RUSSIAN AVIATION & MILITARY GUIDE

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№ 02 (03) March, 2016

Russia and India: new stage of mutually beneficial global cooperation

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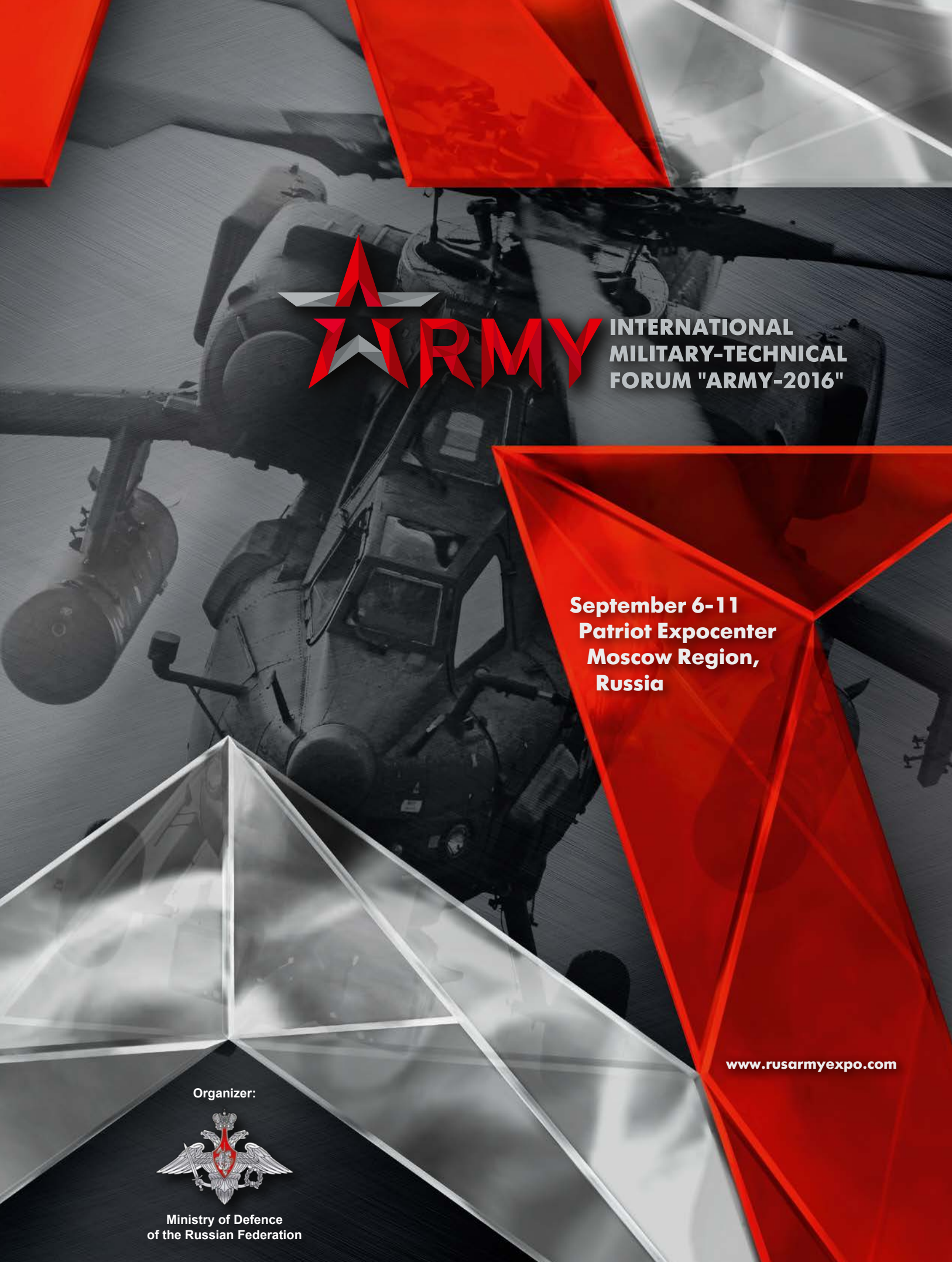

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It's necessary to be strong

Political situation in the world makes nations once again reconsider their defense possibilities. Threat of local conflicts to be evolved into global ones, failure of worldwide system of safety and non-ending economic crisis – all of this leads to an unstable and dangerous situation. One can predict raise of defense means market in times like this. But together with developing of defense technologies in order to secure people's safety, rivalry among sellers of weapons and defense systems increases in order to achieve such goals as increasing profits and market share.

World experience shows that it is not about how many weapons you have, but quality and possibilities of every single one of them is what leads to victory on the battlefield. Other significant factor is technological independence from seller – modern technologies make it possible to shut down any device from any place of the globe if you have appropriate access.

And so we believe, Russia has all it takes to remain one of the leaders of defense market in these conditions. With hi-tech technology, solid after-sales service and proven reliability of products, Russia is honest and friendly partner for all countries, ready for mutual work.

Valeriy STOLNIKOV

Russian helicopters: contract with India

A Russian helicopter design and manufacturing company said it is in discussion with Indian partners to conclude a contract for 200 choppers, more than 140 of which will be made in India under an inter-government pact.

