies are controlled by highly skilled managers who apply certain mathematical and pragmatic principles; they estimate whether it is convenient or inconvenient, efficient or inefficient to invest in the given economy at the given time.

– If we get back to industries, the fuel and energy market and commodity trade market are well developed; so, which new opportunities and offers is Russian market trying to generate nowadays?

– The land is a new resource; until now, we have had a considerably complicated and imperfect legislative control over land resources. But now the situation is changing.



If we are talking about the production sector, it depends; we have targeted investments only. There are some very attractive objects for investments; and there are such objects which cannot arise any interest without proper preparation. We should understand that not in every instance a foreign or Russian investor purchases any Russian company to continue the type of activity such a company has been involved in. There are many examples when the investor has purchased enterprises working in the downtown areas in Moscow or in St. Petersburg just for demolition and further building of business centers, hypermarkets or apartment buildings. Another typical example: foreign investors purchased Russian businesses in order to eliminate competitors. They have purchased and closed companies or changed their line of business to maintain their own position in the market. The typical example of such investments in the 1990s – the famous factory manufacturing sewing machines (“Singer” company, founded in the beginning of XX century), located in Podolsk. The factory was purchased and closed.

*– What's the situation with investments in the defence industry sector?
Are there specific examples of successful transaction in this field?*

– The defence industry is a very attractive sector for foreign investors. There are some examples of successful investments, if not in enterprises which are directly

involved in the manufacturing of finished military products, but in high-tech companies producing assemblies, parts and components or dual-use products. Companies involved in the production of optical devices, communication equipment, electronic components and materials have a large number of foreign shareholders, sometimes, majority shareholders.

There are just a few transactions associated with direct investments in the defence industry, with companies manufacturing finished products, but there are some examples such as Tver Carriage Works and Siemens. Firstly, Alstom purchased the company's block of stock, and now, as a part of a big international transaction, Siemens is purchasing Alstom's shares and after all necessary governmental approvals could include Tver and Bryansk Carriage Works in its business. These are diversified enterprises manufacturing products for civil and military purposes. Recently, this transaction has successfully passed the procedure by the Government Commission on Monitoring Foreign Investment. Okskaya Shipyard has also made a deal with a foreign investor. The enterprise is involved in manufacturing of special-purpose products. Working for the defence industry, NII Stali Research Institute also has foreign capital. Kirov Tyre Plant has been purchased by Pirelli. This list may be continued.

– The government has assigned a task to diversify defence enterprises. Some defence concerns, in their turn, are facing a number of problems

Andrey TSYGANOV,
Deputy Head of Russia's
Federal Antimonopoly
Service (FAS)





when trying to accomplish this task, in particular, insufficient funds; launching the production of high-tech products for civil purposes requires big investments in R & D and modernization. In your opinion, can foreign investments in the defence industry help solve these problems?

– Of course, they can. Moreover, they can help out in the form of direct investments. As you have mentioned R & D, so try to find any Russian bank which would give you money for R & D... It is highly unlikely. In the current business environment in Russia, banks prefer short-term loans; that is why companies may spend only their own money for development. The situation in the global market is actually identical for Russian lenders – taking into account risks of the sanction policy within their own jurisdiction, very few foreign banks will be involved in the financing of R & D for Russian companies, especially, Russian defence companies. The capital in the form of direct investments by purchasing a share in a Russian company will have more reliable protection, with regard to the effect of sanctions. It is evident, taking into account Russian laws and international laws. This is the most promising and secure model of interaction.

– However, there are many aspects to be taken into account, including the restricting laws. Which steps are taken to encourage investors interested in defence companies?

– Our country has all necessary institutions for investing; we have the appropriate legislation, experience in legal enforcement, judicial practice, business support institutions, the Industrial Development Fund and the Russian Direct Investment Fund. The main problems lie not on the macro level, they rather lie on the level of enterprises.

We should understand that it takes skills, time and a thoughtful approach, including international strategic marketing, to attract any foreign investor. It takes skills to sell and promote the existing projects. This is the problem Rosoboronexport has been solving for years and they have achieved success; may be we should learn from them. Within the military and technical cooperation system, we can sell finished products. We should apply similar sales methods and skills in order to attract investments, establish joint ventures and manage joint research.

– Russia has been negotiating joint development of the most advanced fighter aircraft with India and United Arab Emirates for a long time with variable success, we should say. Do you think this approach (to joint development) is one of the methods to attract investors? What do Russian companies need to intensify business processes?

– They need sales skills; they should master modern methods of global marketing. Many Russian defence companies do not have any of them. This is the specifics of the industry; for decades, these companies have had the only customer – the state. Now, they have options and they must work for several customers; they

should diversify their stock of orders and the list of partners. Many companies understand it.

Moreover, we need to fundamentally change the image of Russia as the business partner. That's a fact, because even expert communities have an insufficient or incorrect opinion of Russia as the investment medium, as the business environment. The world knows little about Russia.

– In other words, the opinion on Russia and, in particular, on the business environment in our country, has been shaped, we may say, based on erratic information flows, wild guesses and lack of understanding. What should we do to change this situation?

– We need to promote our country as the environment where scientists are involved in research activities, where corporations are growing, where enterprises are working; business multiplies capital; personnel are refreshing their skills; the government is taking care of the business environment. We need to represent the country as a country favorable for business.

– How to satisfy an investor?

Which risks or pitfalls await the investor?

Are there any risks for European investor's reputation when collaborating with Russia?

– Of course, some risks exist. First of all, there are the global economic risks associated with improper investments or with an inappropriate analysis of investment expectations. Also, there are political risks at all times. Those are global risks, they are not connected with Russia only. The recent history proves that sanctions are persistent in this world; we have managed to live and work in a situation like this since the Soviet era. By the way, not only those who are the target of these sanctions are taking risks, but also those who impose sanctions.

– Can we say that if we attract more foreign investors, if a larger number of investors enter Russian market and return to us often, if the geography of business cooperation is expanded, all this will become one of the factors ensuring stability and improvement in international political relations?

– No doubt, the more foreign investors, the less the profit of maintaining the sanction policy. Improving the dialog and business communications is the way to stabilize relationship at the global level. Attracting foreign investments is not an extraordinary event; this is routine and regular work. We should note that attracting foreign investments means not only money, but also extended competencies both managerial and technological. If a new representative of western top management enters a Russian company's board of directors, this means they attract representative's job experience; this indicates that such a representative is interested and wants to make the business more successful, to faster return invested assets. Integration of any Russian business into the global economy cooperation system help the business grow and meet actual requirements.



– In one of your interviews you said that for 10 years of application of the law (“On the Procedure For Foreign Investment ...”) you have received 516 applications, including 216 applications approved by the Government Commission. On average, we have 20 approved transactions per year. At first glance, it is not a very big figure for a large country like Russia. Why? And why did you reject applications?

– Twenty approved transactions per year is the only part of deals that are directly covered by the federal law, i.e. those are transactions relating to national defence and security. In all other cases, transactions are not to be approved by the Government Commission. Why we approved only 216 transactions of the whole bunch of 516 – that was not caused by rejections of all others. Often, businesses take a cautious approach and submit documents for transaction approvals, but there are no requirements to submit them. Actually, there have been 14 rejections for 10 years, or 5% of the total amount of reviewed applications.

– After the 2017 amendments to Federal Law No. 160-FZ in order to ensure the state defence and security according to the decision of the Chairman of the Government Commission on Monitoring Foreign Investment in the Russian Federation, transactions made by foreign investors with regard to Russian business companies may be reviewed by the Government Commission in accordance with the procedure specified by Federal Law No. 57-FZ. The Decrees of the Government of the Russian Federation dated 09.04.2018 Nos. 430 and 431 legally established the procedure to implement the regulation. What are these Decrees intended for?

– Federal Law No. 57-FZ contains a list of types of activity and industries which belong to the strategic category. It is evident that any list is imperfect. There are controversial situations when it is clear that a transaction is highly likely to cause damage to national defence and security due to its specifics, and such a transaction does not match the above-mentioned list. We have had a number of such precedents and analyzed them to prepare amendments to the law.

The Government decrees regulate the process of submitting a transaction to be reviewed by the Government Commission. The decrees regulate the procedure for submitting a transaction to be reviewed by the Commission; they also regulate the procedure for preparation and decision-making.

– How does the Chairman of the Government commission receive the information of an upcoming transaction? If company’s line of business is not specified in the list, how can they know about an upcoming transaction with a foreign investor?

– All transactions that meet certain criteria are to be checked by the FAS of Russia as we should check them, first of all, in accordance with the Law on Competition so that any large mergers and takeovers, not only in strategic industries, shall not reinforce any company’s

dominant position in the market and limit the competition.

Every year we review a few thousands of transactions; we carefully analyze them, with regard to our internal regulations, and check them for any potential threat to national defence and security. Our report may be used as the ground for submitting a transaction to the Government Commission. First of all, we notify the company to let them know the current status of their transaction.

– Which tasks does the Government of the Russian Federation assign for the FAS of Russia?

– The President assigned the task to increase the rate of investments in national GDP up to 25% (any investments, not only foreign ones). No doubt, foreign investments are more profitable; they often bring new competences, knowledge, experience in product promotion, and access to new markets. Despite the fact that Federal Law 57-FZ seems to be a restricting law, it is intended not to restrict, but to attract foreign investments, and at the same time to analyze and identify potential threats. That is why, according to statistic data, we have over 200 approvals relating to the attraction of foreign investments; over 200 cases when transactions had not to be submitted to the Government Commission; and less than 20 cases when we have managed to identify the threat.

– Which steps does the FAS of Russia take to attract foreign investors to Russia, probably, to help companies?

– Knowledge is power. We are trying to inform Russian companies and foreign investors about Russian laws regarding foreign investments. Outreach activities work.

– What are the first steps to increase investments?

– Outreach activities are needed in our country and in other countries, too. It’s important to inform market players so that they should know peculiarities of investment laws and regulations; companies should understand what they can start with, what they should be prepared for, what the business environment in Russia is. Besides, there are many people in other countries that know nothing about it, and make it worse, they are telling false stories. So far, the image of Russia is the country where Cossacks are walking together with brown bears by the streets and drinking vodka on and on, and where foreigners are robbed or put in prison. In fact, information about our country is very scrappy, and the knowledge of Russia as a country for business activity is tenuous.

– The St. Petersburg International Economic Forum 2018 was a large-scale event and success, with a large number of foreign visitors. But they discussed global business problems, urgent macroeconomic issues and the future. Such events offer a very high level of discussion, in fact, for those who have expert knowledge. May be, we should descend to a middle level, non-philosophical, application level?



– We are finishing our work on clause-by-clause comments on the Russian foreign investment laws. The project is being developed with the help of lawyers who have wide experience in operations with foreign investors. Our consultants are international and Russian law firms. They are our project partners. After

these comments are complete, we are going to invite foreign and Russian lawyers and counsels, businessmen and diplomatic mission representatives to take part in a special conference. This is a very important step. We need to communicate with Russian and foreign businesses. ♦

REFERENCE INFORMATION

Federal Law No. 57-FZ specifies limitations for foreign investors in case of ownership of business companies, which have the strategic importance. The limitations require that transactions are subject to the preliminary review by the Government Commission on Monitoring Foreign Investment in the Russian Federation. For now, the list includes 47 strategic types of activity (nuclear and atomic energy sectors, military-industrial complex, space industry, subjects of natural monopolies, subsurface users, etc.).

Private investors shall agree upon the monitoring of “strategic” types of activity. The investors controlled by foreign states, as well as investors who do not disclose the information on their beneficiaries and controlling persons, have no right to monitor strategic-type business companies and shall agree upon the possibility to block decisions of strategic-type companies’ management bodies. Moreover, the purchase of strategic-type companies’ assets, the value of which is 25% and more of the book value is subject to approval.

Special threshold values for foreign investors’ ownership of capital are specified for business companies-subsurface users. The FAS of Russia is the authorized federal executive body for monitoring foreign investments.

EXAMPLES OF FOREIGN INVESTMENTS IN RUSSIAN DIVERSIFIED BUSINESS COMPANIES

- Siemens AG (Germany) purchased rights that allow to define decisions taken by management bodies of JSC “Tver Carriage Works”, JSC “Bryansk Machine Building Plant”, JSC “Kolomensk Plant” (2018);
- Palfinger CIS GmbH (the Republic of Austria) purchased 60% of shares of LLC “BELMASH-Service” (2014);
- JSC “National Company “Kazakhstan Gharysh Sapary” (the Republic of Kazakhstan) purchased 33.3% of shares of JSC “International Space Company “Kosmotras” (2012);
- Zartel Limited (the Republic of Cyprus) purchased 73.5% of JSC “Nizhnokamskshina” (2010);
- “SUBUR Finance Luxembourg S.a.r.l.” purchased 100% of shares of JSC “Yaroslavl Tyre Plant” (2010);
- LLC “Corporate Governance “Concern “Tractor Plants” purchased 100% of shares of JSC “NII Stali” (2011);
- Vasiat Trading Limited (the Republic of Cyprus) took control over JSC “Promsintez”.



OFFICIAL ACCEPTANCE TEST OF MIG-35 FIGHTER HAS BEEN LAUNCHED

/ RIA NOVOSTI, RUSSIA

Yury Slyusar, Head of the United Aircraft Corporation (UAC) announced on May 25, 2018 that UAC had already launched the official acceptance test of MiG-35 fighter. He used to say earlier that UAC had planned to begin the plane series supplies to the armed forces beginning from 2019. The MiG-35 is the leading-edge multi-purpose fighter of 4++ generation. It is the furtherance of MiG-29M/M2 planes. This plane significantly surpasses its predecessors with respect to its performance characteristics, and it is almost unparalleled with respect to weapon system capabilities; the fighter airborne radar can track up to 30 targets simultaneously within the range of nearly 160 kilometers. A possibility of building a ship-based plane version is being presently studied apart from the baseline MiG-35 variant.

The MiG-35 features a great export potential: more than a half of 56 countries, operators of MiG-29, have already expressed interest in the acquisition of MiG-35 planes. Including MiG-35 in the inventory is justified, since these countries already have all infrastructure required for the MiGs maintenance. ♦



CHINA HAS RECEIVED A REGIMENTAL PACKAGE OF ANTI-AIRCRAFT MISSILE SYSTEM (AAMS) S-400 "TRIUMF"

/ RUSSIAN NEWS AGENCY, TASS, RUSSIA

China completed acceptance of regimental package of anti-aircraft missile system (AAMS) S-400 "Triumph" in the second half of July 2018. After signing a respective certificate the systems passed into the ownership of the PRC. It is currently reported that by the end of summer of 2018 China schedules to perform the inaugural qualificatory target practices using AAMS procured in Russia. It is expected that the S-400 combat crew of the Chinese People's Liberation Army that has been trained in Russia will perform target shooting on a simulated ballistic target in the Chinese firing range at the end of July – beginning of August. It became known in November 2014 about the contract with China for supplying S-400, in November 2015 Vladimir Kozhin, the Assistant to the President of the Russian Federation for military and technical cooperation confirmed closing of a deal. The PRC became the first overseas customer of these systems and will receive in total two regimental packages of S-400.

The missile system S-400 has been developed on the basis of AAMS S-300 in early 2000s by Scientific and Production Association Almaz named after Academician Raspletin (now the enterprise is comprised by VKO "Almaz-Antey" concern). AAMS S-400 forms now the basis of anti-aircraft component of aerospace defense of Russia and features the best performance characteristics: with respect to coverage, multiplicity of engaged targets and efficiency. AAMS S-400 "Triumph" was included into the inventory of aerospace defense of Russia in April 2007, its quantity production began the same year. ♦



ARRIVAL OF STRATEGIC BOMBERS TU-160M WILL BEGIN IN 2022

/ INTERFAX, RUSSIA

According to Alexander Konyukhov, Director General of Tupolev PJSC the upgraded long-range bombers Tu-160M being produced again by Kazan Aircraft Production Association will begin to arrive to the military units since 2022. "The maiden flight of experimental upgraded Tu 160 will take place in the 3x4 quarter of 2019, it is planned to hand over the first series upgraded formation plane Tu-160M to the Russian Aerospace Forces in 2022," stated A. Konyukhov in the course of visiting Kazan Aircraft Production Association (KAZ, affiliated branch of Tupolev PJSC, comprised by UAC) by Alexei Krivoruchko, deputy Minister of Defense of the Russian Federation on July 12, 2018. Konyukhov said earlier to the mass media that the flight tests of the upgraded "strategist" Tu-160M will take about three years: since 2019 to 2021. ♦



APPEARANCE OF SOME NEW RUSSIAN ARMAMENT SYSTEMS HAS BEEN SHOWN FOR THE FIRST TIME / MINISTRY OF DEFENSE OF THE RUSSIAN FEDERATION

A series of video clips published by the Ministry of Defense of the Russian Federation on July 19, 2018 demonstrated for the first time the appearance of very long-range nuclear-powered torpedo “Poseidon”, “Burevestnik” cruise missiles with nuclear power unit, the launch of the missile launching vehicle of strategic hypersonic missile system “Avangard” from one of Russian missile firing ranges was also shown for the first time. Vladimir Putin, the President of Russia told for the first time about existence of the cutting-edge armament systems on March 1, 2018 in his address to the Federal Assembly.

According to the video of the Ministry of Defense several pieces of “Burevestnik” cruise missiles have been prepared for conducting tests, these missiles differ by overall dimensions and appearance from the combat systems included already in the inventory of the Russian army. The very long-range torpedo with nuclear power unit is equipped with fins provided with rudder and elevator as well as a propelling screw in a nozzle. As anticipated, the overall dimensions of torpedo “Poseidon” significantly exceed the overall dimensions of conventional torpedoes and other suchlike units. A launch of the missile system “Avangard” with missile launching vehicle of UR-100NUTTKh type has been shown for the first time. ♦



SERGEI DRONOV,
**DEPUTY COMMANDER-
IN-CHIEF OF THE RUSSIAN
AEROSPACE FORCES,
LIEUTENANT GENERAL**

The Russian Aerospace Forces have performed since 2017 more than 350 flights of air squadron equipped with “Kinzhal” systems with hypersonic missiles. The air squadron equipped with new missile systems has entered experimental and combat duty in the Southern military command since December 1, 2017. The flight and maintenance personnel of the squadron is successfully mastering the new aviation equipment and armaments, improving skills in preparation and fulfillment of combat training missions, including those for performing practical launches.



ALEXEI KRIVORUCHKO,
**DEPUTY MINISTER
OF DEFENSE OF THE RUSSIAN
FEDERATION**

The stealth technologies will be used in the course of building a new strategic bomber, Advanced Long-Range Aviation Complex (PAK DA).

NEWS



A NEW MODIFICATION OF T-72 TANK HAS BEEN PRODUCED / RUSSIAN NEWS AGENCY, TASS, RUSSIA

A new modification of T-72 tank with high-power engine and enhanced protection are already supplied to the armed forces and shall become the most mass-produced machine in the Army of Russia. For the first time the new modification was demonstrated to the public during parade in Moscow on May 9, 2018. Uralvagonzavod announced that the Ministry of Defense had procured the first batch of new tanks T-72M, which differ from T-72B3 by the engine of increased power (1,130 h.p.), enhanced dynamic protection, availability of slat armour and upgraded on-board equipment. The tank is equipped with the cutting-edge Russian tank gun 2A46M-5 and has acquired a laser system of metering gun tube distortion after gunshots, which increases the accuracy of hitting targets.

“It is expected that this tank will become the most mass-produced one in the Russian ground forces,” added the representative of Uralvagonzavod. The tank is produced not as a new machine, T-72B3 tanks available in the armed forces will be upgraded to “M” level. ♦

PRIORITY LINES OF MILITARY AND TECHNICAL DEVELOPMENT OF RUSSIA

/ VOENNO-PROMYSHLENNYI KURIER, RUSSIA

The report of Yuri Borisov after his appointment to the position of Vice Prime minister of the Government supervising the military and industrial complex of the country to the scientific and teaching staff and students of the Military Academy of the General Staff on the priority lines of military and technical development of Russia became his first public appearance. In particular, Yuri Borisov has informed that it is planned to provide the Russian Army in the context of government program of armaments up to 2027 with the following up-to-date pieces of armaments unrivaled in the world, such as fixed-site strategic missile with liquid-fueled intercontinental ballistic missile RS-28 "Sarmat", advanced long-range aviation complex (PAK DA) Su-57, hardened tank T-14 "Armata", mobile multi-channel long-range air-defense missile system S-500, mobile anti-satellite system "Nudol", ground mobile system of satellite communication countermeasures "Tirada-2C". ♦

NEWS



MI-26 HELICOPTER WITH NEW ENGINES WILL FLY AFTER 2022

/ RIA NOVOSTI, RUSSIA

Andrei Boginsky, Director General of Russian Helicopters Holding Company said on May 15, 2018 at the press conference that the maiden flight of transport helicopter Mi-26 with the new powerplant was scheduled to take place after 2022. "The entry-level works on Mi-26 imply, of course, the powerplant replacement. We expect that after 2022–2023 we will be able to launch the certification flights and tests," he said.

The world-biggest Mi-26 helicopters are used for transportation of equipment, oversized cargoes, transportation of units of paratroopers as well as for fire-fighting. The Russian Helicopters have already supplied the upgraded Mi-26T2 military transport helicopters to Algeria and Venezuela, Mi-26 helicopters have been also supplied to China and other countries. ♦



UP-TO-DATE AAMS "VIKING" IS OFFERED FOR EXPORT

/ ROSOBORONEXPORT, RUSSIA

In the spring of 2018 Rosoboronexport JSC (comprised by State Corporation Rostec) began promoting the up-to-date AAMS "Viking" to the foreign markets. "Viking" corresponds to an export version of AAMS "Buk-M3" included lately into inventory of the Russian aerospace defense forces. "This is a good piece of news for us and for our foreign partners. The system "Viking" maintains the best qualities of the famous line of anti-aircraft missile systems "Buk" and presents a new dawn in the development of medium extended air defense systems. The manufacturers have provided the system with the unique characteristics meeting the present-day demands in the field of protecting troops and infrastructure facilities from the strikes of existing and future air assault weapons under conditions of radioelectronic and firing counterefforts. There is second to none today among "Viking" competitors in the world market of weapons," said Sergei Ladygin, Deputy Director General of Rosoboronexport.

The multi-channel medium-range AAMS "Viking" being a growth derivative of the famous line of AAMS of "Kub" – "Buk" row features a range of firing (65 kilometers) increased 1.5 times as compared with AAMS "Buk-M2E". Besides, the number of simultaneously engaged targets has increased 1.5 times – 6 by every transporter-erector-launcher and radar, while the number of anti-aircraft guided missiles ready for launching in firing location from 2 combat units has increased from 8 to 18. AAMS "Viking" is able to interact with the anti-aircraft missile system "Antey-2500" that will provide a chance for hitting targets in the range up to 130 kilometers and will considerably increase the efficiency of the entire air defense concentrations in opposing the enemy's manned aviation.

"Viking" has been developed and built with due account of the world market trends. Its technical capabilities help adapt the system to a maximum extent to the priorities of Rosoboronexport's foreign customers. The information coordination central of "Viking" afford its interfacing not only with the regular radar, but with other radars too, including non-Russian radars featuring required characteristics. Besides, the AAMS is provided with a capability of autonomous use of firing units and even individual transporter-erector-launcher and radars, which increases the total defended area and the number of covered objects, as well as helps minimize the cost of arranging the air defense system. ♦





**SERGEI CHEMEZOV,
DIRECTOR GENERAL
OF ROSTEC STATE
CORPORATION**

Regarding import phase-out in the military produce, we go on working in this respect and attempt to completely replace the foreign components with the Russian ones. I reckon that we will fully close the import phase-out program regarding Ukraine no later than 2019, and up to 2020 regarding NATO countries. Speaking about military produce, it is necessary to manufacture everything in house. It is impossible to buy anything somewhere irrespective of some other suppliers.



**VIKTOR BURSUK,
DEPUTY COMMANDER-
IN-CHIEF OF THE RUSSIAN
NAVY FOR ARMAMENTS,
VICE ADMIRAL**

We schedule to begin development of basic design of "Leader" destroyer in 2019–2020. We expect that the basic design of this ship will be accomplished around 2022 to be followed by laying the keel. The shipbuilding program provides for building this ship, which means that the budgets will be implemented.

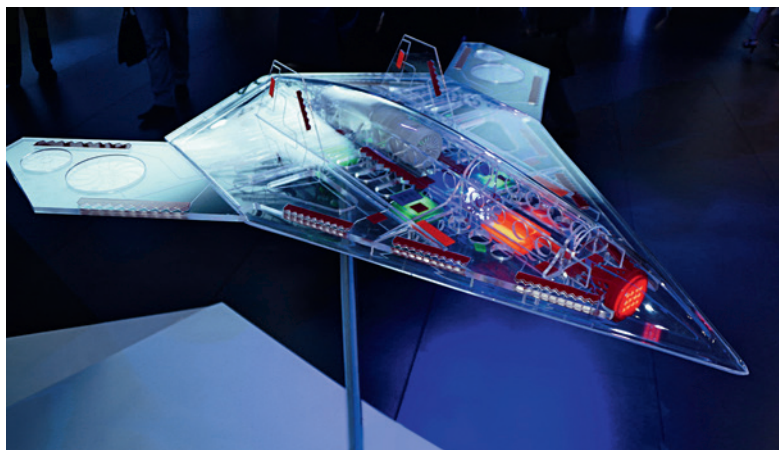


FRIGATE OF PROJECT 22350 HAS BEEN ACCEPTED BY THE RUSSIAN NAVY / RF MINISTRY OF DEFENSE

On July 26, 2018 the State Commission chaired by captain 1st rank Viktor Ivanov signed an acceptance certificate of official acceptance test of destroyer leader "Russian frigate Admiral Gorshkov" of project 22350 in the territory of Severnaya Verf in Saint-Petersburg. The signature of the acceptance certificate means that the official acceptance test of the ship has been fully completed and the military acceptance committee is fully satisfied with its results. A ceremony of hoisting St. Andrew's flag and acceptance of the new warship to the Navy took place on July 28, 2018.

"Russian frigate Admiral Gorshkov" is the frigate of project 22350 and the biggest surface warship built in the post-Soviet period. The keel of the ship was laid at the beginning of 2006 and the ship was set afloat in autumn of 2010. In November 2014 the ship went out for its maiden test run. The ships of project 22350 feature displacement tonnage of 5 thousand tons and are able to accelerate to 29 knots, the crews of the ships amount to 170 people. The destroyer leader is equipped with missile system "Kalibr-NK" with missiles "Oniks" and "Kalibr" as well as with the most advanced anti-aircraft missile system "Poliment-Redut". In total it is planned to hand over six frigate of project 22350 to the Russian Navy by 2025. ♦

GROUND TESTING OF HEAVY RUSSIAN STRIKE UNMANNED AERIAL VEHICLE "OKHOTNIK" HAS BEEN LAUNCHED / INTERFAX, RUSSIA



It is currently reported that the strike unmanned aerial vehicle (UAV) "Okhotnik" was unveiled on June 28, 2018 at Novosibirsk Aircraft Production Association named after V.P. Chkalov (NAZ, affiliated branch of Sukhoi company of UAC). The unmanned vehicle undergoes ground tests and is getting ready to perform its maiden flight. The maiden flight of UAV "Okhotnik" is expected to take place in 2019. Vladimir Mikhailov, director of administration of military aviation programs of the United Aircraft Corporation (UAC), ex-Commander-in-Chief of the Air Force of Russia, informed in 2014 about research-and-development activities being in progress at Sukhoi Design Bureau aimed at building heavy strike unmanned aerial vehicle. The only certain characteristic of UAV "Okhotnik" is that its takeoff weight will be 20 tons. It is widely thought that the vehicle will be made according to "flying wing" aerodynamic configuration. ♦

INDIA. MODERNIZATION, AVIATION, MEDITATION...

Since 2009, India has been holding the first place among the largest arms importers, while remaining the key independent product market for weapon manufacturers. It is India where Russia, the USA, France, Israel and other countries-exporters are involved in the toughest competition.

Text by Leonid Nersisyan, military columnist

As the USSR and Russia took almost the entire Indian market in the past, in recent years this principle is no longer applicable. Moscow is still holding the first place, but in 2013–2017 the share of Russian arms supplies fell down to 62.3% (according to the Stockholm International Peace Research Institute (SIPRI)); in 2008–2012, Russia took 79.7% of the market. Delayed talks on several joint projects and a few lost tenders have contributed to the current situation in the market. Traditionally, fighter aircraft have made a great portion of supplies – the Indian Air Force is the world's #4 by the number.

Let's discuss in detail what awaits the military-technical cooperation (MTC) between Russia and India in the future.

WHEN WILL THE TIME FOR SUPER SUKHOI COME?

Development of the heavy multirole fighter Su-30MKI has become one of the most important and largest Russian-Indian joint military projects in the field of MTC. In total, India will pay about \$12 bln for 272 Su-30MKI fighters; note that Delhi has received a considerable part of technologies for aircraft production and launched the local production of many assemblies and aircraft assembly in the territory of India via HAL (Hindustan Aeronautics Limited). India already has at least 240 operational aircraft; supplies are expected to be completed by 2020. In recent years, the modernization of the existing fleet has often

been discussed with regard to gradual deterioration of avionics.

The modernization package called Super Sukhoi is likely to include a new on-board radar station with the active phased antenna array (APAA), upgraded cockpit avionics, etc. Even the replacement of the engine is being discussed – according to Indian media reports, Russia has offered more advanced engines AL-41F1S (installed on the Su-35S fighters). However, India is serious about a possible application of the in-house development – the Kaveri engine, but only after its modernization in cooperation with French specialists (for the time being, the engine is not able to ensure the required thrust performance). Of course, such an approach is hardly to be agreed by Russia, which can reasonably dump any responsibility for the technical condition and emergency situations for aircraft equipped with a foreign-made engine. Besides, the actual capability of Indian developers to reach the large-scale production phase for a complex unit like a new aircraft engine is doubtful. By technical parameters, a new engine is inferior to the AL-41F1S engines, which feature a thrust-vectoring module.

It is still unclear when the Super Sukhoi basic design will be determined. In 2016, Defense News, an American magazine, published the article with the reference to Indian AF's representative who had reported an upcoming signing of a contract for upgrading 194 Su-30MKI



Although the most part of 272 Su-MKI aircraft contracted in Russia were manufactured by Hindustan Aeronautics Limited, basically, it was the Semi Knock Down assembly. So far, we cannot manufacture the Su-30 by ourselves

*Representative
of Hindustan Aeronautics Limited*



Indian Su-30MKI

aircraft for more than \$8 bln. It was reported that a contract would be signed in 6 months. However, no progress in this deal has been achieved. Nonetheless, it is evident that sooner or later India will have to upgrade its fleet of the most powerful fighters, and they'll have to cooperate with Russia. The Su-30MKI will bring its billion profits in the future.

We should mention other trends of cooperation, concerning the Su-30MKI fighter. In March 2017, United Aircraft Corporation (UAC) and Indian HAL signed a contract for service maintenance of the

Su-30MKI aircraft. This news has become very important as bureaucratic complications are arising with regard to procurement of spare parts by India. For this reason, a considerable number of the Su-30MKI aircraft are non-operational. Now, UAC will be responsible for 5-year maintenance program for Russian aircraft operated by the Indian AF.

Another interesting joint project is modernization of 48 Su-30MKI fighters to be able to carry the supersonic cruise missiles BrahMos-A co-developed by Russia and India. BrahMos-A is able to hit ground

targets and ships at a distance of up to 290 km at a flight speed of up to 2.8 M. An option to launch the missile from an aircraft platform will enhance striking capabilities of the Indian AF. Completing the development of a smaller and lighter BrahMos-NG (Next Generation) missile will also allow to enhance striking capabilities of the Indian Air Force. With the same characteristics, the Su-30MKI fighter will be able to carry three missiles of this type; now, the aircraft carries only one BrahMos-A missile. Besides, BrahMos-NG may be installed on lighter fighters oper-

ated by the Indian AF such as the MiG-2929UPG, Dassault Rafale and deck-based MiG-29K fighters. It is evident that the production of large lots of the BrahMos cruise missiles in their airborne version will also bring profits to Russia.

LIGHT FIGHTER AIRCRAFT – ENDLESS STORY?

It is known that to negotiate any deal with India is often a very challenging task that takes much time to be accomplished. As far as the early 2000s, the Indian Government got some plans for replacing an enormous fleet of the obsolescent fighter aircraft. This fleet included hundreds of the MiG-21 and MiG-27 fighters, plus the SEPECAT Jaguar aircraft co-developed by the UK and France. Although the initial plan was to quickly and directly purchase the French Mirage 2000 fighters, later they announced a tender to purchase 126 light or medium fighters designated MMRCA (Medium Multi-Role Combat Aircraft). A number of aircraft took part in the tender such as the U.S. F/A-18E/F Super Hornet и F-16IN Super Viper, European Eurofighter Typhoon, French Dassault Rafale, Swedish JAS 39 Gripen and Russian MiG-35. After many years spent in choosing the winner, India chose the French twin-engine fighter Dassault Rafale. However, the French asked the sum that was two times higher than \$10.4 bln specified in the tender requirements for the contract for 126 aircraft. Moreover, there were some problems related to the technology transfer as per India's requirements. As a result, in 2015 Delhi purchased 26 Dassault Rafale aircraft for 4 bln and refused to buy the remaining aircraft.

Of course, that was not the end of the story – in fact, these 36 fighter aircraft could not solve the problem relating to disposal of hundreds of obsolescent fighters. Now, India has 31 fighter aircraft wings instead of planned 42, and by 2022 there will be 23 wings. Taking into account unfriendly, to say the least, neighboring countries such as China and Pakistan, this situation is not acceptable. That is why, at the latest Aero India 2017 India was showing a growing interest in purchasing 114 light single-engine fighter aircraft while foreign companies were focused on the promotion of single-engine aircraft such as JAS 39 Gripen and F-16. According to some reports, India even wants to purchase 400 aircraft, but purchasing this number of aircraft at a time is highly unlikely.

In February 2018, the other interesting information appeared: according to Jane's Defence Weekly, India's MoD ordered the Indian AF to review the terms of reference that has been prepared for two years to buy the above-mentioned 114



Indian Su-30MKI



Supersonic cruise missiles BrahMos-A on the upgraded Su-30MKI

single-engine fighters. According to MoD, the tender should also include twin-engine aircraft. Actually, it comes to the MMRCA-2 tender. Knowing the specifics of handling such projects in India, it will take a lot of time to make a certain decision (if any) – at best, in the mid-2020s. As before, the production of the most part of aircraft will be carried out in India as per the Make in India concept. The same participants are expected to take part in the tender. The U.S. F-35 single-engine fighter aircraft may become a new tender participant, but it is very expensive and the USA is unlikely to consider the option involving the transfer of key production technologies (it is doubtful the USA really wants to supply it's most advanced combat aircraft).

We should note that this time the Russian MiG-35 may have more chances in comparison to MMRCA because the aircraft is slowly but steadily moving to the real large-scale production phase in



**VLADIMIR DROZHZHOV,
DEPUTY DIRECTOR OF
THE FEDERAL SERVICE
FOR MILITARY-TECHNICAL
COOPERATION (FSMTC)**

.....

If India shows her interest, Russia will supply the MiG-35 aircraft to India. Moreover, Indian pilots know the MiG-type aircraft perfectly well, and India has developed the necessary infrastructure for operation of this type of fighters, in contrast to the French Rafale fighters



BrahMos-NG (Next Generation)

Swedish JAS 39 Gripen



French Dassault Rafale



American F-16V



Russian MiG-35

Russia. At large, the aircraft has become more attractive in terms of its technical characteristics. For real completion, Russia should fix faults and launch the production of the onboard radar station with AESA "Zhuk-A" that is the stumbling block of the project. This is the common problem of the aircraft intended for the Russian AF and for further export. There are also some political issues: will India want to operate the Russian aircraft as two main types of fighters?

Direct purchase of 21 MiG-29 aircraft may become a hopeful sign for the future of the MiG-35 (the MiG-35 is the in-depth modernization of the MiG-29). The purchase was rumored in April 2018. According to Indian mass media, Delhi has shown a keen interest in Russia's offer. Now, India is upgrading available aircraft to the level of the MiG-29UPG 62 version. New aircraft are likely to be supplied in the same configuration. If the deal is made, the purchase of the MiG-35 aircraft

will become more urgent for India, taking into account the noticeable similarity of aircraft types and, therefore, smaller expenses for operation and personnel training. We should not forget about the Indian single-engine fighter HAL Tejas. This aircraft is likely to be inferior to its competitors practically by all parameters, but the Indian Government does not want to give up on the aircraft, which has failed to pass the phase of small-batch production and rework.