"We are now discussing terms and conditions for the contract and copter configuration," Igor Chechikov, deputy CEO of Russian Helicopters (RH), told. Sixty of the contracted helicopters will be supplied from RH's existing manufacturing facilities in Russia while planning will be worked out with Hindustan Aeronautics Ltd (HAL) and other partners to manufacture more than 140 units, making it one of the biggest investment venture under 'Make in India' initiative.

The helicopters will be made in India under a pact signed by Prime Minister Narendra Modi during his visit to Moscow in December. The choppers will be supplied in collaboration with Rosoboronexport, a state export agency. The ongoing discussions include the scope of setting up a helicopter plant in India which will be in partnership with a number of Indian entities including HAL.

"We expect to produce more helicopters from India, given the country's demand for a wide range of defence and security related equipment," Chechikov said, pointing to the potential of growing the joint venture business as well as technology and knowhow sharing between the two countries. India has a fleet of over 450 Russian helicopters operating all of which were supplied over the last three decades in various phases. He also stressed on supporting the Russian hardware by establishing an after sales maintenance hub in India in the coming years.

"India is a very strategic market with a huge demand for helicopters," he said at the Singapore Airshow 2016. Russian helicopters are widely used by the Indian air force, navy and border security force. RH is showcasing a wide range of its technology-savvy helicopters and aircraft at the air show for the South East Asian markets.

Tender to supply auxiliary power units

Technodinamika Holding has won a tender to supply 9 new APUs for Ilyushin-76 and its modifications for the Indian Air Force. The tender value has not been disclosed. According to the terms of the tender, the holding shall supply 9 auxiliary power units for Ilyushin-76 and its modifications owned by the Indian Air Force. In all, the Indian Air Force uses a total of 28 aircraft of this type.

The victory in the tender was achieved once representatives of the Indian Air Force were convinced of the Holding's competence in APU production and repair: recently the Indian party accepted the first overhauled installation units for aircraft of this type. Furthermore, Technodinamika's Aircraft Service Center was registered with the Indian Air Force in February 2015. This meant the company was able to bid for component delivery, aircraft maintenance, and repair services for India's fleet.

The value of the bid is not being disclosed at this stage, but winning the tender means a serious step in the transition to a system of long-term contracting with the country's representatives.

"In the very near future, we are going to open a service center in India," Maxim Kuzyuk, CEO of Technodinamika, noted. "It will be arranged in compliance with the principles of the Make in India program, under which aircraft repair and maintenance will be localized in India. In this case, the Indian Air Force will be assured guaranteed deadlines and a high quality of performed works."

Technodinamika Holding specializes in the design, manufacture, and after sales servicing of aircraft systems and components. The Holding also manufactures components for the oil and gas, automotive, transport, and energy sectors.

EASTERN ECONOMIC FORUM

The Second Eastern Economic Forum is set to take place on September 2-3, 2016 in Vladivostok, with the participation of high-level Russian government officials. The event provides a showcase for Russia's new economic policy in the Far East. The Forum will be attended by business leaders from Russia, the Asia-Pacific region and beyond, with presentations of new investment opportunities and proposals for specific investment projects. Participation in the Eastern Economic Forum can help open up a short route to business success.

INVESTMENT OPPORTUNITIES

The Russian Direct Investment Fund (RDIF), the China-Eurasia Economic Cooperation Fund(CEECF), and the State Corporation Bank for Development and Foreign Economic Affairs (Vnesheconombank) have agreed to jointly evaluate and execute investment opportunities in Russia and China that will contribute to investment cooperation and the growth of economic trade between the two countries. Projects in industrial production, transport infrastructure, power generation, and energy efficiency were identified as priorities for collaboration. The agreement was signed today in the presence of Dmitry Medvedev, Prime Minister of Russia, and Li Keqiang, Premier of the State Council of China. Kirill Dmitriev, CEO of the Russian Direct Investment Fund (RDIF), noted: 'We are delighted to foster cooperation with our Chinese partners. With the Silk Road Fund we are already implementing a global initiative to create the Silk Road Economic Belt, which will promote economic development throughout Eurasia. This new agreement will enhance the efficiency of our partnerships with China.'

SPIEF 2016

The 20th St.Petersburg International Economic Forum (SPIEF) will take place on June 16-18, 2016 at a new venue. SPIEF is Russia's largest economic event, providing a platform for dialogue between government and business, and helping to formulate innovate approaches to furthering economic relations. Since 2006, the Forum has been held under the auspices of the President of the Russian Federation. Every year, the Forum welcomes approximately 10,000 participants from leading global economies, including heads of state and government, political leaders, heads of major companies, and leading international experts and media figures.

High-precision optics for satellites

The Schwabe holding company has developed the Geoton-L1 optical electronic instruments for a satellite of the Resurs-P series launched into orbit on March 13, 2016 from the Baikonur Cosmodrome. It is planned to produce two more specimens in 2017 and 2018.

The resolution of the device allows to distinguish and identify 85 cm long objects from space at a distance of 475 km from the Earth's surface with high certainty. As of today, Geoton-L1 is the most precise optical equipment produced in Russia.

Geoton-L1 will allow maximally accurate terrain mapping, identification of vehicles and buildings, as well as operational control of the ecological condition of the environment and monitoring of emergency situations. The equipment has a number of enhanced information characteristics, high resolution, as well as an extended guarantee period of normal operation – up to five years. It is planned to produce two more specimens in 2017 and 2018," said Sergey Popov, Deputy Director General of Schwabe for R&D and Innovative Development.

The Geoton-L1 equipment is a modernized version of the Geoton system that was launched as a part of the Resurs-DK spacecraft in 2006. The modern device has not only improved ground resolution and photometric resolution, but also a large number of spectral channels.

The Geoton-L1 was manufactured by Schwabe for spacecraft intended for remote sensing of the Earth – Resurs-P1 and Resurs-P2. In 2013-2014 the satellites were launched into orbit for space surveillance and mapping in the interests of national economy of Russia, as well as for obtaining information in the field of monitoring and protection of the environment. Today they effectively work as a part of a satellite constellation. The Resurs-P3 spacecraft is the final satellite of the series which joined the constellation on March 13, 2016.

Plans for a new multicopter

United Instrument Manufacturing Corporation (UIMC) has presented plans for a multifunctional air robotic system, which includes a robot helicopter, observational copter, reconnaissance copter, and attack copter with rocket-launching capabilities. The robots can carry out a wide range of tasks and can act either independently or as part of a unit.

The flying robots were designed to observe distant objects, record video and still images (including thermal imaging), transmit video in real time, deliver goods to a specified point, and destroy enemy targets on the battlefield.

'The technology developed by Concern Systemprom is designed to effectively replace humans wherever possible. It can carry out reconnaissance, monitoring, and patrolling missions of indoor and outdoor facilities, transport cargo, prepare cartographic materials, and fulfill combat tasks,' said Sergey Skokov, Deputy CEO of United Instrument Manufacturing Corporation.

According to him, the human role in managing the robots has already been minimized: the drone detachment can operate in an autonomous mode, where each robot performs its function independently, following its own specified route.

'These robots can navigate through the air without the support of an operator, choose their own routes, carry out reconnaissance work, and interact with other drones and robotic systems,' said Sergey Skokov.

The robot helicopter complex is designed for conducting video surveillance, delivering a payload to a given destination, and carrying out meteorological observations. It has a flight range of a few hundred kilometers. The reconnaissance copter can fly to an altitude of several thousand meters and can be used to detect and identify targets in real time. The observational copter can be used to adjust artillery fire and determine the location coordinates using the signals of GLONASS/GPS satellite navigation systems. The attack multicopter can detect and destroy enemy targets, including tanks and armored vehicles, with the help of standard rocket weapons.

RUSSIA-APEC INFORMATION PORTAL

The Russian Direct Investment Fund (RDIF) has launched a new online information portal, 'Russia-APEC' (http://www.russia-pacific.com), which will provide data and analytics support for Russia and member-states of the Asia-Pacific Economic Cooperation forum (APEC). The portal will facilitate economic integration and promote mutually beneficial cooperation across these regions. The portal is a joint project between RDIF and the Government Commission on Economic Development and Integration. The Russia-APEC portal is the most comprehensive database of information and reference materials on APEC member-states. The website's target audience is Russian companies doing business with countries in the region, exporting goods and entering APEC member-states markets. The portal's unique tools provide a comprehensive view of the economies, legislation, current news, key markets and companies in the region through one resource. Users can also find details of events, which might be of interest to representatives of the Russian businesses. The portal is structured as a database allowing companies to search for potential markets.

Russian companies can familiarize themselves with standard business practices in APEC economies and the support programs for international cooperation and investment. Users have access to regulatory documents, statistics, and key indicators for market conditions. Market reviews are categorized by country and industry. Information on APEC events are also available on the portal, as well as contact information for the trade offices and non-profit organizations providing support for Russian companies abroad.

$500 MILLION TO INVESTMENT PROJECTS

The Russian Direct Investment Fund (RDIF) and Kuwait's sovereign wealth fund, the Kuwait Investment Authority (KIA), have agreed to expand their partnership, with KIA allocating an additional $500 million to investment projects in Russia. Kirill Dmitriev, CEO of RDIF, signed the agreement today with Bader Mohammad Al-Saad, Managing Director and CEO of KIA, in the presence of Russian President Vladimir Putin and the Emir of Kuwait, Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah, as part of the Emir of Kuwait's official visit to Russia.

NCI and CRI EICS

The National Center of Informatization (NCI) and the Central Research Institute of Economy, Informatics, and Control Systems (CRI EICS) will create a competence center for software development that will consolidate the resources to conduct large-scale projects for the development of Russian software.

Rostec's new strategy Rostec until 2025 approved at the 2015 year-end provides for, among other things, making inroads into the IT market, increasing the share of products manufactured by the electronic cluster (that, in addition to the R&D Institute, includes Ruselectronics holding company, United Instrument Manufacturing Corporation, Concern Avtomatika, Shvabe holding company, RT-Inform, Yota Devices, and Electronics Central Research and Development Institute). In addition, the state corporation plans to foster new emerging capital-intensive markets in Russia, promote new professional skills and highly intellectual jobs

In this regard, the National Center of Informatization is being faced with new, large-scale tasks. In particular, a competence center for software development will be founded at the NCI.