Some Indian media report on the purchase of an extra lot of 40 Su-30MKI aircraft as the simplest way to maintain the desired number of fighter aircraft for the Indian AF. For now, it ends in talks.

WILL FGFA BE DEVELOPED?

The first flight of the Russian Su-57 5th generation fighter prototype (the then T-PAK FA) took place in 2010. Also, in 2010 Russia and India signed a contract for the

exclusive design of the export aircraft version called FGFA (Fifth Generation Fighter Aircraft). The contract value was about \$300 mln. After that, further development of the project was stalled. Indian mass media regularly report fake news from some sources in the Indian AF or MoD either relating to upcoming signing of a contract for R & D work for \$8 mln (each party shall invest \$4 million) or about the incompletion of the aircraft with customer's requirements and possible choice of aircraft made in Western countries. According to the latest report of Jane's Defence Weekly, India has frozen its participation in the project; National Security Adviser Ajit Doval and Defence Secretary Sanjay Mitra notified Russia on this decision. However, India is still considering an option of purchasing finished Su-57 aircraft as soon as it's ready and meets all the requirements by Delhi. In the future, India may return to the project. On the other hand, Russia represented by Viktor Kladov, Rostec's Director for International Cooperation and Regional Policy, states that India has not announced that it is going to quit the FGFA project.

It is quite evident that delays in the course of the project were caused by several factors – the influence of the French lobby and, to a lesser degree, the American lobby; India's attempts to reduce the cost of the program (we should admit that Delhi has achieved its goal – the cost of R & D has already been reduced by 40%); requirements for more extended transfer of production technologies (in this aspect, India has also succeeded; they have managed to bargain an option to produce 40% of aircraft components instead of 25%); traditional tardiness and complexity of Indian bureaucracy and frequent changes in the policy. As for claims for the aircraft quality, now and then there have been statements on insufficient thrust of the AL-41F1 engines, on insufficient radar stealth performance and unsatisfactory performance of the airborne radar station. As for the engine, the AL-41F1 engine is not considered to be the main power plant – the Su-57 aircraft's original engine designated 'Item 30' is currently passing flight tests. Development of this engine will also allow to improve the aircraft stealth performance (stage 1 engine AL-41F1 fails to ensure sufficient reduction of the radar cross-section).

All in all, the initiatives regularly reported by Indian mass media in connection with the purchase of the U.S. F-35 single-engine fighter aircraft do not meet quite large number of Delhi's requirements. First of all, this is the transfer of technologies – it is evident the USA will



**MANOHAR PARRIKAR,
A FORMER MINISTER
OF DEFENCE OF INDIA**

As a result of recent intense three-party talks involving Russia, state-owned HAL Corporation and Indian Air Force, a considerable progress has been achieved in order to ensure the operational readiness of the Su-30MKI aircraft. Due to improved availability of spare parts and maintenance for these fighters, the maximum availability of operational aircraft has increased from the recent 46 to 60%; the level of 75% is expected to be reached in the nearest future



The onboard radar station with AESA "Zhuk-A"

never agree upon that. Washington was in compliance even when it came to the transfer of technologies for the previous generation of combat aircraft such as the F-16V. As for the F-35, this fighter aircraft has many issues; its development and production has been delayed for a long period of time and its cost estimates have exceeded all reasonable limits. Besides, purchasing the F-35 aircraft will be much more expensive for India, with re-

gard to the absence of any infrastructure and weapons for this aircraft. The market cannot offer any other alternatives to customers who want to buy the 5th generation combat aircraft – the U.S. F-22 is no longer available for export and its production is stopped. As for Chinese aircraft, India will never get them for political reasons (besides, their characteristics are unlikely to surpass the characteristics of the Su-57).

Therefore, despite all the difficulties associated with the FGFA joint project, Delhi does not have any other promising options. Of course, India can give up on the 5th generation fighter aircraft and continue to stake on the modified versions of the 4th generation – after all, these aircraft are much cheaper. But in this case, the country takes a risk of falling behind China, its regional competitor, in the arms race. In the future, China will be able to supply its 5th generation fighter aircraft to India's sworn enemy – to Pakistan. This reasonable argument gives Russia slight chances for pushing the Su-57 aircraft to the Indian market in the future. The purchase of 108 fighter aircraft of this type (according to the previously announced scopes of delivery) with the expected cost of at least \$100 mln per FGFA will bring UAC over \$10 bln, excluding service maintenance, weapons, spare parts, training, etc. Such a deal takes years of labor, but it's worth it. It will be compensated through decades of stable incomes.

Nonetheless, no progress on the matter is expected in the coming years. But Russia still can "reenter the game" with its almost finished Su-57 – it is not for nothing that Russia has signed a procurement contract for the first 12 pre-production Su-57 aircraft for Russia's Aerospace Forces. ♦

FGFA (Fifth Generation Fighter Aircraft)





Ministry of Defence
of The Republic of Indonesia

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SUPPORTING PUBLICATIONS



New Russian Strategic Weapon Systems

In his address to the Federal Assembly on 1st March 2018, President of Russia Vladimir Putin told about several newest strategic weapon systems developed in Russia.

Text by Dmitry Kornev

RS-28 "SARMAT"

In his speech, the President told that the Ministry of Defence and aerospace manufacturers had started an active phase of testing of a new missile system with the heavy intercontinental ballistic missile (ICBM) "Sarmat". This missile system is being developed to replace the missile system with the heavy ICBM "Voevoda", which is supposed to be the most powerful missile in the world for the time being. With its launch weight over 200 tons, the new missile will have a short boost phase. This will hamper the computation of its trajectory for the potential enemy's missile launch monitoring systems, and, therefore, the response of anti-missile systems. The new missile increased power capacity allows to use a wide and extended range of combat equipment variants. No doubt, the "Sarmat" missile's payload will include controlled warheads. Moreover, NPO Mashinostroyeniya, one of the co-developers of the "Sarmat" missile, has been working for years to develop such hypersonic warheads. Increased power capabilities of the "Sarmat" missile allow to hit targets, flying along any trajectories, including global ones, i.e. not only along the shortest path, but also over the South Pole. This gives an opportunity to attack the potential enemy from directions that are not protected by anti-missile defence systems.

In the Presidential Address on 1st March 2018, the beginning of drop tests of the new ICBM at Plesetsk state testing cosmodrome was confirmed. We watched the video showing the pop-up launch from a refitted silo launcher. Drop test are highly likely to be continued in the coming months – it is assumed that before flight tests, three pop-up launches of test missiles should be completed. After that, the system and missile



RS-28 «Sarmat»

will pass flight and structural tests followed by state tests. Depending on test results, the missile system will be put into service by the Russian Strategic Missile Forces. According to the initial plans, the system is expected to be put into service by 2024, but the latest data prove that the missile will be put into service before the scheduled date, by 2021.

Academician V.P. Makeyev State Rocket Centre (Miass) is the lead developer of the new missile system.

"AVANGARD"

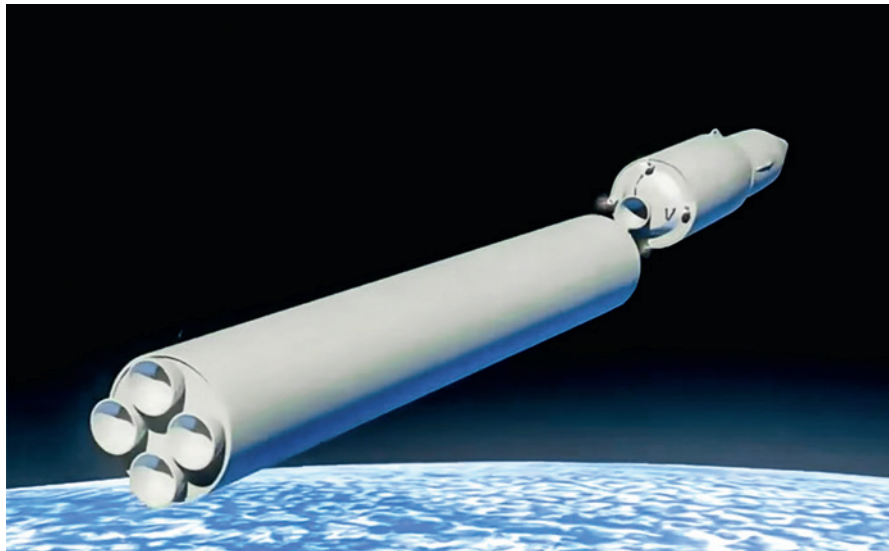
Another newly developed system for the Russian Strategic Missile Forces is a new warhead for strategic missile systems such as "Avangard" hypersonic glider warhead. The President announced that the system had successfully passed tests; the first successful launch was carried out during the 2004 strategic nuclear forces exercises.

DIRECTOR GENERAL OF ROSCOSMOS



**DMITRY ROGOZIN,
DIRECTOR GENERAL
OF ROSCOSMOS**

.....
The hypersonic fighter-interceptor MiG-31 was chosen as the carrier for the "Kinzhal" missile. This unique advanced hypersonic aircraft has been upgraded together with the development of the missile weapon system



Hypersonic winged combat unit "Avangard"



**YURI BORISOV,
DEPUTY PRIME MINISTER
OF RUSSIA FOR DEFENCE
AND SPACE INDUSTRY**

.....

Many thanks to our nuclear scientists who have managed to turn fiction into reality. This cruise missile is unique, because it is able to fly along a preselected trajectory, enveloping ground folds at a low altitude to make it difficult to detect the missile

It is a controlled object able to perform a coasting flight in the upper atmosphere at a speed of more than 20 M, while making a compound maneuver changing its course and altitude. Such an object will be a very complicated target for the existing anti-missile defence systems due to its unpredictable trajectory and lack of possibilities for computing the object's kill point by means of antimissiles.

Composite materials are used for the structure of such an object, which allow to solve the problem relating to a long-term flight in the atmosphere at high speeds when the vehicle surface is heated up to 1,600 – 2,000 Celsius degrees.

The codename "Avangard" is highly likely to conceal the system that, according to media sources, is mainly known as "Object 4202" (15Yu71) developed by NPO Mashinostroyeniya (Reutov). Actually, this object made its first successful test flight in 2004, and on 1st March 2018 the Presi-

dent announced the start of large-scale production of the unique combat system.

NUCLEAR CRUISE MISSILE

Probably, an unlimited-range cruise missile equipped with a small-size heavy-duty nuclear power plant (NPP) has become the hottest news. It has been reported that a cruise equipped with NPP was successfully launched at the Central Test Site of the Russian Federation at the end of 2017. In the course of flight, NPP reached the specified power and ensured the desired missile propulsive power. Completed flight tests together with ground tests allow to develop a new-type strategic nuclear weapon system equipped with a cruise missile powered by NPP.

We are talking about the Central Test Site of 12th Main Directorate of the Ministry of Defence on Novaya Zemlya, which is the main nuclear test site in our country.

Taking into account the distinctive features of the new missile, the missile is supposed to be launched, flown and dropped within the nuclear test site.

The appearance of such military equipment indicates the development of the unique small-size nuclear power plant. This may be estimated as real breakthrough in the field. Such a missile is equipped with an entirely new type of the engine, which uses the atmospheric air heated by NPP as the mass carrier. As the solution for developing such an engine has been found, of course, it is technically possible to develop an unlimited-range cruise missile which will provide the unique combat capabilities.

No doubt, such a weapon system will carry a nuclear warhead and can be used only as the strategic nuclear deterrent system.

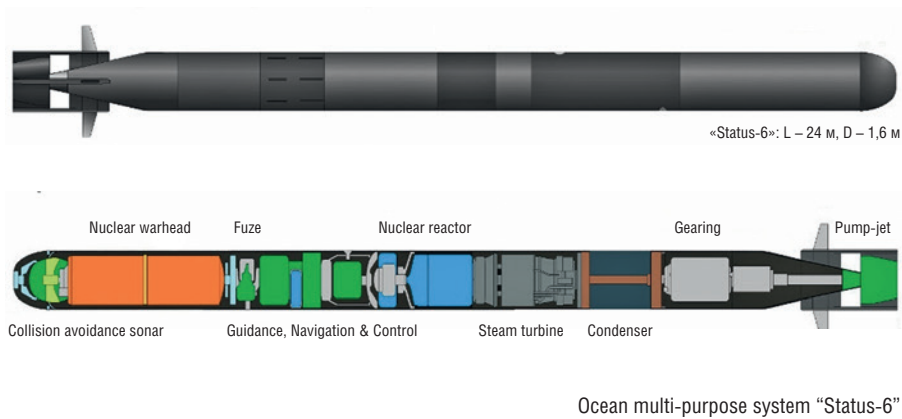
"KINZHAL"

Another piece of news announced in March 2018 – Russia has developed a high-precision hypersonic airborne missile system which was put on combat alert in a test mode at aerodromes of the South Military District on 1st December 2017. It is the "Kinzhal" system featuring a carrier aircraft based on the MiG-31BM fighter-interceptor and an airborne platform ballistic missile based on ballistic missile 9M723 used for the "Iskander-M" system. Together with a high-speed missile-carrying aircraft, such a missile is really able to reach a speed of 10 M and to hit targets at a distance of up to 2,000 km from the carrier's base airfield. This system may be used to hit targets with known coordinates, and, taking into account the availability of radar homing guidance system, to hit radio-contrast targets or even moving targets.

We should note that the ballistic missile of this type mainly flies in the upper

Aircraft missile system "Kinzhal"





atmosphere and its flight is practically similar to the flight of the ground prototype. The unique feature of the system is the high-precision prompt strike with an option for strategic maneuver – long-range transferring of missile-carrying aircraft. The existing air defence and anti-missile defence systems are not able to prevent such a strike.

UNDERWATER DRONES

In his speech, the President of Russia described in detail works on the program for developing robotized underwater vehicles with nuclear power plants also known as the "Kanyon" system in the West.

Development of an unmanned deep-water vehicle with a small-size nuclear power plant dates back to the 1980s. Now we know that the long-term program for testing the small-size NPP has been successfully completed in December 2017. Russia has developed the NPP, the volume of which is 100 times lower than the volume of NPP installed onboard modern nuclear-powered submarines. The new NPP offers greater power and acceleration to reach the maximum power.

This achievement allows to develop the conceptually new type of strategic weapon

armed with high-power nuclear munitions for the system which is reported as the Status-6 system. Central Design Bureau for Marine Engineering "Rubin" (St. Petersburg) is the lead developer of underwater drones. The drone-carrier test submarine B-90 "Sarov" took part in testing of the system.

On completing the development of NPP, it is possible to develop such a combat system and to achieve the unique design performance. Now, Production Association "Sevmash" (Severodvinsk) is building the submarines "Belgorod" and "Khabarovsk", which are expected to become underwater drone carriers.

LASER SYSTEM

In his speech, the President of Russia briefly mentioned combat laser systems supplied to armed forces since 2017. The purpose of laser systems shown during the presidential address is still unknown, but we can guess these are the systems able to damage optical equipment installed in enemy's reconnaissance unmanned and manned aerial vehicles.

For laser systems, hitting real airplanes or missiles is still the unsolved problem. Although, using the above-mentioned small-size high-power NPPs, the progress in this field of development can be achieved. Design overall dimensions of the laser device for hitting aircraft should be considerably

larger. Destroying optical systems is a reasonable and technically solvable problem, and laser systems are the best solution.

Of course, in his speech on 1st March 2018, the President of Russia did not mention all innovative and breakthrough weapon system development programs Russia's military and industrial complex is working on. We saw only a few unique and really amazing military and technical programs, which can bring vital changes in modern strategic nuclear forces. In the coming years, we will witness development of these programs and their influence on the global balance of forces. ♦



**RUSLAN TSALIKOV,
FIRST DEPUTY MINISTER
OF DEFENCE OF RUSSIA**

Our President unveiled Russia's new military technologies in his address to the Federal Assembly. Some people say it was a military-oriented section of the presidential address, but we cannot agree. It was the intellectual and technology-oriented section; of course, it was addressed to our armed forces



Combat laser systems Peresvet



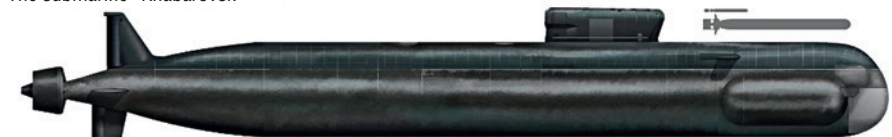
**VLADIMIR KOROLEV,
ADMIRAL, COMMANDER-IN-
CHIEF OF THE RUSSIAN NAVY**

In 2018, we will start to work on the project of the new missile-carrying submarine "Borei-B". I believe its development will begin in the nearest future

The submarine "Belgorod"



The submarine "Khabarovsk"



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NUCLEAR DEEPWATER SUBMARINES

In 1965, the Ministry of the Defence of the USSR established a special department named the Main Directorate for Deep Sea Research to initiate the development and servicing of deepwater vehicles. In 1976, as a sort of cosmonaut corps, the Minister of Defence of the USSR ordered to establish a hydronaut team and a task-oriented training center in Leningrad to operate underwater vehicles.

Text by Dmitry Kornev

In June 1979, the 29th Red Banner North Sea Fleet separate submarine brigade was formed at Olenya Guba, a naval base in Russia, for maintenance and operation of underwater vehicles and their carriers. To make sorties, hydronaut crews travelled to the North Sea naval bases, received there vehicles from maintenance crews to make a sortie, and then returned the equipment.

The “Arkhipelag” (Archipelago) and “Seliger” bathyscaphes became the first Russian naval underwater vehicles, which allowed to gain invaluable experience in works with different objects on the seabed.

THE FIRST NUCLEAR DEEPWATER STATION

Actually, even before operating the Seliger-class underwater vehicles, developers knew their disadvantages. First of all, the operational area for such submersibles is narrowed by communication with the carrier submarine. Secondly, there was restrained sea endurance in terms of energy sources and crew life support system resources. Thirdly, they had extremely poor maneuverability. These factors inspired developers to create an autonomous modification of the Seliger-class bathyscaphes by installing a nuclear reactor on the vehicle, increasing its overall dimensions, and by enhancing the life support system resources, speed and maneuver performance. No doubt, a new type of the underwater vehicle was meant to be more autonomous and capable of accomplishing different types of missions on the World’s ocean bed.