Since 2016, Konstantin Solodukhin has led the National Center of Informatization as the new CEO. The change of CEOs is also a product of global changes within Rostec. Previously, Konstantin Solodukhin worked in another subsidiary of the State Corporation, the Central Research Institute of Economy, Informatics, and Control Systems. Creating a competence center for software development necessitates the concentration of resources, including project teams of developers and managers with experience in conducting large-scale projects. Therefore, it is assumed that CRI EICS and NCI will be consolidated at the expert level.

CRI EICS's expertise includes the development and maintenance of basic software (operating systems and database management systems) and trusted platforms and sophisticated ERP and PLM solutions for state needs, particularly the military-industrial complex. The Institute has accumulated extensive experience in creating highly secure systems for special clients.

For their part, NCI experts are capable of developing high-quality solutions for social services and are expanding the demand in the market for the service model. NCI's fields of expertise include medicine, education, science, culture and sports, public transport, safe city, electoral processes, and e government. The creation of platforms for civilian use is necessary for the formation of a base for demand that will later reduce the price of domestic products.

NCI has an advantage in that its specialists are familiar with the regulatory framework, are able to speak with representatives of state structures in the language they understand, and understand well their actual problems. The company aims to create a mass service that will benefit the citizens of Russia. It has extensive experience in creating high-loaded systems, such as the single state information system for the health sector (EGISZ), or e-government systems.

The integration of the expertise of the two companies will facilitate synergies and lead to the implementation of the ambitious project to create import-substitution systems and application software for government agencies.

As part of the new strategy, NCI will focus on three main areas: the development of basic systems and application software; implementation of major integration projects in the public sector, including for federal and regional authorities, municipalities, and large corporations; and building an information services model.

One of NCI's priorities for the near future is ensuring the smooth migration of software applications for state customers onto domestic or trusted platforms. In addition, NCI is planning to form a single control loop for Rostec's IT assets to create cross-sectorial synergies and, as a result, unique cross-technology developments. As a result, NCI will become a leader of the Russian market for the provision of information services for the public sector.

DP World and Russia

Global trade enabler DP World and the Russian Direct Investment Fund (RDIF) today announced the launch of a new joint venture company targeting ports, transportation and logistics infrastructure in Russia.

His Excellency Sultan Ahmed Bin Sulayem, DP World Chairman and Kirill Dmitriev, Russian Direct Investment Fund CEO, on the sidelines of the World Economic Forum in Davos, signed a document determining the key terms and principles of the joint venture in which DP World will own an 80% shareholding with the remaining 20% held by RDIF.

Under the name 'DP World Russia', the company will target marine, dry ports and logistics infrastructure in different parts of Russia.

'DP World Russia' is expected to potentially invest over time a total of US $2 billion in upgrading Russian port facilities, while introducing international best practices in operations to improve trade connectivity for the benefit of Russian businesses, consumers and community.

His Excellency Sultan Ahmed Bin Sulayem,DP World Chairman, said: 'Russia has always been an attractive origin and destination market for us with huge long term growth prospects. This joint venture allows DP World and RDIF to build on each other's strengths in bringing economic prosperity to Russia. It is also another great example of the strategic partnerships with government stakeholders, a model that has proven very successful for us over the years. Ports and logistics infrastructure are long term investments and this is why, when we invest, we prefer an approach that recognises the benefits of sharing resources for a common purpose. RDIF has a proven track record of investing with other global companies and we are pleased to partner with them. This JV will enable us to share with Russia our experience as a global port operator and trade enabler and to further enhance the already established strong relations between our countries.'

Kirill Dmitriev, CEO of the Russian Direct Investment Fund (RDIF), said: 'DP World's global expertise and its proven and tested ability to drive trade growth and develop efficient infrastructure, make it the ideal choice to support the long-term goals for the development of Russia. We are glad to welcome DP World in Russia and look forward to creating an effective partnership which will benefit both Russia and UAE.'

DP World has a portfolio of more than 65 marine terminals across six continents, including new developments underway in India, Africa, Europe and the Middle East. Container handling is the company's core business and generates more than three quarters of its revenue. In 2014, DP World handled 60 million TEU (twenty-foot equivalent container units). With its committed pipeline of developments and expansions, capacity is expected to rise to more than 100 million TEU by 2020, in line with market demand.

DP World has a dedicated, experienced and professional team of over 36,000 people serving its customers around the world, and the company constantly invests in terminal infrastructure, facilities and people to provide quality services today and tomorrow, when and where customers need them.

In taking this customer-centric approach, DP World is building on the established relationships and superior level of service demonstrated at its flagship Jebel Ali facility in Dubai, which has been voted 'Best Seaport in the Middle East' for 20 consecutive years.

VSMPO-AVISMA is set to keep up production

For 2016, VSMPO-AVISMA Corporation has set a production target of around 29 thousand tons of titanium products which is the same as the previous year's figure. It was reported by Deputy CEO for Marketing and Sales Oleg Leder.