Thus, in 1970s a new deepwater system development project (Project 1851) was

launched. The system included the “Nelma” nuclear deepwater station (NDS) (Project 18510) and nuclear carrier submarine (Project 675N).

At that time, a new modification of the carrier submarine was developed (Project 675) under Project 675N (“Nositel” (Carrier)).

On 25th September 1981, Leningrad Admiralty Association (now – “Admiralty Shipyards” JSC) laid down the flagship nuclear deepwater station AS-23 (Project 18510 “Nelma”). Two years after laying-down, on 29th September 1983, the top secret mini-submarine was set afloat, opening the phase of retrofit and testing. Probably, as far back as 1984, western intelligence services spotted the new deepwater vehicle in Leningrad and named it X-RAY. In 1986, Project 1851 complex reached the final phase of testing: the first underwater docking between NDS and a carrier submarine was completed. The complex with NDS AS-23 was officially approved and put into service by the USSR Navy on 30th December 1986.

One of the questions that arise immediately: how can a nuclear power plant be installed inside so very small submersible? For the basic design of Project 18510 NDS, it was proposed to use a lightweight power plant similar to those installed in spacecraft. The nuclear reactor was supposed to be installed inside a capsule without a special heavy biological shield. Seawater was meant to be such a shield, i.e. the reactor compartment was made as an individual unit of the pressure-proof hull, which was separated from the inhabited pressure-

proof hull by the seawater space inside the external lightweight hull of NDS.

The distinctive feature and the main drawback of the first nuclear deepwater station was that it had the structure similar to the Seliger-class bathyscaphes. Actually, a new type of subs was designed as submersibles similar to tethered bathyscaphes, but with-

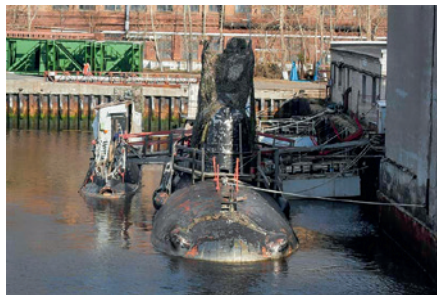


**VLADIMIR KOROLEV,
ADMIRAL, COMMANDER-IN-
CHIEF OF THE RUSSIAN NAVY**

Putting the blue-water multirole system with deep-sea unmanned nuclear-powered submarines in operation for the Russian Navy is scheduled after the system passes a full cycle of tests, which are being run in strict compliance with specified plans. The installed nuclear propulsion plant allows the unmanned underwater vehicle developed in Russia to move at a high speed at a depth over 1 km while being invisible for the enemy



NDS AS-23 (Project 18510 "Nelma", or X-RAY) next to NDS (Project 1910 "Kashalot") near the moorage wall at Shippreparing Center "Zvyozdochka" in Severodvinsk



Nuclear deepwater station AS-33 Project 1910 "Kashalot"



out the tether. These subs also featured quite large sizes, onboard small-size nuclear power plants and advanced main and auxiliary propellers or propeller screws. The location of the access hatch in NDS was similar to the first underwater vehicle "Arkhipelag" – in the upper section of the hull, without a deck-house and a barrier. The crew was meant to be transferred from NDS through a special transfer module of the carrier submarine. The emergency exit was available after surfacing similarly to the procedure for "Arkhipelag". In service, the structure of NDS AS-23 was redeveloped: the station was equipped with a barrier that ensured safer exit to the NDS deck in case of surfacing. This was the final version of NDS (Project 18510 "Nelma") as we know it now.

DEVELOPMENT OF NDS. "PALTUS" AND "KASHALOTS" CLASS SUBMARINES

In the course of development of the NDS prototype (Project 18510) designers found out some appropriate selected solutions. On 26th December 1984, Leningrad Admiralty Association (now – "Admiralty Shipyards" JSC) laid down NDS AS-21, which became the flagship station of the series production Project 18511 "Paltus". The new NDS had large overall dimensions, enhanced performance and a new carrier (Project 09774) based on Project 667A nuclear missile submarine. The carrier sub was refitted at Shippreparing Center "Zvyozdochka" in Severodvinsk since 1983.

At least two nuclear stations were expected to be built under the "Paltus" project: flagship AS-21 and the first standard model

AS-35. By the end of 1995, these plans were completed. In April 1991, NDS AS-21 (Project 18511) was identified by western intelligence services for the first time, and the project was named "Paltus" – probably, they had already known the real codename of the project through other sources.

While developing carried NDSs, Project 1910 named "Kashalot" was launched to build larger and more autonomous nuclear deepwater stations, which, in fact, were designed as full-featured nuclear submarines with long sea endurance. These subs may operate at a long distance from their bases.

The new NDS was designed according to the above-mentioned Decree of the USSR Council of Ministers issued in 1972, the task being assigned to the TsKB "Volna" of the USSR Ministry of Shipbuilding Industry. E.S. Korsukov was the chief designer of the project; S.M. Bavin, developer of the "Nelma" project, the deputy designer. Later, according to the order of the Minister of Shipbuilding Industry, a special design team led by Yu.M. Konovalov was formed for designing Project 1910 NDS. In 1979, the 1st and 2nd crews of the flagship NDS Class 1 AS-13 (Project 1910) were included in the hydronaut team.

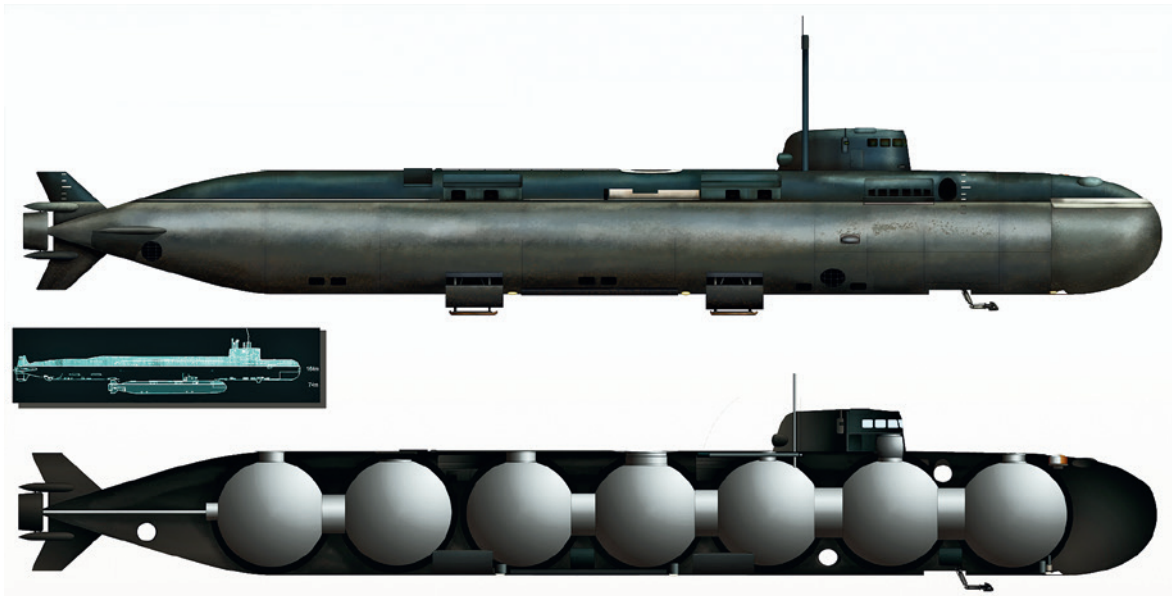
Class 1 NDS (the "Kashalot" project) was planned to be built as small series, including the flagship NDS and two standard models. The standard models have been built by Leningrad Admiralty Association ("Admiralty Shipyards" JSC) since 1977. The series flagship AS-13 was set afloat on 25th November 1982. On 31th December 1986, it was accepted by the Navy for field testing after completing factory and state

tests (started in 1983). The series consisting of three stations were completed on 16th December 1994, and the third NDS was supplied to the Navy. The NATO repowering name for Project 1910 NDS is Uniform.

The depth of submersion of the first gen NDSs is believed to be not less than 1,000 m. This depth is a few times higher than the depth of submersion of standard-type submarines, but, for example, the "Komsomolts" submarine, composed of titanium, built at the same time and probably featuring the similar structure, was able to submerge at the similar depth.

No public data on the operation of complexes with deepwater stations is available through open media sources, and we can only speculate on possible application of the new type of underwater vehicles. NDS may be delivered to the operational area by means of nuclear carrier subs and then may independently conduct search and reconnaissance operations on the seabed. Of course, such submersibles should be equipped with tools for bottom sampling and for lifting object onboard. Like some civil submersibles for similar applications, NDSs should be fitted with observation and surveillance equipment, manipulators and remotely controlled equipment for handling objects.

The purpose of such stations is believed to be operations with their own and foreign objects fallen onto the seabed if such objects may provide valuable data. No doubt, such submersibles are able to carry out reconnaissance operations to detect cable and other communications on the seabed and to disrupt them.



NDS Project 10831 AS-31 (factory No. 01210) "Losharik"

In addition, NDSs may be used for search-and-rescue operations. It is known that in the period from 13th to 19th August 2000, NDS AS-15 (Project 1910) took part in an operation intended for search and observation of the "Kursk" submarine lying on the seabed. The data collected by NDS were likely to be the first valid information about the condition of the "Kursk" submarine.

"LOSHARIK"

Development of the materials science along with gained experience in building and service of nuclear deepwater stations should seamlessly lead to the next breakthrough stage in their development, i.e. to building submersibles able to operate deeper and to accomplish various missions. Such underwater vehicles should combine the performance of Project 1910 nuclear deepwater stations and the depth of submersion demonstrated by the best research bathyscaphes available at that time.

In the late 1980s, the task force led by S.M. Bavin at the Marine Engineering Bureau "Malakhit" prepared the basic design of the complex (Project 10830) which included a nuclear deepwater station (Project 10831) with a polyspherical pressure-proof hull. Based on the above-mentioned Decree of the USSR Council of Ministers, development efforts were undertaken to refine the technology for manufacturing a polyspherical pressure-proof hull and monoblock units of the lightweight filler, and to develop equipment for such a station as well. The complex had to include the nuclear carrier sub BS-136 "Orenburg" (Project 09786).

By 1990, the technical and design projects of the station were developed and approved. Moreover, both projects were developed along with the modeling of equipment layout inside spherical compartments of the submarine. In 1991, with almost completed sections of the NDS pressure-proof hull, technical project 10830 was revised concerning customized auxiliary equipment to be installed in the fore part of NDS. The reworked technical project of the complex (Project 10830/1083K) was represented and reviewed in May 1992.

The new deepwater station featured a pressure-proof hull made of several intersectional titanium spheres. Due to this structure, the submersible was unofficially named "Losharik" in the process of building. Later, this name stuck to it and is still used nowadays. The space between the spheres and a lightweight external housing was filled with a new porous material, which provided the desired combination of structural strength and positive buoyancy, similarly to the Consul-class bathyscaphes and other types of deepwater vehicles. One of the spheres contained the unique nuclear power plant.

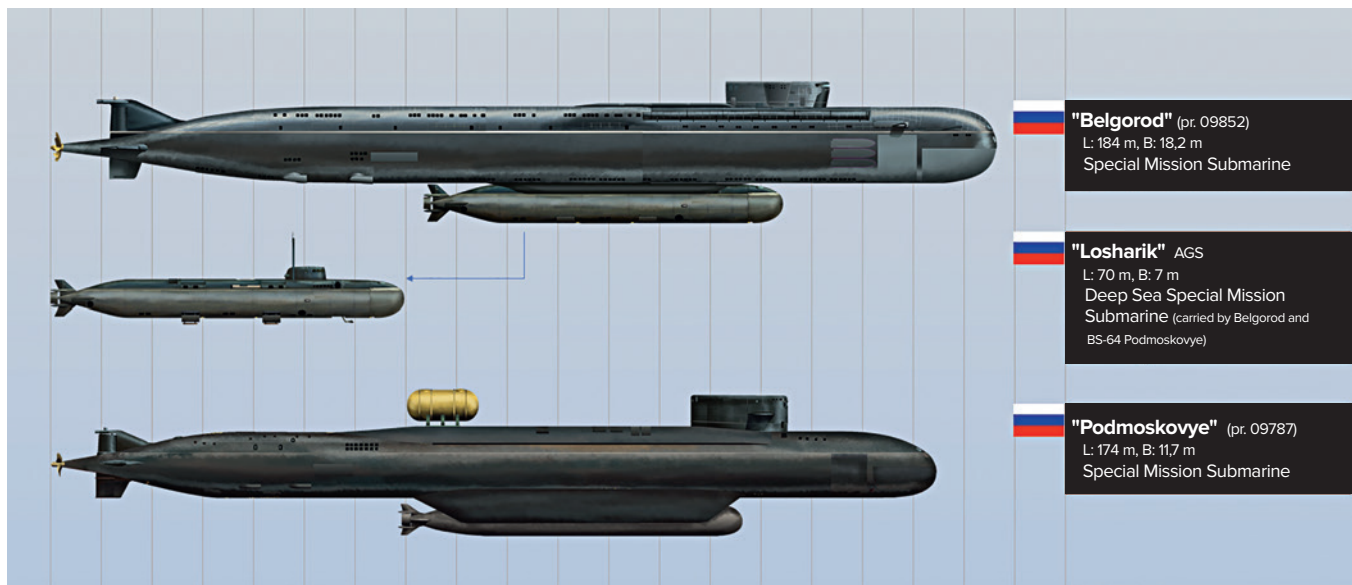
NDS that belongs to the project is able to operate autonomously like large NDSs (Project 1910) or may be used together with a nuclear carrier sub. The depth of submersion of the new NDS exceeds the operating depth of Project 18511 and Project 1910 NDSs and may be over 2,000 m. Some sources report even 6,000 m.

As far back as 1988, Production Association "Sevmash" (Severodvinsk) started design

In 2018, the Russian Navy is expected to put into service a new nuclear carrier submarine for deepwater stations KS-139 "Belgorod". The mothership is being built under Project 09852 at Production Association "Sevmash" in Severodvinsk. The special-purpose carrier submarine "Belgorod" will be able to carry a nuclear deepwater station and a few unmanned underwater vehicles.

In 2017, the special-purpose nuclear submarine BS-64 "Podmoskovie" completed a program of factory sea trials and state tests of the deepwater complex (Project 1083KM).





works preparation for the production of a new NDS under the project. Among other reasons, such efforts were needed to master a new technology for manufacturing titanium spheres of large diameters: Soviet specialists did not have any experience in such applications. The flagship NDS AS-12 (factory No. 01210) was laid down in "secret" shop No. 42 at "Sevmash" on 16th July 1990. In the mid-1990s, the building of the station was frozen due to insufficient funds and resumed only in 2000. The station was set afloat in the presence of Commander-in-Chief of the Russian Navy V. Kuroedov on 5th August 2003.

In 2004–2007, under the command of Captain A.I. Oparin the factory, state and deepwater tests of the special-purpose experimental submarine have been held in the White Sea, Barents Sea, Norwegian Sea, and Greenland Sea. In 2006, Project 10831 NDS was transferred to the Navy for field testing; in 2008, NDS was put into service by the Russian Navy. In May 2010, some media sources reported that specialists of JSC Shippreparing Center "Zvyozdochka", JSC Central Design Bureau for Marine Engineering "Rubin", JSC Marine Engineering Bureau "Malakhit" and Federal State unitary Enterprise "Central Research Institute of Structural Materials "Prometey" received the national award for "experimental deepwater station state order 1083K".

LONGER RANGE, DEEPER WATERS, LARGER SCOPE

At the turn of millennium, Project 09787 was launched to develop a new carrier submarine based on the nuclear submarine (Project 677BDRM). The new carrier was developed as an auxiliary element for the BS-136 "Orenburg" carrier submarine. Probably, development of the modernization program for nuclear deepwater stations and carriers was started at that time. In 2004, a contract was signed to develop an equipment complex for the carrier submarine "Podmoskovie" (Project 09787 BS-64). In 2008, Shippreparing Center "Zvyozdochka" began works to upgrade the submarine. "Losharik" was meant to become the main load to be carried by the new submarine.

At the same time, they started to restore technical readiness and upgrade nuclear

deepwater stations (Projects 10511 and 1910) not used then by the Russian Navy. The set of technical equipment for special missions is likely to be expanded.

Moreover, in 2009 Russia's Ministry of Defence and the Central Design Bureau for Marine Engineering "Rubin" signed a contract for developing a project to modify the unfinished submarine tender "Belgorod" (Project 949A) into a special-purpose nuclear research submarine. Nearly no information on the project is currently available, but we know that this new special-purpose submarine is expected to be the multirole mothership for a massive fleet of manned and unmanned underwater vehicles. On 20th December 2012, Production Association "Sevmash" (Severodvinsk) laid down the special-purpose submarine "Belgorod" under Project 09852 KS-139. The new submarine is expected to be put into service by 2020.

Many years of efforts applied by developers, engineers, the whole industry and the Ministry of Defence allowed to form and equip a new branch of armed forces – the deepwater special operations forces, which include some large nuclear carrier submarines, carrier submarines for small-size bathyscaphes and unmanned underwater vehicles, plus the fleet of nuclear deepwater stations and a wide range of various auxiliary underwater equipment. For now, this is Russia's top priority in the field of naval research and development. ♦



SMS pr. 09787 BS-64 «Podmoskovye»

RELIABLE GUARD.

Russia's Coastal Defence Systems

Anti-ship missiles are one of the types of armaments and military equipment developed by Russia, traditionally leading in this field. Russia's leadership is evident not only in the development of the most powerful ship-based and airborne missile systems, but also in the widest range of coastal defence missile systems popular in the world market.