'In 2016 we expect to maintain the previous year's level of total output equating to around 29 thousand tons. However, it should be noted that our production is not only concentrated at Avisma and VSMPO, today we have operations in Ukraine and in the USA — that is NF&M producing bars, billets, and wire for medical products and aerospace fasteners,' said Oleg Leder.

In the face of the crisis, VSMPO-AVISMA shipped to its customers products worth USD 1.3 billion in 2015, Mr. Leder was quoted as saying in an interview with Novator corporate newspaper. Nowadays, titanium is used in a wide range of industries from spacecraft building to medicine.

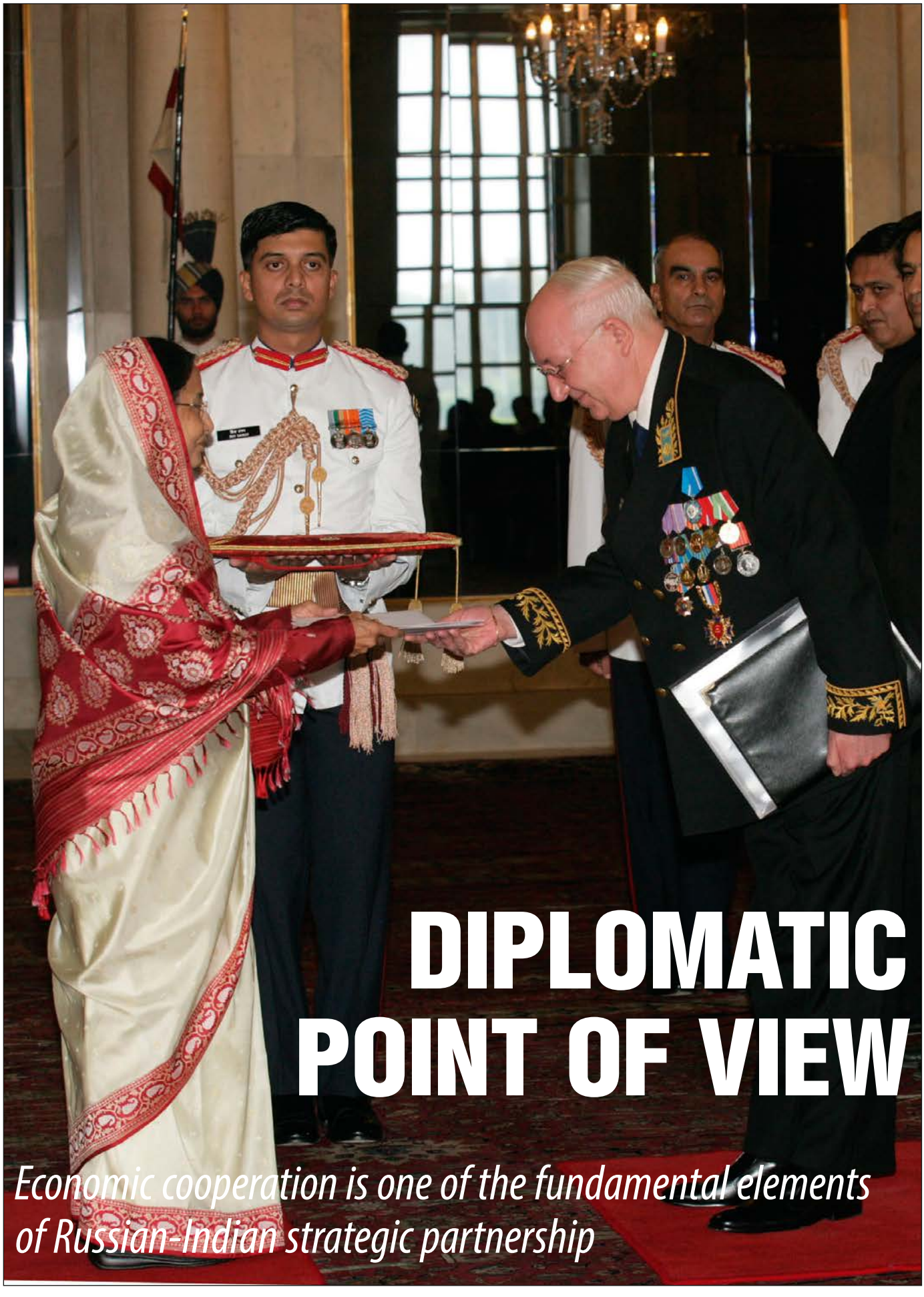
'However, it is the aerospace industry and all related sectors that constitute a larger part of the titanium market, even though there are the healthcare and manufacturing sectors', remarked Oleg Leder. 'The last one is still in a distressing plight, but we are persevering with our work in that sector, securing orders, albeit, on a small scale. In the difficult year of 2015, we managed to keep sales at an appropriate level in the aerospace industry. We are continuing to step up supplies to such companies as Boeing and Airbus. Over 11 thousand tons of products were ordered by and delivered to Russian businesses.'

According to him, for the time being it is no easy task to find an industry where titanium wouldn't be required — this metal is needed everyplace due to its specific strength and corrosion resistance. So, VSMPO-AVISMA sees the medical market as a priority.

'From the perspective of the medical sector, the global titanium market is showing a steady growth unaffected by the crisis because people continue to take care of their health even in the worst of times. The aerospace market also follows an upward trend although over a five-year cycle. Conversely, the medical market has a steady year-over-year gain of 4-8%. Today the global market capacity is about four thousand tons of titanium, with us accounting for about 25 percent', said Oleg Leder.

According to him, the corporation is currently contracted by such businesses as Johnson & Johnson, Biomet, Synthes, Orchid, Stealth, Zimmer, DePuy. VSMPO-AVISMA supplies medical-grade titanium all over the world. Medical-grade titanium certification requirements are tough in terms of the material purity, but they require no special properties like for aircraft engine manufacturing, explained Oleg Leder.

VSMPO-AVISMA is the world's largest producer of titanium, ingots and all titanium-alloys based semi-finished products, as well as large aluminum extrusions, semi-finished products of alloy steel, and nickel based heat-resistant alloys.



DIPLOMATIC POINT OF VIEW

Economic cooperation is one of the fundamental elements of Russian-Indian strategic partnership

Ambassador Extraordinary and Plenipotentiary of the Russian Federation to the Republic of India Alexander Kadakin in interview tells about the development of relations between Russia and India. The Ambassador assured that our countries have the highest potential for development of both political and economic relations.

— In actual practice, how is the strategic partnership between Russia and India manifested and realized?

— Let me remind readers and listeners of "Sputnik" that Russia and India became initiators of this format of interaction, introduced in international practice at the turn of the XXI century following the signing of the Delhi Declaration on strategic partnership by Vladimir Putin and Atal Bihari Vajpayee in 2000. This was a specific reflection of the maturity, diversity and depth of our relations which continue to grow in spite of the severe turmoil on the world stage. At the heart of this phenomenon lies an unprecedented level of mutual understanding and trust, intimacy or community of priorities in economic and social development, domestic and foreign policy, including our approach to peace and security, to the formation of a new global architecture. Based on this precious asset, accumulated through joint efforts from the early days of the existence of independent India, the two countries have cultivated new directions of bilateral cooperation, conforming to our national interests and the current international agenda.

As regards Russian-Indian relations, we are highly satisfied with the outcomes of the visit of Prime Minister Narendra Modi to Moscow last December. I will be very frank in saying that I had not expected the visit to be so fruitful and so productive, because till the last moment several agreements were not ready and I was rather pessimistic. The good results have exceeded all expectations. First of all, it applies to the serial construction of nuclear power units in India. The number of nuclear power units to be constructed in India with Russian assistance is 12, including the completed and running unit 1 of KNPP. Unit 2 will be commissioned to full capacity in about five-six months' time, ground works for units 3 and 4 have already started, and talks are being held on the technical parameters of units 5 and 6. Another six units will be constructed at a new site, which most probably will be in Andhra Pradesh. The name of the place has not yet been announced.

Russia is the pioneer of peaceful nuclear power units in India. While we have almost completed unit two, India's so-called newly acquired partners have not driven a nail at their sites. Until now they have not started even ground work. Maybe it happens because of the liability issue but it has not prevented Russia from going ahead. Pricewise the energy received from Kudankulam today is twice lower than the projected price for so far hypothetic French and American units. There is nothing at their sites — just wilderness.

There was another important feature of the summit – President Putin and Prime Minister Modi had a one-to-one meeting during dinner at the Kremlin. It shows there is a good chemistry in personal relationship between the two leaders. They both are very precise gentlemen who do not spend time on idle talking but act in practical terms. They both are result-oriented persons.

Another important agreement reached in Moscow – an intergovernmental agreement on Ka-226T helicopters. It means Russia will help India to produce at least 200 machines here in India. It will be with HAL, which can choose even private partners. It is absolutely in tune with the "Make in India" program launched by Prime Minister Modi.

— For a long time, Russia and India have been trying to accelerate bilateral trade and economic relations.

— Economic cooperation is one of the fundamental elements of Russian-Indian strategic partnership. In the foreseeable future, nuclear energy will remain the main element of this partnership. Let me remind you that the second unit of NPP "Kudankulam" is expected to become operational by the end of 2015 and we expect to start the construction of Units 3 and 4 of this plant in early 2016. The Indian side is prepared to offer us a platform to build the second nuclear power plant of Russian design. The "Strategic Vision" of the Russia-India cooperation in nuclear energy, signed during the Russia-India summit in December 2014, provides for the growth of cooperation in various areas, including the production of radioisotopes and scientific and technological developments. Agreements have been reached on the participation of Indian scientists in the programs being carried out at the Center for Nuclear Research in Dubna.

I agree that the potential for trade between the major emerging economies such as India and Russia is far from being exhausted. However, it should be borne in mind that in

Alexander Kadakin

recent years we have made significant progress in the development of contacts between small and medium-sized businesses, Russian regions are participating quite actively in this process . This is facilitated by the consistent improvement in the business environment and investment in both countries, as well as the current international economic environment.