Text by Alexander Ermakov

The history of the development of Russian coastal missile systems dates back to the mid-1950s when the S-2 ground-based systems – the fixed version “Strela” and the mobile version “Sopka” were developed based on the first full-featured airborne anti-ship missile (ASM) KS-1 “Kometa”. Put in service in 1957–1958, these systems became the world's first systems in their class. The “Sopka” anti-ship systems were included in the weapons deployed in Cuba on the threshold of the Cuban Missile Crisis. Later, many Soviet ASMs initially developed as ship-based or airborne versions were modified into ground-based systems. First of all, we should mention the “Redut” system with a heavy supersonic missile P-35, as well as the “Rubezh” system with a lighter missile P-15. The Russian armed forces are currently removing these systems from service, but they are still operational in foreign countries. The P-15 missile has many Chinese replicas which are produced and exported in modified versions.

So far, ASMs are basically subdivided into heavy and high-speed missiles (superfluous for attacks on large ships not equipped with a powerful air defence system), and lighter missiles intended for breaking through enemy's air defence systems at very low levels and for fighting more dangerous systems. The latter missiles are efficient due to firing a many missiles salvo.

“BAL”

One of typical representatives of light missiles is the Kh-35 ASM with which the “Bal” coastal defence system is equipped. After launch (ship-based and ground-based versions use a solid propellant booster), the missile extends its airfoils and continues



Coastal defence system «Bal»

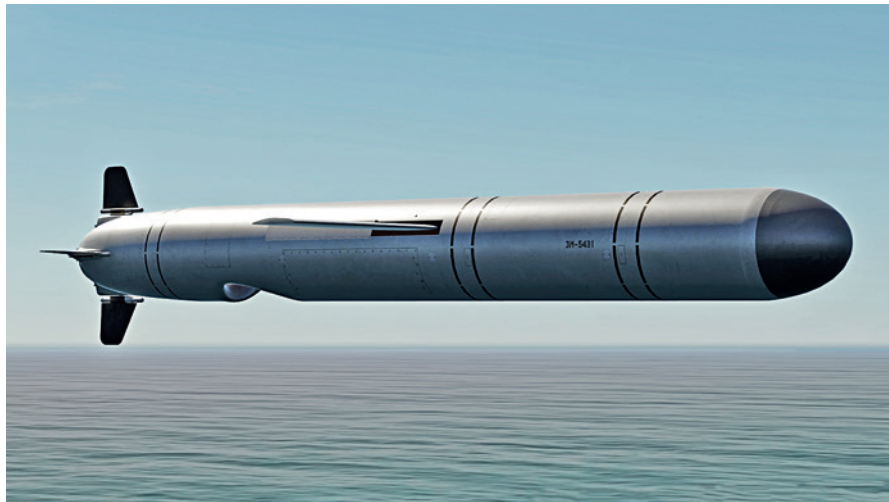
the flight, using a turbojet engine. The missile flies at a low altitude and descends to the level of 3-4 m when approaching the zone protected by enemy's ship-based air defence systems. Actually, the missile flies over wave tops by means of a high-precision radar altimeter.

After entering the area of estimated enemy target location by means of the passive inertial system, the onboard active radar target-seeking device is activated for target lock-on at a distance of up to 20 km (in practice, depending on the missile's flight level, lock-on is enabled as soon as the target appears on the horizon). At that moment, the missile speed reaches 0.8 M. It is a challenging task to hit a missile moving so fast. The range of fire of the Kh-35 missile's basic modification is 130 km. The Kh-35U missile, an advanced modified version of the Kh-35, has already been



**VLADIMIR PUTIN,
PRESIDENT OF RUSSIA**

“Bastion” is a coastal defence missile system. It is not an attacking system, but it is an efficient, advanced and high-precision weapon. For now, only Russia has such a weapon. For the time being, it is likely to be the most efficient coastal defence system in the world. Moreover, to make it clear that the Crimea is properly protected, we supplied these coastal defence systems “Bastion” there



Anti-ship missile 3M-54E1



Mobile complex "BASTION-P"

developed, featuring new avionics, a high-bypass turbofan engine and increased fuel capacity. In comparison to the original version, the range of fire of the Kh-35U missile is 2 times higher (up to 260 km). A new target seeking device ensures lock-on at a distance of up to 50 km while the missile weight has been increased only by 50 kg. The missile is compatible with the existing launchers. For now, the Kh-35U missile is the basic modification for export and domestic procurement.

The main advantages of the Kh-35U missile are its relatively low price and weight/overall dimensions characteristics. This allows to equip carriers with a larger amount of missiles and to fire them in large quantities. The missile power is not excessive to hit light targets. In total, these advantages make the missile the best solution in terms

of quality-price ratio. The Kh-35U missile has the excellent range of fire in its class – for example, only the latest version of the U.S. Harpoon missile (modification RGM-84N Harpoon ER with a lighter warhead passing its test phase) has surpassed the Kh-35U.

These features are fully implemented in the coastal missile system "Bal". Each launcher is able to carry up to 8 missiles due to a low weight of the missile. The missile battery may include up to four launchers controlled by one or two command vehicles fitted with radar stations and electronic reconnaissance equipment that provide a quiet launch mode without radiation in favorable conditions. For reloading, the missile battery includes up to four loader transporter vehicles with ammunition loads compatible with launch-

ers. Thus, a single missile battery is able to fire a salvo of 32 missiles (moreover, able to hit 24 individual targets) and, unlike a ship, is able to repeat a salvo in 30 minutes.

Only a powerful ship formation is able to repeal a coordinated attack of this large number of ASMs; however, even such a ship group will sustain losses (in particular, during the second attack when the set of air defence missiles is partly depleted). The value, importance for the enemy and the number of staff of such a group will be absolutely incommensurable with the attacking Bal.

"CLUB"

The cruise missile "Kalibr" is one of the most well-known products developed by Russia's military and industrial complex in recent years. Its application by means of surface ships and submarines to hit terrorist targets in Syria has been widely covered by mass media. However, we know that the "Kalibr" family includes anti-ship missiles that are also intended for the mirror-like application – they may be used as surface-to-sea missiles. The "Club-M" coastal missile system is armed with these missiles.

We will not discuss in detail the well-known "Kalibr" family in this article, but we will give a quick look at 3M-54E/Er anti-ship missiles used by the "Club-M" system. The difference between these two exported ASMs is the presence or absence of the unique know-how featured by the anti-ship version of the "Kalibr", i.e. a supersonic second stage which carries out the final rush at about 20 km to reach the target at a low altitude and speed of 2,500 km/h approx. It needs no explanation that

Coastal missile system "CLUB-M"





"Yakhont" – heavy high-speed ASM

"YAKHONT"

"Yakhont" is a heavy high-speed ASM with unique characteristics. When flying along the composite trajectory at medium altitudes, its speed reaches 2,700 km/h; when approaching the target at the final flight leg of 40 km at very low levels, its speed is 2,450 km/h



In conjunction with its capabilities, "Bastion" is the most powerful missile system available in the world market and for export

such features critically affect the interception capabilities. The 3M-54E missile is equipped with such a stage while the 3M-54E1 version does not have this option – it is meant to approach the target at a low altitude when flying along the entire trajectory. Of course, the 3M-54E missiles are more expensive; they have larger overall dimensions and heavier weight (the length is 2 m longer and the weight is 500 kg heavier). The best way to use them is to hit targets with more advanced air defence systems. Another advantage of the 3M-54E1 version is a longer flight range – up to 275 km versus 220 km for the 3M-54E version.

The coastal defence system's launcher is unitized and its ammunition load includes up to 6 missiles of any types. In addition to the above-mentioned missiles, the "Club-M" system may use 3M-14E missiles intended for hitting ground targets. They have overall dimensions similar to the 3M-54E1 version and a longer range (to comply with Missile Technology Control Regime, the official data indicating the range of "up to 300 km"). Unlike many foreign equivalents, the 3M-14E missile uses an active radar target seeking device at the terminal phase for more precise hitting of a ground target.

The missile battery includes up to 3 launchers, therefore, up to 3 loader transporter vehicles with the second ammunition load, one or two command vehicles fitted with radar stations and electronic

reconnaissance equipment, plus a maintenance vehicle. Thus, a single salvo of the system may comprise 18 low-altitude high-speed ASMs. Such performance guarantees that any target will be hit. In December 2017, the simplified "Club-T" version was demonstrated at Kuwait Military & Defence Exhibition. Exclusively designed for hitting ground targets, this system is armed with the 3M-14E missiles only. The known-coordinate firing option allows to get rid of command vehicles included in the missile battery; however, if necessary, the customer can buy them in addition and "restore" its lost anti-ship functions.

"BASTION"

Traditionally, the signature line of Russia's military and industrial complex was heavy supersonic ASMs with the highest performance characteristics at that stage of the development. And if the newest developments such as the hypersonic ASM "Tsirkon" are currently passing the final testing stage and are to be put into service for the Russian Navy, the most advanced ASM of the previous generation such as the "Yakhont" missile is available to foreign customers. The BrahMos missile co-developed by Russia and India is based on "Yakhont".

"Yakhont" is a heavy high-speed ASM with the unique characteristics. When flying along the composite trajectory at medium altitudes, its speed reaches 2,700 km/h; when approaching the target at the final flight leg of 40 km at very low levels, its speed is 2,450 km/h. The range of fire along the composed trajectory reaches 300–500 km (along the low-altitude trajectory – about 120 km). The missile's high flight speed provides not only high survivability, but also the most efficient real-time hitting of ship groups. This may be an important tactical option. In November 2016, unexpected capabilities were demonstrated – the missiles were used in Syria for hitting

ground targets. The range of fire was reported to reach 450 km (probably, because the entire flight is carried out along the most energy-saving high-level trajectory).

The "Bastion" system uses the ground versions of the "Yakhont" missiles. It is worth mentioning that unlike the other systems described herein, the "Bastion" system is available as the fixed version "Bastion-S" with missiles located in the pit. The "Bastion-S" version is available for export. The fixed version has been purchased by the Russian Navy and used for refitting inactive coastal defence installations which were built in the Crimea in the Soviet era. However, as the fixed version has limited options for application, we will discuss only the mobile version Bastion-P.

To ensure high performance, the missile has larger overall dimensions and heavy weight. Due to these characteristics, the "Bastion" system's launchers can carry only two missiles. Somehow, this shortage is offset by configuring the missile battery, i.e. the battery may be controlled by a single command center with up to 18 launchers spread in a wide area (of course, in practice this number is not greater than 4–6). To ensure the operation of launchers, the missile battery may include up to 3 command vehicles with radar stations and electronic reconnaissance equipment, as well as the required amount of loader transporter vehicles and launch support vehicles (in case the system is deployed for a long period of time). In conjunction with its capabilities, "Bastion" is the most powerful missile system available in the world market and for export.

Basically, the "Bal", "Club", and "Bastion" systems discussed in the article, as well as the artillery system "Bereg" prove that Russia's supply in the global arms market can cover all segments relating to coastal defence systems and can meet any demand. ♦

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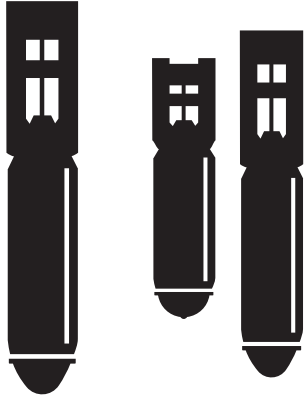
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KAB-500S Guided Bomb



Military conflicts for the past decades prove that one of the key tools for defeating the enemy is precision-guided weapon. Such a weapon helps achieve the most efficient results, avoiding mass destruction of the infrastructure and minimizing civilian casualties. However, this weapon has a critical disadvantage – that's its price.

Text by Artur Kovalivsky

As precision-guided missiles are very expensive, military forces keep applying the classic methods of warfare on the battlefield such as bomb attacks, in particular, using dumb bombs. But, as the international laws introduced more restrictions for the use of “inhuman” methods of warfare, the leading states started to develop a cheaper version of precision-guided weapons.

The USA became the pioneers in this field by developing the GPS-based JDAM system (Joint Direct Attack Munition) able to turn dumb bombs into guided ones. The first bombs of this type were developed by Boeing in 1997. They were successfully employed in Yugoslavia in 1999 and later in Iraq in 2003. Russia did not push forward in the development of such weapons as the Russian military forces did not consider them to be efficient. However, successful employment of such bombs by the USA, their cheap price and relatively simple production technologies through upgrading the existing bombs made Russia's defence industry develop the domestic equivalent. It did not take long to see the result: in 2003, the Russian KAB-250S guided air bomb was demonstrated at International Exhibition MAKS-2013. However, later the project was frozen; the bomb was not put into service for the Russian Army. But Russia's participation in an operation for eliminating terrorist factions in Syria may change the situation.

Let's have a look at the KAB-500S guided bomb, its advantages over standard dumb bombs and high-precision missiles, its export potential and its actual advantage in the battlefield.

WHAT IS THE KAB-500S GUIDED BOMB?

The KAB-500S is a guided air bomb featuring a GPS-based guidance system and an explosive warhead. The central section of the bomb is cylindrical with the cone faring fitted with the X-shaped stabilizer. The tail section is fitted with wings and control surfaces. The bomb is 3 m long; the total weight is up to 560 kg, including a warhead of 380 kg.

The KAB-500S uses special-purpose 24-channel satellite navigation system (SNS) receiver GLONASS/GPS PSN-2001 as the main guidance system developed by Moscow Design Bureau “Compas”. The device is designed for receiving signals from satellite navigation systems.

Key features of the PSN receiver:

- Automatic selection of GLONASS/GPS navigation system's stellar constellation based on the “all in the sky” radio visibility principle. The receiver's automatic system is able to independently select the navigation's system's reference stellar constellation, processing all available satellite signals;
- Measuring the carrier frequency phase to increase accuracy;
- Differential method of navigation parameters measurement when using the differential correction receiver (may be included in the PSN-2001) and when entering an array of differential corrections received from an external transmitter;
- Two independent antenna inputs to provide the operation of the PSN-2001 with objects evolutions and to prevent the interference of signals received for the navigation system;
- Built-in antenna selector to ensure the use of the disabled airborne antenna device;



**PRESIDENT OF RUSSIA
V.V. PUTIN
ON THE MILITARY CAMPAIGN
IN SYRIA**

.....
It is not just some lessons for us;
it is the experience in employment
of high-precision weapons



..... The KAB-500S bomb dropped by the Russian Aerospace Forces eliminated 200 militants and 2 warlords in Syria



**SERGEI RUDSKOY,
COLONEL GENERAL**

.....
As a result of the employment of guided bombs dropped from the Su-24 aircraft, 67 terrorists, including 19 warlords – natives of the North Caucasus and Central Asia, were killed. 104 militants were injured



The export modification is KAB-500S-E



- Automatic reception (and update) of GLONASS/GPS SNS almanacs and saving them in non-volatile memory.

Such a system allows to use the bomb at any time (day/night), in any weather conditions with circular error probable (CEP) up to 5–10 m. This makes the bomb a cheap equivalent of precision-guided weapon for hitting fixed ground targets and sea surface targets such as warehouses, bunkers, protected command posts, various military and production facilities, as well as battleships and vessels.

The KAB-500S may be used in the drop altitude range of 500 m – 10 km at an aircraft speed of 550–1100 km/h. In other words, the aircraft does not need to enter the hostile air defence zone and to drop bombs “manually” as the KAB-500S fully implements the “drop-and-forget” principle: the aircraft pilot should not perform any operations after dropping the bomb and may continue the mission.

The bomb may be installed on different types of aircraft such as the Su-24M, Su-30, Su-34, Su-35, MiG-35, etc.

EXPORT POTENTIAL

The KAB-500S has high export potential. The export modification is KAB-500S-E. It is evident that those countries which are purchasing Russian combat aircraft are interested in related precision-guided weapons in order to unlock the potential of modern aircraft to the full extent. In 2013, India became the first customer of the KAB-500S-E, purchasing the bombs to equip 272 Su-30MKI fighter aircraft ordered by India and produced by HAL under license. China may become the next customer.

DO RUSSIA'S ARMED FORCES NEED THE KAB-500S?

Putting satellite-guided bombs into service allows to redefine striking capabilities of the Russian Aerospace Forces. Combat employment of such munitions by the USA has proved efficient, in particular, during anti-terrorist operations.

The KAB-500S may be used regardless of the time of day and weather condi-

tions. The bomb is cheaper in comparison with foreign-made equivalents. However, its cost is the stumbling block for putting the bomb into service. The cost of one KAB-500S is 3 million rubles; the cost of the U.S. GBU-53/B SDB-II with GPS-based navigation system is \$239,000 (about 15 million rubles); the cost of the JDAM set for upgrading the GBU-31 dumb bomb is \$70,000 (4.4 million rubles), excluding the cost of the bomb. The cost of the “Kalibr” missile in its export version is \$6.5 mln. To sum up, in some combat scenarios, the KAB-500S may replace the more expensive “Kalibr” missile: it is cheaper than foreign-made equivalents; first and foremost, it allows to minimize the risk for the pilot and for civilians.

Although the Ministry of Defence officially refused to put the bomb into service, it was eventually employed in Syria:

- On 9th December 2015, the KAB-500S bomb dropped by the Russian Aerospace Forces eliminated 200 militants and 2 warlords in Syria.
- On 13th October 2015, the Su-24M aircraft delivered an air strike in Aleppo province (Syria), using guided bombs and eliminated two ISIS field headquarters facilities (the terrorist organization prohibited in Russia).
- On 21st October 2015, near Sarmin settlement in Idlib province (Syria), the Su-34 bomber delivered a localized strike on a basement in one of the abandoned buildings, using guided bombs, and destroyed the target with its contents. That facility had been used as a rallying point for warlords.

Successful combat employment of the guided bomb along with a new concept to increase the arsenal of precision-guided weapons may help get things moving for the guided bomb. Developing a Russian equivalent to the JDAM upgrade kit may become a more promising way of Russian dumb bombs development. Due to a better price, such a product will be in demand in Russia and abroad. ♦

KAB-500S GUIDED BOMB PERFORMANCE

Developer	GNPP “Region”
Length, mm	3000
Body diameter, mm	400
Wingspan, mm	750
Bomb weight, kg	500–560
Warhead weight, kg	380
Warhead type	Explosive, concrete-piercing
Type of explosive device	Contact-type device with three types of delay
Guidance system	Inertial-satellite
Precision, m	5–10



The National Defense Management Center (NCMC) of the Russian Ministry of Defense

“ALL-SEEING” Space-Based Reconnaissance and Targeting System

Since the mid-20th century, the striking power of Russia’s Navy is based on submarines and long-range heavy supersonic anti-ship missile (ASM) carriers. Russian ASMs are the most powerful anti-ship weapons able to efficiently counter the potential enemy’s shipborne air defence systems, including aircraft carrier groups.