The task of increasing the volume of bilateral trade to 30 billion US dollars and mutual investment to $ 15 billion by 2025 set by our leaders during the bilateral summit in December last year is quite achievable. A mechanism to move to the use of national currencies in mutual settlements is being actively developed. The creation of a reliable and efficient infrastructure of the international transport corridor "North-South", which will significantly reduce the delivery period for goods and the cost of cargo transportation between Russia and India is being accelerated. We are discussing the creation of a Free Trade Zone between the Euro-Asian Economic Union and India. The first meeting of the Joint Study Group on the advisability of such an agreement was held recently. We are working on updating the Russian-Indian agreement on the protection and promotion of mutual investments. All these steps will create an entirely new environment for building fruitful cooperation, not only bilaterally but also on the regional level.

Speaking of advances in bilateral trade and economic relations, mention must be made of the successful implementation of a number of projects in the oil and gas sector. In particular, the Indian company ONGC Videsh Ltd. is carrying out exploration of oil fields in the Tomsk region and in the northeast shelf of Sakhalin Island (project "Sakhalin-1"). In pursuance of the accords reached during the December visit of the Russian President to India, the Russian company Rosneft and the Essar Group signed during the BRICS summit in Ufa on July 8 this year a long-term contract for oil supplies for the purpose of refining at the Vadinar refinery (Gujarat, India). The contract envisages total supplies of 100 mln tones of crude oil over a period of 10 years. This is truly a landmark event in the history of oil and gas cooperation between India and Russia as it opens up broad prospects for cooperation in related fields.

Moreover, Rosneft and Essar shareholders signed a Term Sheet with regard to the participation of Rosneft in the Vadinar refinery equity capital with a share of up to 49%. The framework of the transaction also includes a retail network of 1,600 petrol pumps in India.

In the energy sector, work is continuing under a contract for designing the second stage of the largest hydroelectric power plant UpperSiang in India, signed in March 2014 by the company "RusHydro International" in consortium with the Institute "Hydroproject". In February this year, the International group of companies "Lighting technology" started the production of lighting equipment for general and special purpose capacity of 60 thousand luminaires per month in the southern state of Karnataka. There are other instances confirming the growing commitment of business communities of the two countries to expand mutually beneficial cooperation.

— What can you say about perspectives of economic cooperation and trade between Russia and India?

— I do not think there are any barriers in our trade. The figures are hovering around $10 billion. Of course, for such giants as Russia and India these are peanuts. We must raise trade. I have been analyzing the reasons and I think that Russian and Indian businesses are both to blame.

On the one hand, maybe, Indian businessmen were spoilt by the former Soviet system of quotas, when, for example, producers of tea had a guaranteed quota of supplying, say, 10000 tonnes of tea. Or the business people from Ludhiana who had a quota of 300 pieces for wool hosiery to be supplied to the Soviet Union. When we became a free market economy, one had to be more active. Maybe our Indian friends are somewhat lazy. They must be hyperactive in the Russian market like the Chinese and, until recently, Turkish companies. We would also welcome investments in pharmaceuticals but your people still prefer to sell us readymade generics. We would like to produce them together in Russia. Transportation is also a problem. We must rejuvenate and more actively use the North-South Corridor.

— What about the Russia-India defence relations which were so robust in all times?

— Defence cooperation is very robust now. It is a very stable relationship. We do not feel jealous when India wants to acquire some weaponry from other sources. We view India as a superpower in the making. For many decades we have been doing everything for India to become militarily, industrially, scientifically strong. It is absolutely wrong when media writes that Russian-Indian ties are not as strong as before. It happens because people do not know what they write. Please, name a country, which would rent a nuclear submarine to India? Name another country, which would refurbish and reconstruct aircraft carrier to make such a nice one as the Vikramaditya.

"Make in India" program is not a novelty for Russia. We have always been working according to this principle. The steel plants at Bhilai and Bokaro are still in India, not in Russia. The HAL factory producing planes is also in India as well as the small antibiotics plant in Rishikesh, which was the first in India's progress towards superpower status in medicines.

Our relations has always been on a smooth and even keel with the exception maybe of a short period after the democratic revolution in Russia after 1991, when we were immersed so deeply in our own problems that the focus on India was less. It was a period of great hardships for Russia – we were undergoing transformations of never seen before dimensions. Even at that period we tried to sustain our relationship with friend India. President Yeltsin came to India in 1993 to sign the Treaty of Friendship and Cooperation. India around that time also started its economic reforms.

— What are the directions in which it is acquiring significance and gaining weight?

— I think that the statement about the loss of positions in the Russian arms market in India is very much exaggerated. We continue to occupy a unique and leading place in the field of direct supplies and joint production of arms and military equipment for various purposes in India. Today, the Indian Navy and the Air Force have 80% and 70%, respectively, of their equipment from Russia. No other country in the world has such collaboration with India.

Cooperation in this area is based on a long-term program of military-technical cooperation for 2011-2020, which consists of more than 20 intergovernmental agreements. The total amount of contracts signed by India with Russia is over 35 billion dollars, more than with any other country.