Text by Pavel Rumyantsev

In addition to a system of various means and technological solutions intended to counter the enemy’s shipborne air defence systems, Russian ASMs feature a long flight range of up to a few hundreds kilometers. This allows to attack hostile ship formations in areas beyond the effective radius of the enemy’s air defence and anti-submarine systems. Moreover, a long

flight range of Russian supersonic ASMs has been the enemy’s Achilles heel in recent years.

USSR NAVY’S “LEGENDA” SYSTEM

Using an inertial navigation system, all modern ASMs are intended to fly to the point where the target is expected to be

located, and then the active radar homing head is activated to detect and lock the target and to guide the missile. However, for efficient firing of ASM to cover a long range, we should know the position of the enemy’s ships with the appropriate accuracy in order to guide the missile, give it the direction of flight and the coordinates of the point where the missile should seek the



Satellite US-P



NSTS "Legenda" system. US-PU satellite

target, using its own guidance system. The task to locate the position of the enemy's ships at a distance of some hundreds kilometers cannot be solved efficiently without technical means of the ASM carrier. That is why, as far as the late 1950s, the Soviet Navy required a system able to accomplish the following missions critical for naval forces:

- timely detection of large ship formations of the potential enemy in any areas of the World's ocean and continuous surveillance;
- targeting data for supersonic ASM carriers for long-range firing, at any moment.

These tasks are still urgent for Russia's Navy to this day. One of possible solutions is to use reconnaissance aircraft with radar and electronic reconnaissance equipment, but this approach has its great disadvantages. In the 1960s, the reconnaissance and targeting system "Uspek" was deployed, including the long-range naval reconnaissance TU-95RTs aircraft and ship-based K-25RTs helicopters. However, it was practically impossible to ensure global surveillance over the potential enemy's ship formations while the use of advanced fighter-interceptor aircraft and further development of air defence systems made the combat stability of such a system very unreliable.

The way out was found when the satellite constellation was developed and deployed for reconnaissance and targeting tasks. As far as 1965, the first prototype of the radar reconnaissance satellite went into orbit. By the early 1970s, the system was successfully functioning. In 1978, the system was officially accepted and put into service in full strength as the Naval SIGINT and Targeting System (Russian: MKRTs) named "Legenda". The system comprised two types of satellites – the US-A radar reconnaissance satellites and US-P SIGINT satellites. The US-A satellites were equipped with a side-looking radar and a nuclear power source. The US-P satellites featured a simpler structure and were intended for detecting individual ships and ship formations by sensing the radiation of

their electronic equipment. In addition to satellites, the MKRTs system included communications processing units, as well as data receivers installed on submarines and ASM carrier ships.

The "Legenda" system became the first radar reconnaissance and targeting system in the world, ensuring not only continuous surveillance over the potential enemy's ship formations, but also real-time transmission of data on their location to all ASM carriers.

At the same time, the "Legenda" system had a number of critical disadvantages. First of all, the resolution capability of radar reconnaissance satellites was insufficient and allowed to detect only large ship formations. Secondly, as the onboard equipment required an enormous quantity of power supply, developers had to install a nuclear power source on radar reconnaissance satellites and to reduce the orbit altitude. The US-A satellites flew around the Earth along the circular orbit at an altitude of 250–270 km only while the US-P satellites were operated at an altitude of 420–440 km. Due fast depletion of the nuclear power plant installed on the US-A satellites (normal service life – 1,080 hours), the satellite constellation should be renewed constantly. The mean lifetime of orbital radar reconnaissance satellites was about 45 days; actually, by the end of the 1980s, this parameter reached three months by upgrading the power plant. After the power plant lifetime was depleted, the US-A satellites were moved to so-called disposal orbit at an altitude of 800 km approximately. The operating time of the US-P satellites was considerably longer – from a few months at the initial stage of functioning of the Legenda system to two or more years during the last decade of its existence. At any time, 3–4 satellites (2 US-P and 1–2 US-A) were on orbit.

After the "Legenda" system had been officially put into service, 27 US-A satellites and 15 US-P satellites were launched. Launches of the US-A satellites were terminated in 1988 due to international treaties on prohibition of the use of nuclear power in space. The US-P satellites constellation was functioning and periodically renewed



**SERGEI SHOIGU,
MINISTER OF DEFENCE**

Only by means of space systems support we can achieve the maximum efficiency of our Armed Forces. That is why we pay particular attention to this area of activity

**A.M. PETROV,
PH. D, NAVAL SCIENCE,
REAR ADMIRAL**

To ensure the combat employment of missiles, support systems, first of all, reconnaissance and targeting systems play the key role. The development of such systems requires solutions to challenging research and technical problems. We need not only target coordinates, but also data on structure, formation and other characteristics

**OLEG SHURKOV,
RESEARCH OFFICER,
RESEARCH INSTITUTE
OF SHIPBUILDING AND
ARMAMENT, NAVAL
ACADEMY**

The top priority for us is to ensure continuous tracking of weapons, which means we can see our enemy at all times ... Another goal is to be able to use missile weapons at any time

**IGOR LISOV,
COLUMNIST
FOR THE "NOVOSTI
KOSMONAVTIKI" MAGAZINE**

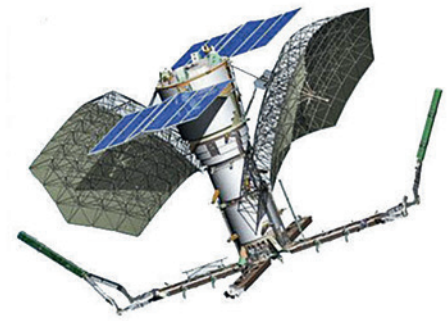
After the "Legenda" system was removed from service, the Ministry of Defence urgently demanded surveillance and targeting systems. Now, the "Liana" system is able to meet the demand



AWACS A-50



SIGINT satellite Lotos



"Pion-NKS" radar reconnaissance satellite

after the collapse of the USSR. The last US-P satellite was deactivated in 2006, leaving the Russian Navy without any space-based "all-seeing eye" and without any options for real-time surveillance over movements of the potential enemy's ships and for targeting heavy supersonic ASM carriers for long-range firing.

As submarines were able to provide targeting data for ASMs at distances of up to 200 km (depending on hydrological conditions) by means of the onboard sonar system (while being located at a safe distance from hostile ships), supersonic ASM surface carriers actually lost their striking performance because the Legenda system was no longer functional.

RUSSIAN NAVY HAS RECEIVED THE ADVANCED SPACE-BASED RECONNAISSANCE AND TARGETING SYSTEM LIANA

It is worth mentioning that as the "Legenda" system was deactivated, developers intensified their efforts to create a new space-based naval reconnaissance and targeting system, which was named "Liana". Development works were started in the early 1990s, but insufficient funds for the armed forces made developers put the program on the back burner. In the second half of the 2000s, works to develop a new MKRTs system were resumed. Development of the system became one of top priority defence programs in Russia.

In 2009, the first experimental SIGINT satellite ("Lotos-S") was put into orbit. The satellite launch was a failure – after entering orbit, more than 50% of the satellite systems were inoperative, requiring extra work to refine the system. The problems mainly caused by software issues were solved by 2012.

Despite all the issues, the baseline design "Liana" satellite constellation was deployed for operational testing by 2013. The "Liana" space-based reconnaissance and targeting system comprises two types of satellites – the "Lotos-S" SIGINT satellites and "Pion-NKS" radar reconnaissance sat-

ellites. Two satellites of each type are included in the system.

The "Liana" system is designed as the 2nd generation space-based naval reconnaissance and targeting system and has excellent combat capabilities in comparison to the "Legenda" system. The progress in the development of solar batteries allowed to get rid of a large-size nuclear power plant installed on radar reconnaissance satellites. This allowed to considerably increase the orbit altitude. The operational orbit altitude for the "Lotos-S" satellites is 900 km; for the "Pion-NKS" satellites, the altitude is 500 km. In its turn, this allowed to multiply the viewing area in comparison to the Legenda system. The progress in radio electronics and radar ranging provided truly extraordinary capabilities for the "Liana" system.

The US-A satellites included in the MKRTs "Legenda" had a very low resolution capability; that is why they were able to track only large ship formations such as aircraft carrier strike groups (ACSG), large convoys, etc. Radar stations onboard the modern "Pion-NKS" satellites have the resolution capability of a few meters only. This allows to detect and track not only any types of ships, even the smallest ones, but also even individual small-size ground objects such as tanks or automotive vehicles. Actually, the "Liana" system is not only the space-based naval reconnaissance and targeting system, but also the global space "all-seeing eye" able to ensure continuous surveillance over sea and ground surfaces and to detect any targets – ships, aircraft, automotive vehicles and armored vehicles.

The satellites' lifetime has significantly increased; according to the manufacturer's data, their operating time on orbit is not less than three years.

High efficiency of the "Liana" system being at its testing and combat operation phase was demonstrated in the course of the Russia's military campaign on the Syrian territory. The "Liana" system's satellites provided targeting for Russian naval ships launching the 3M14 Kalibr cruise missiles. These missiles successfully hit hostile mili-

itants' facilities. Also, during the military operation in Syria, the concept of so called "airborne and space reconnaissance strike complex" was developed. Real-time data received from different reconnaissance sources such as UAVs, special-purpose reconnaissance aircraft TU-214R and long-range radar detection aircraft A-50, as well as the satellite constellation (including data received from the "Liana" system's satellites) was collected and processed at the National Defence Operations Center (NDOS) of Russia's MoD. This allowed to deliver highly efficient strikes on terrorists' positions in almost real-time mode.

The "Liana" system successfully passed its combat testing phase. According to some data, the number of the "Liana" satellites is expected to be increased up to 6–8 satellites. Also, the system is expected to be integrated into the developed large-scale underwater surveillance system, which will comprise an extended network of active and passive sonars deployed on the seabed, close to the near maritime zone of Russia. Sonar data is expected to be transmitted to the "Liana" satellites, which, in their turn, will forward data to the underwater surveillance center.

For now, we may say that the Russian Navy has not only restored its capabilities for detection and tracking of the potential enemy's naval ships and formations, but also has managed to enhance such capabilities. In the course of modernization, the missile cruiser "Marshal Ustinov" was equipped with new receivers for data from the "Liana" system. These receivers are likely to be installed on all new or upgraded Russian naval ships and submarines.

The "Liana" system has allowed the Russian Navy to unlock the potential of the most advanced supersonic ASMs by receiving targeting data for firing to cover any distances to the target in the real-time mode.

The dream of Soviet admirals who always wanted to receive an "all-seeing" space reconnaissance and targeting system has become the reality for Russia's Navy admirals. ♦

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Armoured personnel carrier BT-3F

BT-3F. UNIVERSAL, FLOATING, ARMoured

Success of military operations in the conditions of present-day conflicts not infrequently dependss on the military formations mobility, in some cases it helps exclude the very possibility of military clashes. An armoured personnel carrier is able to provide high maneuverability to the units, especially in cross-country conditions with water barriers, as it can move across at once without preliminary preparation. And such a machine has been developed by designers of Special Design Bureau of Machine-Building OJSC and specialists of JSC “Kurganmashzavod”, as they have built a prototype of the armoured personnel carrier BT-3F on the chassis of the infantry combat vehicle BMP-3.

First of all, designers of Kurgan endeavoured to provide a high level of protection to the new machine. Great attention has been paid to an upgrading step forward regarding characteristics of inhabability and ergonomics. Besides, the basic parameters of mobility and commonality with the baseline machine have been preserved.

SURVIVABILITY

The armoured personnel carrier BT-3F has inherited from BMP-3 a high degree of protection against conventional weapons, and against nuclear effects, which helps use these machines together in the course

of performing combat missions. The BT-3F is provided with a system of protection against mass destruction weapons, as well as with air-conditioning system, fire-fighting equipment, smoke grenades launching system and engine exhaust smoke system.

ARMAMENT

The BT-3F is provided with a remote-controlled combat module 5ETs16U with machine gun “KORD” featuring a calibre 12.7 mm furnished with tele-thermal weapon sight and laser range-finder. The machine commander can lay down fire remotely from a control panel and manually in case

of electric power failure. Besides, the machine front part accommodates two bow machine guns 6P7 with a calibre 7.62 mm, so that shooters or the driver can lay down fire from these machine guns.

VERSATILITY

The accommodation of an assault force can be versatile: the machine can accommodate up to 10 troopers in addition to the crew, besides, there is a possibility to accommodate additionally five more troopers. The BT-3F can also be used for transportation of significant loads of cargoes, munitions, arrangement of devices and equipment. Actually the new-generation armoured person-



The armoured personnel carrier BT-3F can accommodate up to 15 troopers in addition to the crew



BT-3F overcomes water obstacles at once

nel carrier is offered as the baseline chassis for building general-service machines.

MOBILITY

The engine featuring power of 450 h.p. makes it possible for BT-3F to retain its mobility characteristics at the level of BMP-3: highway speed up to 70 km/h, floating capability in case of sea disturbance of up to three balls. The CCTV system provides for all-round observation of terrain. The image from cameras is translated to the driver's video-viewing screen.

One more undoubted advantage of the machine is its transportability. Transportation by road, air, sea and railways can be used for BT-3F. The BT-3F can also be transported at the external store of Mi-26 helicopter.

ERGONOMICS

The air conditioning system KBM-3M2E helps the crew and troopers feel comfort-

able even at ambient temperature up to +50 °C, which is extremely important in case of a durable operation. The chairs of an original design provided with head rests and four-point safety belts feature folding backrests and seats. It provides for free access to the equipment stored in the machine onboard recesses, or makes free space for accommodating special equipment in case the assault force is absent.

COMMAND CONTROL

The new-generation means of communication are installed on the machine: radio station R-168-25-UE2 and equipment for internal communication and switching AVSKU-E intended for providing telephone and telecode radio communication in the wide frequency range. The portable radio stations will make it possible to maintain communication with the landed assault force in the distance up to 2 km.

COMMONALITY

A series production of the new BT-3F can be launched at JSC "Kurganmashzavod" in short order, actually without any preparatory works, owing to the use of commercially available units and accessories of BMP-3 that has been in service for long time in the design of the armoured personnel carrier. In this case the crew training will also pass without problems, especially for those having experience of operating BMP-3 and BMP-3F.

This circumstance allows to name the states that have already BMP-3 and its modifications in their inventory, as the most promising external markets for BT-3F. First of all, Indonesia can be considered among such countries, where the marine corps' units operate BMP-3F. Moreover, the obsolete armoured personnel carriers BTR-50 are used there until now.

The countries having BMP-3 in their inventories include UAE, Kuwait, Azerbaijan, Sri-Lanka, Venezuela. Equatorial Guinea and the Philippines show interest to BMP-3, since they have obsolete Russian BTR-50s in the stocks of their armies, as well as Vietnam and some other countries. Definitely, the fully-tracked floating armoured personnel carrier BT-3F manufactured by JSC "Kurganmashzavod" will occupy its niche in the world market of armaments, where Russian offer is traditionally strong. ♦



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SIBER – INTEGRATED SECURITY SOLUTIONS

JCS SIBER, holding company of Rostec State Corporation, is a fast-developing and successful enterprise. This year SIBER celebrates its 5th anniversary. In recent years, the holding company has managed to combine a wide range of competences needed for successful competition in the Russian market for rendering security services.

SIBER has accomplished a challenging mission to develop a reliable security system at Rostec's companies. The company is entrusted with securing critically important state-owned production facilities of Rostec Corporation, including strategic enterprises such as Russian Helicopters, UralVagonZavod, Techmash, High Precision Systems, Technodynamika, United Engine Corporation, Shvabe and Kalashnikov Concern.

WIDE COMPETENCES – ONE BRAND

SIBER is rapidly developing new areas of activity, expanding its footprint in the Russian market related to security and protection services. In addition to in-house security, which ensures integrated protection of Rostec facilities, SIBER provides comprehensive fire protection services. In-house fire fighting units and fire safety departments prevent and suppress fire at protected enterprises.

SIBER is also successfully developing RTO-Guard, a network of private security companies authorized to render security services to non-Rostec companies.

Establishing of Russian-Chinese joint venture Hao Guard LLC in 2016 became one of the key milestones in SIBER's history. With Hao Guard, Russia now has the task-oriented official security company to be entrusted by Chinese businessmen as Hao Guard's co-founder is a Chinese company – Huawei Security, and Hao Guard represents the Rostec – a brand well-known in China.

INTERNATIONAL COOPERATION – SYNERGY OF COMPETENCES

International cooperation is one of important business lines the holding company is focused on. Due to successful cooperation with foreign companies, SIBER is able to implement foreign partners' experience and latest developments as well as to offer a wide range of services abroad, involving its foreign partners, who have the required infrastructure and competences in security and safeguarding. Among SIBER's partners are leading international companies from China (Huawei Security, DeWe-Group and China Cityguard Security), India



Facts and Figures

- Over 14 000 qualified employees
- More than 300 companies under reliable protection
- 25 branches within the territory of the Russian Federation from Vladivostok to Kaliningrad

(Checkmate), Singapore (AETOS and ST Electronics), South Africa (Business Opportunity and Risk Assessment), Austria (Bodyguard & Security Association), and France (AMARANTE International). SIBER has signed a number of agreements aimed at implementing joint projects related to physical security, cargo escorting, training and consulting services.

For instance, according to the agreement with ST Electronics, SIBER has gained exclusive rights for distribution of state-of-the-art solution developed by the Singaporean manufacturer – AgilFence perimeter intrusion detection system a.k.a. "smart fence". Later SIBER has also signed a memorandum with another Singaporean company, AETOS, to join efforts for establishing Rostec State Corporation Command Center, intended for monitoring, control and coordination of security and accident response at the Rostec's facilities.

Another SIBER's large-scale project in progress is the Multifunctional Training

Center in Smolensk Region, which is intended for theoretical and field training of security personnel both from Russia and abroad.

SIBER TODAY

Today SIBER unites five companies: managing company JSC SIBER, in-house security company JSC RT-Guard, in-house fire protection company JSC RT-Fire Protection, network of private security organizations RTO-Guard Ltd and Russian-Chinese joint venture Hao Guard LLC. Combining a wide range of services in the field of security, each of these companies successfully operates in its specific area, including: physical security, cargo escorting, fire safety, maintenance of engineering and security equipment and fire safety systems. ♦



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TYPHOON K-53949: TESTED. READY!

EXPORT POTENTIAL

Syria has become a test site for different military pieces of armament, including wheeled armored vehicles. Experience gained in “trouble spots” has proved the great significance of decisions taken by Russian designers.

Photos of armored vehicles have got around military mass media of various countries being accompanied both by envious and enthusiastic comments of experts thereat. For example, “big press” was gathered by a photo of an armored vehicle Typhoon K-53949 that was equipped with a jammer RP-377VMr on its roof taken in Ghouta. The vehicle is manufactured in Naberezhnye Chelny at the Special vehicle plant within the RD structure. Such attention of foreign mass media has supported an export joint program between Rosoboronexport and RD in order to promote the Typhoon-K vehicle to the foreign market.

“While developing the program, we took into consideration that Rosoboronexport possessed a unique experience in the sphere of importing military and dual-use goods, and Remdizel with its qualified personnel, up-to-date equipment and tools would be properly able to advertise new products of Russian manufacturers at the foreign market,” as explained in the news handout when the program was started in 2016. – We see promotion prospects for the Typhoon vehicle in the countries of North Africa, the Middle East, Central and South-East Asia, Latin America and, without any doubts, CIS.”

“Interest of foreign partners is high, orders will take place,” Mr. Faiz Khafizov, RD Director General, says expressing his surety.

TECHNICAL DETAILS

An armored vehicle 4x4 Typhoon K-53949 is designed for solution of a wide range of tasks. The base chassis K-53949 is a unique base for production of vehicle modifications, security protection, personnel and cargo transportation, intelligence support and fire support operations. Different modules can be installed on the chassis. The Ministry of Internal Affairs and the Ministry of Defense can therefore buy armored vehicles fitted with different equipment that have different characteristics and capabilities meeting customer's requirements.

There are four doors in the hull walls that are located in the front vehicle part. Another



door is in the rear plate. An independent spring suspension that ensures smooth ride and damping is used for this vehicle. The armored vehicle can be transported by air using planes Il-76, An-124 or helicopters Mi-26. The V-shaped bottom side is reasonable for taking aside blast waves, the hull is equipped with five security cameras providing a 360° field of vision. The vehicle is equipped with additional sets of armor and air conditioning system.

The first vehicles Typhoon K-53949 were tested in various local and climatic conditions before they were ready for delivery to the Russian Army.

Today, the South military command is the first one to be fitted with this newly-designed product. Typhoon-K has already been tested in live action during special tactical training exercises at the test range in Krasnodar region.

DESIGN VERSIONS POSSIBLE

One of the most advanced modifications designed on chassis of Typhoon family to be fitted with a wheel arrangement 4x4 is Linza medical vehicle. There are two options available for using the vehicle: a medical carrier and a battalion aid station vehicle.

“A person receives medical care during the first hour after a battle injury. This determines the rise of survival chances.” The model was presented at the military fair Army-2017.

“I’m sure that the Ministry of Defense will put major focus on the modernization of weapons and military equipment, – Mr. Faiz Khafizov says. – I mean automotive vehicles, armament system for military and special-purpose technology based on tracked and wheeled chassis etc.

“The Special vehicle plant (RD) develops a new range of advanced armored vehicles of new generation rated for different load-carrying capacity respectively, such as Typhoon, Tornado, Vystrel and etc. For example, a multi-purpose universal 8-wheeled Tornado chassis can carry a payload from 8 to 30 tons depending on the design version. We are going to bring forward a plan regarding Tornado to become a base chassis for installation of a potentially productive Pantsir-SM missile system.” ♦

RD
Defence
solutions

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"SHIPBUILDING & SHIPREPAIR TECHNOLOGY CENTER" EXTENDS INTERNATIONAL COOPERATION

For many years, finding solutions for issues in the area of economic relations with foreign partners has been one of the main scopes of activities of the Joint Stock Corporation "Shipbuilding & Shiprepair Technology Center" (JSC SSTC).

In the 20th century, during the USSR period, the companies that are presently incorporated into JSC SSTC have been engaged in design-technological works for establishing facilities in the territories of friendly states, which provided support for the life cycle of marine equipment and machinery of Soviet production. Ship repair dockyards and naval bases for warships and submarines stationing have been created on the basis of our design projects and with participation of our experts in such countries as Algeria, Syria, Libya, Iran, Angola, Cuba, India, Vietnam, China, and Greece. We have been involved in shipbuilding yards construction in Bulgaria, Hungary, Romania, Guinea, and Egypt; a geo-thermal electric-power station has been constructed in Nicaragua.

After the disintegration of the USSR the scopes of foreign cooperation of JSC SSTC did not reduce, quite the opposite, they have considerably increased.

The main factor for the stable growth was the fact that JSC SSTC has taken on the entire complex of works for creating on-shore facilities for foreign customers, including shipbuilding, stationing at bases and repair. These works are carried out in the framework of military-technical cooperation through the federal mediator JSC "Rosoboronexport".

Based on national and foreign experience, effectiveness of operation and combat use of the Navy is largely determined by the level of development of at-base stationing system and by the readiness of rear and logistics units for full-fledged technical support of warships.

The prospect of growth in the volumes of supplies of weapons and military equipment is in direct relation with the level of organization and with the quality of works and services for after-sales support of supplied ships with the purpose of providing their everyday operation and technical readiness.

For the majority of foreign customers, the availability of a full complex of on-shore infrastructure facilities, which are necessary to maintain the operation of new military marine equipment during its entire life cycle, is the indispensable condition for acquiring such equipment. Implementation of this condition may have a decisive importance in increasing competitiveness of national military marine products.

By now, JSC SSTC has accumulated considerable experience in creating on-shore infrastructure facilities for foreign customers. Successful implementation of contracts with countries like India, Vietnam, Algeria, China, and Iran allows to consider JSC SSTC the leading industrial enterprise in this sphere of activity.

The main positive aspect of JSC SSTC's activities is its participation and engagement in all stages of creating the facilities: from initial data collection for design works to launching and commissioning. It is comprehensive and system approach to project implementation that proved to be especially in demand with foreign customers and that has strengthened JSC SSTC's reputation as a reliable, and not momentary, partner whose aim is prospective long-term cooperation.

Recently, the option of manufacturing naval equipment and machinery, developed and designed by Russian experts, on the territory of a foreign customer has become more and more relevant. At the same time, the existing production facilities of some customers do not always meet the necessary requirements, from the point of view of both their technical level and personnel training.

To modernize existing shipbuilding enterprises or to create new ones, JSC SSTC can offer foreign customers the following works and services: development of technological and design documentation; supply of specialized, power and general-purpose equipment, accessories and tools; installation, setup and commissioning of the supplied equipment; training of customer specialists both in Russia and in customer's country; supply of spare parts and materials required for operation of the facilities; consulting and advisory services for production activities; warranty and after-sale maintenance services for the supplied equipment and machinery.

At present, the main partners of JSC SSTC in implementing various projects in the area of military-technical cooperation are Vietnam and India.

The major project in military-technical cooperation with Vietnam is construction of a new ship repair naval dockyard at Cam Ranh Bay. JSC SSTC has developed and provided the dockyard design documentation to the customer. Currently, civil works are close to their completion, equipment for the first stage of dockyard



JSC SSTC hosts India-Russia Intergovernmental Commission on Military Technical Cooperation, Subgroup on Shipbuilding in St. Petersburg, Russia, in 2017



JSC SSTC at DSA 2018 Exhibition in Kuala Lumpur, Malaysia

construction has been manufactured and supplied, and equipment installation is to begin in the nearest future.

In India experts from JSC SSTC together with specialists from local enterprises and companies, which develop weapons systems, are engaged in works for installation and commissioning of earlier supplied equipment for repairs of warships and submarines in the cities of Mumbai and Vishakhapatnam. Works for preparing the supplied equipment for installation onboard the Indian indigenous aircraft carrier are in progress now in Kochi. Technological documentation is being developed for the shipyard in Goa to enable construction of warships of Project 11356.

In addition to all this, JSC SSTC has worked out and prepared technical-commercial offers for creating on-shore facilities for warships and submarines in Kazakhstan, Turkmenistan, Indonesia, Algeria, Myanmar, Brazil, Venezuela, and the Philippines, all of which will hopefully be implemented under favourable conditions. ♦



Opening of JSC SSTC Representative Office in Hanoi, Vietnam



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**DONALD TRUMP,
US PRESIDENT**

I met with Russian President Vladimir Putin in an attempt to tackle some of the most pressing issues facing humanity. We're nuclear powers – great nuclear powers. Russia and us have 90 percent of the nuclear weapons. So I've always felt getting along is a positive thing



DILEMMA FOR TURKEY – AMERICAN FIGHTERS F-35A OR RUSSIAN AAMS S-400? / IA REGNUM, RUSSIA

The exacerbation of relations between NATO allies, Turkey and the USA, becomes more and more vivid. The disagreement has reached its apogee, when despite active and quite public pressure on the part of Washington, Ankara represented by President Recep Tayyip Erdogan continues to adhere to the agreements about procuring Russian long range anti-aircraft missile systems (AAMS) S-400 “Triumph”. Now the USA moved beyond pronouncements to action: on June 18, 2018 the Senate adopted an amendment to a pending bill on the military budget of the USA for 2019 (it will come into effect on October 1, 2018) prohibiting supplies of the fifth generation fighters F-35A to Turkey because of a deal for S-400. In spite of this fact, a ceremony of an official transfer of the first F-35A to Turkish Air Force (AF) took place at Lockheed Martin company in Texas state on June 21, 2018. The same day the second plane being currently flight-tested was officially transferred. How did Turkey receive these planes after official embargo for supplies and how can the situation develop in future?

In order to make the bill on the military budget come into effect, it is necessary to meet a number of conditions and procedures. First of all, it should be approved by the House of Representatives of the Congress, after that it should be approved again by both houses of the Congress of the USA, and the final document is to be signed by the President of the USA Donald Trump. Allegedly, this will happen at the end of August 2018. Before that moment Pentagon is entitled to continue the steps scheduled earlier for implementation of program of F-35A supplies to Turkey. It stands to reason that some changes can be introduced in the process of coordinating the bill, although if Turkey never gets round to change its course regarding S-400 supplies, it will be very difficult to nullify the Senate's decision even for the most pro-Turkish circles (and simply for the lobbyists of F-35 supplies).

Washington has already experienced an event of successful squeeze on Turkey in the case similar to the supplies of Russian S-400. A good example was the Turkish tender for supplying long range AAMS T-LORAMIDS (Turkish Long Range Air And Missile Defence System), which was won by China with its AAMS HQ-9 in 2013. Nevertheless, Turkey being exposed to the external pressure, overturned the tender results at the last moment and declined from buying these systems. Ankara too was always open to use blackmail (for improving the deal conditions) thanks to an artificial interest to armaments manufactured outside of NATO countries. But the very personality of Erdogan plays the role too under the present day situation, he is taken not very well in the West, and he himself likes to demonstrate his independence. This factor testifies to the fact that the deal related to S-400 will most probably succeed and the supplies of F-35 will really be frozen.

Totally, Lockheed Martin plans to manufacture and supply 3,220 pieces of F-35 of different versions. From this number 2,456 planes are intended for the armed forces of the USA,



NEWS

the rest will go for export. At that, it should be noted that Turkey has been the second partner after Great Britain with respect to volume of purchases (138 F-35B) with plans to procure 100 F-35A. Doing away with supplies Turkey will deprive Lockheed Martin of approximately \$25 bln, however, it makes only 3.1% against the background of a common quantity of orders; quite a number, though not critical. By now a contract has already been signed for the next four F-35, at that, Ankara planned to get 30 machines in F-35A Block 3F configuration by 2020, and 20 fighters more in F-35A Block 4 configuration beginning from 2023. Now these plans have a very dim outlook. As for two F-35A transferred already, these planes have to stay until 2020 at the air base Look in Arizona state, where the Turkish pilots will get trained. Thus, the transfer of machines can be called rather conventional. As for the monetary funds invested already by Turkey into this project, the amount thereof according to the Turkish President equals approximately \$800 mln, some funds have been used for organizing production of some parts for the fighter, since Ankara is the 3rd-level partner and got a chance to manufacture a part of machine at its enterprises.

It should be noted that if Turkey is not able to acquire F-35 fighters, it will succeed to acquire fighters from other vendors, it can be either China or Russia.

In this case, even if it is accepted as a given that F-35 surpasses Russian and Chinese machines (which is doubtful considering serious problems taking place during development and manufacture), Turkey will get fighters appreciably cheaper and, probably, in greater numbers. Moreover, Ankara will make itself less dependent on the American supplies of spare parts and aircraft weapons, incidentally becoming more dependent on Russia and China. This fact can hardly be very profitable and interesting for Washington, however, it is difficult for it to turn from a declared course. It is also necessary to specially note the fact that the USA in principle began to apply pressure on many buyers of Russian armaments threatening to impose economic sanctions on them. For instance, India as a traditional buyer of the Russian armaments, also presently came under immense pressure due to their intention to procure AAMS S-400. However, a considerable part of Indian sources says that the deal will take place with any Washington's position. It is even possible that the contract will be paid in rubles and/or rupees. In such a game the USA will be able to deprive Russia of a number of contracts with relatively small countries, but lose its influence on big countries demonstrating more independent policy. ♦



**SHANNON KILE,
A SENIOR RESEARCHER
FOR SIPRI**

Despite the clear international interest in nuclear disarmament, the modernization programs under way in the nuclear weapon-possessing states indicate that genuine progress towards nuclear disarmament will remain a distant goal



U.S. WILL START DEVELOPING SPACE-BASED MISSILE DEFENSE WEAPONS AND SENSORS / THE DRIVE, USA

U.S. lawmakers from the House and Senate have agreed on a final version of the approximately \$716 billion defense spending bill for the 2019 fiscal year, which requires the U.S. military begin work on developing new warning satellites to spot incoming ballistic missiles and weapons to blow them up from space. The draft law requires the Missile Defense Agency to pursue these programs even if it argues against them in an upcoming ballistic missile defense strategy review, which might be setting the Pentagon up for a battle with Congress, but might also highlight the opinions of certain senior U.S. military leaders.

Based on the existing language in the defence spending bill for the 2018 fiscal year, the lawmakers want the Missile Defense Agency to come up with a plan to finish development of the space-based weapons to destroy incoming missiles within a decade and potentially start testing a prototype system in 2022, which would be when the sensors are supposed to go online.

The space-based weapons will be “regionally focused.” That is to say, it will be positioned to respond to threats from only one specific part of the world, such as the area around Iran or North Korea.

Space-based weapons, whether they are advanced directed energy weapons or physical interceptors, have historically proven to be complex, expensive, and unreliable. Griffin probably knows this as well as anyone, having been a member of President Ronald Reagan’s Strategic Defense Initiative.

This program became derisively known as “Star Wars” and was associated with a host of technologies experts decried at the time as impractical, exorbitantly expensive, or both. The interception portion included space-based lasers, particle beams, rail guns, and finally, an elaborate orbital weapon system known as “Brilliant Pebbles.” ♦

NEWS





ALI AKBAR VELAYATI,
SENIOR ADVISER TO
THE SUPREME LEADER
OF IRAN ALI HOSSEINI
KHAMENEI

Iran and Russia's presence in Syria will continue to protect the country against terrorist groups and America's aggression. We will immediately leave if Iraqi and Syrian governments want it, not because of Israel and America's pressure



NEWEST U.S. STRATEGY IN AFGHANISTAN MIRRORS PAST PLANS FOR RETREAT

/ THE NEW YORK TIMES, USA

The Trump administration is urging American-backed Afghan troops to retreat from sparsely populated areas of the country, officials said, all but ensuring the Taliban will remain in control of vast stretches of the country.

The approach is outlined in a previously undisclosed part of the war strategy that President Trump announced last year, according to three officials who described the documents to The New York Times on the condition of anonymity. It is meant to protect military forces from attacks at isolated and vulnerable outposts, and focuses on protecting cities such as Kabul, the capital, and other population centers.

The withdrawal resembles strategies embraced by both the Bush and Obama administrations that have started and stuttered over the nearly 17-year war. It will effectively ensure that the Taliban and other insurgent groups will hold on to territory that they have already seized, leaving the government in Kabul to safeguard the capital and cities such as Kandahar, Kunduz, Mazar-i-Sharif and Jalalabad.

The retreat to the cities is a searing acknowledgment that the American-installed government in Afghanistan remains unable to lead and protect the country's sprawling rural population. Over the years, as waves of American and NATO troops have come and left in repeated cycles, the government has slowly retrenched and ceded chunks of territory to the Taliban, cleaving Afghanistan into disparate parts and ensuring a conflict with no end in sight.

When he announced his new war strategy last year, Mr. Trump declared that Taliban and Islamic State (ISIS, prohibited in Russia) insurgents in Afghanistan "need to know they have nowhere to hide, that no place is beyond the reach of American might and American arms."

After the declared end of combat operations in 2014, most American troops withdrew to major population areas in the country, leaving Afghan forces to defend remote outposts. Many of those bases fell in the following months. During a news conference last month in Brussels, Gen. John W. Nicholson Jr., the commander of the American-led coalition in Afghanistan, said remote outposts were being overrun by the Taliban, which was seizing local forces' vehicles and equipment.

"There is a tension there between what is the best tactic militarily and what are the needs of the society," General Nicholson said.

The strategy depends on the Afghan government's willingness to pull back its own forces. A Defence Department official said some Afghan commanders have resisted the American effort to do so, fearing local populations would feel betrayed.

"Abandoning people into a situation where there is no respect for them is a violation of human rights," said Mohammad Karim Attal, a member of the Helmand Provincial Council. "This might be the weakest point of the government that does not provide security and access to their people's problems."



NEWS



Just over one quarter of Afghanistan's population lives in urban areas, according to C.I.A. estimates; Kabul is the largest city, with more than four million residents. Most Afghans live and farm across vast rural hinterlands.

Of Afghanistan's 407 districts, the government either controls or heavily influences 229 to the Taliban's 59. The remaining 119 districts are considered contested, according to the Office of the Special Inspector General for Afghanistan Reconstruction.

Hamdullah Mohib, the Afghan ambassador to the United States, disputed that American and Afghan forces were leaving rural areas and essentially surrendering them to the Taliban.

Hundreds of Afghan troops are being killed and wounded nearly every week – many in Taliban attacks on isolated checkpoints. Over the last year alone, the number of Afghan soldiers, police, pilots and other security forces dropped by about 5 percent, or 18,000 fewer people, according to the Inspector General's office.

Under President George W. Bush, and during Mr. Obama's first term, the Pentagon established a constellation of outposts across Afghanistan, affirming that the American-led military coalition would fight the war in far flung villages and farmlands.

In 2006, the United States Army set up a string of small bases in the Korengal Valley – an effort that was planned in part by General Nicholson, who was a colonel at the time.

But by 2009, an Army document outlined a shift from “attacking the enemy in remote areas” to “protecting and developing the major population centers” in eastern Afghanistan.

In 2015, the Obama administration encouraged Afghan commanders to give up defending some of the most remote checkpoints and outposts that were seen as difficult to reclaim and hold. General Nicholson supported the idea after he took command in 2016, the official said. Should Afghan troops pull back now, defending remote pockets of the country would mostly be left to the local police, which are more poorly trained than the military and far more vulnerable to Taliban violence. In some areas, police officers have cut deals with the Taliban to protect themselves from attacks.

Not all of the roughly 14,000 United States troops currently in Afghanistan have pulled back to cities. Some who are training and advising Afghan troops as part of Mr. Trump's war strategy are stationed in bases in remote areas and smaller towns.

Mr. Trump has long called for ending the war in Afghanistan and only reluctantly accepted Defence Secretary Jim Mattis's advice to send an additional 4,000 troops in an attempt to claim victory. ♦



NEWS

SYRIAN ARMED INSURGENTS DEFECTED TO THE SIDE OF ASSAD

/ AL MASDAR NEWS, MIDDLE EAST

The combatants of the “Free Syrian Army” (FSA) have joined the government forces for fighting against armed groups connected with terrorist organization “Islamic State” (ISIS, prohibited in Russia) in the province of Deraa. The video of combat actions against terrorists has been recorded by the Russian reporter.

According to information from the Syrian military men, more than 500 former rebels have joined the military to settle the conflict in Yarmuk river basin. It is reported in publication that they have proposed cooperation to the combatants in exchange for the promise not to be prosecuted under the law and permission to stay in the province after its liberation from ISIS.

It was reported at the beginning of July that the leaders of armed formations in the Syrian province of Deraa have agreed to cease fire. At the same time the sides have agreed about settling the status of combatants and beginning of weapons surrender.

The military actions began in Syria in 2011. They have involved the government forces supporting Bashar al-Assad, President of the country, soft opposition, and various Islamic groupings. ♦



**VLADIMIR PUTIN,
PRESIDENT OF RUSSIA
(ABOUT SITUATION
IN SYRIA)**

Russian and American military have acquired a useful experience of interaction and coordination, fixed operational communication channels, which helped not to allow dangerous incidents and unpredictable clashes in the battlefield, in the air, on the ground



From Eyewitnesses' Accounts About the Capture of the City of the Palmyra by ISIS* in 2015

* THE ORGANIZATION PROHIBITED IN RUSSIA

“ ... The city roads were covered with dead soldiers' bodies... with their heads cut off. The ISIS fighters forbade locals to bury them. Mobile phones in dead soldiers' pockets kept ringing... Their bodies were resting on the streets for four days, and then they scooped bodies into garbage cans, using a bulldozer, and carried them out somewhere.” **

“This event took place in Deir ez-Zor, 80 kilometers away from the city of Raqqa. There was an urban combat, nearly house-to-house fighting. From a shelter on the house roof, the Beduins demonstrated a POW to their enemies in order to let the ISIS fighters recognize him. They were crying that the lunch time had come. They cut this POW into pieces. Then they showed him again. Then they put the dismembered body into a big pot, cooked it and ate. They were loudly commenting on the cooking process.”***



“The ISIS fighters began killing them. They separated the Sunni people and shot them in the head, and cut off heads of the Christians or Alawites.” **

**”The member of the Shaitat Tribe Council is a grey-haired middle-aged man with a Beduin kerchief on his head. He is blinking under direct rays of the severe midday sun.
 – You’re Muslims, but you decided to fight the ISIS. Why?
 – When the ISIS fighters come and occupy your district, they let you choose: join us and fight for us or we will kill you. No other way out. We just want to be home, till our land, earn money. We do not need war. They appeared just two years ago, and our tribe had appeared a thousand years ago. They’ve come to teach us Islam. We understand Islam from childhood. We strictly observe the fasts, we pray and we know The Holy Quran. Please explain, what can they teach us?” ****

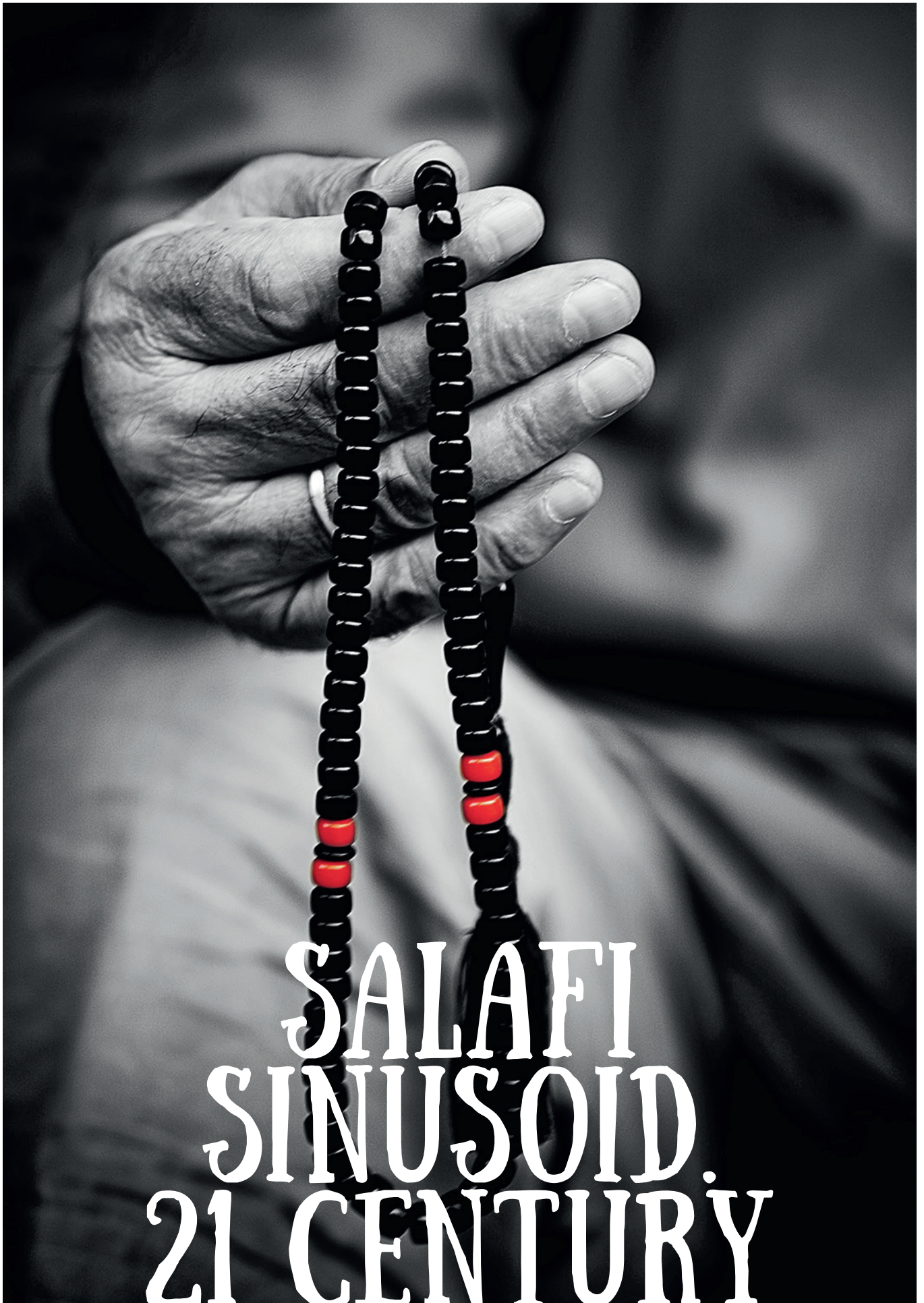
**** An extract from the article by Vadim Fefilov, special correspondent for NTV, “Snob” magazine, issue 6 (2015)**



Today, with high technologies, A.I. developments, cognitive researches and nearly every day scientific discoveries that change the modern society and everyday life, the world is facing the global religious conflict. This is the conflict, the subject matter of which is not evident even to those people who are directly involved, needless to say of those who may happen to be in subway or at a railway station close to a suicide bomber with the Shaheed belt.

The international jihad as the phenomenon seems to be beyond the atheistic Christian-based comprehension of the ordinary European, Russian or American. What are the origins and causes of this religious conflict and is this clash actually based on religious contradictions?

We have discussed this problem with Dr Prof Efim Resvan, a Russian analyst of Islam, Arabist, Deputy Director of Peter the Great Museum of Anthropology and Ethnography of the Russian Academy of Sciences.



– WHERE IS THE BORDER BETWEEN THE CLASSIC ISLAM, A PEACEFUL RELIGION AS ANY OTHER CONFESSION, AND ALL KINDS OF PRO-ISLAMIC RELIGIOUS SECTS AND MOVEMENTS WHICH ADVOCATE JIHAD AND EXTREMISM?

– Islam is fantastically diverse, and we hardly can say any “classic” version does exist. Initially, Islam contains adaptation mechanisms of a mobile ideological system.

This religion was born at crossroads of the key trade routes of the Silk Road. Sasanian Iran and the Byzantine Empire were constantly fighting for areas of influence in this region, bringing the destabilization and threatening the safety of caravans. The people settling down in the Inner Arabia, traders and merchants who had organized and controlled all passing caravans became the first audience for Mohammed the Prophet. The political goal of the arising Islam was to reconcile opposing forces, partly, for pragmatic commercial profit. In fact, Islam is the religion of merchants; all ancient Islamic scholars were merchants who wrote religious texts when they were out of duty.

It is worth mentioning that the route of commercial caravans was also the route for pilgrims; when traveling, the trader could praise the God and worship sacred places. In an attempt to avoid conflicts, the initial Muslim khutbas called for tolerance and forgiveness, recognizing the holiness of all prophets of the key monotheistic religions, who had preached before Mohammed. In Islam, Moses is referred to as Musa the Prophet; Jesus is Isa, Word of God and the Spirit from Him.

Tolerance and the concept of reconciliation were the basis of the Muslim religion in the period of its rise and forming. In the process of Islamization – from the Middle East to India and Africa – Islam gained the unique feature in every region, closely intertwining with local traditions and cults.

The key role in the expansion of Islam was played by Sufi teachings and practices, the important part of which was connected with the sacred places. Meditation practices of Sufism played a certain role – dervishhood rites, which are often accompanied with playing musical instruments, reciting the Quran ayats, special rhythmized movements, devotional attitudes, and breath control. These practices easily absorbed elements of the local culture, thus contributing to the expansion of Islam. However, after a short period of time, other preachers or “Salafis” appeared. They blamed local Muslims for the digression from the values and “ritual purity of true Islam”.

At the beginning of the 20th century one could find the Salafi movements both in Volga and Pre Tibetan areas, the Salafi state – Saudi Arabia – appeared... In several cases the theological debates over rituals turned into clashes and violence. As usual, there were powers attempting to solve, first of all, their own economic and political problems under the guise of theological debates. In the 21st century, we can see the same situation.

One can mention here the peculiar “swing”, the circularity in the development of Islamic communities – varying from Sufi preferences and rituals to “appeal to origins”. Powerful and poorly studied Salafi waves regularly roll over the entire Muslim world and cause the response “Sufi reaction”. On the other hand, the energy of Sufi preaching often encountered the response growth of popularity of the concepts of “purifying Islam from distorting novelties”.

As a result, the whole history of Islam can be represented as the peculiar sine wave. As a rule, regional forms of its existence are self-sufficient and, no doubt, “equivalent”. As for me, it becomes evident that for many centuries the development of the Islamic civilization has been passing in the form of conflicts between conventionally “local” and “Salafi” forms of Islam. This is the “inner engine” of the development.

Now, we can see the next rise of the Salafi movements that the representatives of radical Islam are trying “to saddle”. It is first of all the interim Islamic conflict, which is indicated through everyday reports on deaths and killings in the Muslim lands. New technical capabilities only contribute to going over old ground. However, my expeditionary experience shows that not all Salafis are jihadists by definition, and not all supporters of the Sufi movements are necessarily peaceful.

– DOES THE TEXT OF THE QURAN CONTAIN SO-CALLED “DANGEROUS SECTIONS”: WORDS THAT CAN BE MANIPULATED BY INTERPRETING THEM IN THE OPPOSITE OR DISTORTED MEANING FOR SOMEBODY’S INTERESTS AND FOR JUSTIFICATION OF MILITARY AGGRESSION? IF YES, PLEASE GIVE A COUPLE OF EXAMPLES.

– Of course, there are such text sections. Muslim scholars (as, by the way, scholars in other religions) often interpreted the sacred text in accordance with the urgent political request. For instance, in the 13th–14th centuries Ibn Taimiya and his apprentice Ibn Kathir were searching spiritual grounds for the possibility of military confrontation with Muslims prohibited in the Quran: the Chingisids who had already accepted Islam intensely conquered the territory of Levant, the motherland of scholars. The peculiar interpretation of the 5th surah helped answer many questions arising among faithful Muslims fighting the aggressors.

Here the key extracts of the ayats: *“And whoever does not judge by what Allah has revealed – then it is those who are the disbelievers (5:44); And judge between them by what Allah has revealed ... Then is it the judgement of [the time of] (jahiliya) ignorance they desire?” (5:49-50)*

Here is the scholars' comment: *“Regard people who follow prescription and laws established by people in order to satisfy one's vicious wishes and whims rather than to strictly follow the Shariat regulations given them by Allah. That was happened to dwellers of Arabia at the time of jahiliya... Today, the same situation is with Mongols follow-*

ing Genghis Khan's "Ifse", which is partly the code of laws derived from Jewish, Christian, Muslim and other law systems, partly established in accordance with Mongolian rulers' whims... Those who follow these laws established by people [not by God] are disbelievers".

In combination with ayat (9:5)¹, which, as pronounced later, "supersedes" 124 ayats, pronounced earlier, we have a sort of guidelines to jihadists. That is one of the examples of quotations taken out of the context, which certain Muslim scholars are skillfully manipulating with. Such a tradition of the Islam adaptation to instantaneous political trends dates back to ancient times.



– WHICH PECULIARITIES OF THE SYRIAN RELIGIOUS ENVIRONMENT MAY AFFECT THE FASTEST CONFLICT RESOLUTION?

– In the historical point of view, Syria is one of the most important world's regions where many religions and interests are represented. For centuries, people living here belonged to different religious trends, but they managed to get along with each other. Algorithms of relationship accumulated for centuries are still available. As soon as the massive external intervention tearing the country apart is stopped, these algorithms will be on full display.

– IN YOUR OPINION, WHAT ARE RELIGIOUS, HISTORICAL, PROBABLY, SOCIAL GROUNDS FOR APPEARANCE OF THE ISIS (THE TERRORIST ORGANIZATION PROHIBITED IN RUSSIA)? WHICH ARGUMENTS OF THEIR PREACHERS-RECRUITERS INFLUENCE YOUNG PEOPLE, SOMETIMES EVEN EUROPEANS, MAKING THEM JOIN ISLAMISTS AND BECOME SUICIDE BOMBERS?

– The global economic and political system refuses to take into account financial and economic capabilities of the Islamic world. Islamic countries are not represented in real "elite clubs" (Security Council, G7). The Islamic elite increasingly recognizes that in the conditions of the upcoming economic crisis associated with a new economic order the humanity is tending to, the first world countries can carry out a powerful confiscatory campaign. The alternative is likely to be the establishment of a powerful Islamic state (Khalifat) armed with nuclear weapons (Pakistan). Funds, organizations and mass media appear, acting as sponsors, coordinators and advocates for activities of the kind. At the same time, rich Islamic states are investing enormous funds in the sponsorship of leading western universities and research centers specializing in the Islamic studies. The situation is quite simple: money talks.

After the collapse of the USSR and discrediting communism as the ideology, no alternative to capitalism is left. With the absence of competition, capitalism has turned to severe formatting of the humanity and individuals. Now we can see the global expansion of the so called Western values, which are facing national traditions and the need for justice, which has not disappeared and cannot disappear. With the absence of the opposite civilization model, the ideological vacuum is filled by the "Black International".

The increasing competition among the global centers of power (the USA, Western Europe, China, Russia, India) makes secret services create jihadist organizations and use them to fight competitors. For example, how to explain the fact that until recently, the "Dabiq", the main ISIS propaganda magazine, has been available for purchase at Amazon.com?

The national patterns of life and thought, rise in births and reduction in mortality led to decades of population boom in Islamic countries. In these conditions, the development of national systems of secondary and higher education leads to massive excess production of young ambitious graduates who cannot find the rightful position within the system under conditions of the insufficient economic growth. Means of social mobility stop working, giving birth to a numerous and dangerous group in the society, dissatisfied with authorities (besides, these concerns are associated with a scandalous statement by A. Fursenko, a former Minister of Education, that the main goal of the national education system is the education of qualified consumers). These young people are the main target for a jihadist preach in the East, West, and in Russia.

The global expansion of the Internet, the creation and development of social networks and messengers led to the formation of the unprecedented technological base for self-organization and propaganda of any extremist organizations.

The propagandist arguments are subdivided into three groups: social justice, economic disparity, long-time exploitation of the global South by the global North. The solution to all these problems is Islam in its jihadist version as the way to justice.

There is a group of arguments which emphasize the genuineness of Islam in relation to other religions. In the context, it is important to note the myth telling that unlike other important religious memorials, the Quran was supposedly created in such a way that neither a letter nor a sign were changed after the text had been recorded. However, the arguments of this type are defeated by the science, which shows through the history of the ancient Quranic manuscripts how difficult was the way to the text of the Quran, which is published in bulk issues nowadays. ♦



¹ "And when the sacred months have passed, then kill the polytheists wherever you find them and capture them and besiege them and sit in wait for them at every place of ambush!" The Quran, 9:5

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