The program of modernization of the Indian armed forces envisages bulk imports of modern weapons running into tens of billions of dollars, and Russia holds a key position in India's priorities. This sphere of Russian-Indian cooperation is characterized by the highest degree of confidentiality and trust. The situation is determined not so much by the plans or even individual target contracts as by the overall accomplished deals and joint projects for the future that are already being implemented. For example, the best supersonic missile in the world "BrahMos", which has already been inducted into service in India is at the same time being adapted for use by all kinds of troops, including air force and submarine fleet, or the fifth-generation fighter and multifunctional transport aircraft. A whole range of other initiatives and proposals for prospective projects are also being considered.

Russia readily shares technologies with India and focuses on joint production of military hardware. Prime Minister Narendra Modi's initiative to launch a nationwide program "Make in India" offers great opportunities for closer cooperation between Russian and Indian companies. Russia's participation in this programme is primarily seen in the establishment of

joint ventures in India in areas that have traditionally formed the basis of bilateral cooperation in the military-industrial as well as in civil production. It is about promoting projects such as the creation of medium multipurpose transport aircraft, fifth generation fighters, and production of components for the MC-21 aircraft. Russia pins high hopes on the production of the modern and highly prospective helicopter Ka-226 that it will be marketing together with Indian partners. Proposals are under consideration for the construction of ships and submarines, production of latest tanks and other modern military-technical equipment that has attracted the interest of Indian partners. Joint production is intended not only with state corporations, but also with major private companies.

— In your opinion, what is the BRICS for India and Russia?

— The BRICS and the SCO summits held in July? 2015 once again showed the identity of approach of Russia and India to the solution of pressing international problems and to strengthening the foundations of a multipolar world. The Indians share our position on the inadmissibility of the imposition of unilateral economic sanctions without UN approval. During the meeting in Ufa, Prime Minister Modi confirmed the view of India that such actions are detrimental to the global economy and make the task of strengthening the economic cooperation among the BRICS nations more urgent.

The BRICS Summit highlighted the need for transformation of the obsolete model of global financial system, creation of new institutions to meet modern challenges. The news about the establishment of the new development bank of BRICS and the pool of reserve currencies was welcomed in India. Indian partners hope that while expanding their activity, they will have better chances of borrowing funds for infrastructure projects, social and humanitarian programmes, which will ultimately strengthen economic stability. The proposals of Prime Minister Modi to conclude a customs agreement, to hold the first BRICS trade fair, to collaborate on the construction of railways and to participate in improving agricultural potential were warmly received.

In Indian political circles, Ufa was now firmly associated with a significant event — the beginning of the procedure for India's entry in the SCO as a full member. Such an expansion of the organization will, of course, raise its credibility and serve to strengthen the role of SCO in the international arena, promote cooperation in the interests of peace and security, in the fight against terrorism, drug trafficking and other global and regional challenges and threats. This is especially true in the context of reconciliation and stabilization in Afghanistan, joint efforts in countering the threat of ISIS and other dangerous manifestations of radical Islam.

President Putin and Prime Minister Modi met on the sidelines of the Ufa summits. Prime Minister Modi will come to Russia again before the end of the year on a bilateral visit. The preparatory work for this important event has already started. We are looking ahead to meetings of respective working groups and two intergovernmental commissions that will prepare specific proposals for the agenda. The forthcoming summit in Moscow will impart a new impetus to our relationship , raise them to a new level and impart fresh ideas that will enrich Russian-Indian cooperation.

— Has there been any impact of sanctions on the Russia-India relations?

— No, there has not been any impact. Even more, Russia has opened its borders for Indian agricultural produce like cheese, buffalo meat, the export of Indian fruits is also growing, like tangerines and even mangoes. We highly value India's readiness to help, though Russia has not fallen because of those sanctions. We are not going to die from hunger, let them under-

stand, it was a shot in their own leg, they are harming themselves.

— Can we talk on terrorism? It is the biggest challenge of our times.

— Unfortunately, we are in the same boat with India as regards terrorism. India knows not by hearsay what it means. We have been supporting India in her efforts to counter transborder terrorism, from Pakistan especially. ISIS is another scourge of the world and we are fighting it together. We have a very good machinery of consultations between Russia and India through foreign ministries, security councils and we have contacts between special agencies, we exchange information. It is a very productive dialogue, though not often visible.

You may remember, the first man who was tolling the bell of alarm was Mr Putin in October 2000. When he was speaking in the Parliament, he said that terrorism was the most terrible and most dangerous threat facing our two countries and the world. Mind you, it was much before the 9/11 NY outrage! We like nobody else understand India's high mission and sufferings from this – like Pathankot, but not only this, the examples are aplenty.

— What about culture and people-to-people contact?

— There are many schools teaching Russian in Delhi and other cities in India now. Russian is becoming more and more popular. Russian classes at the Russian Centre of Science and Culture are absolutely packed. More and more tourists visit Russia. We hope we will have visa free tourist flow between India and Russia soon. Our shining ideal on the bright horizon is to have completely visa free travel between Russia and India. The visa process for business people has been simplified very much. They used to complain it was difficult to get a visa, now they get one even on the basis of a fax invitation. That problem has been removed. Now, there is visa on arrival scheme, which has been a great simplification too. So we need more touristic exchanges, we need concerts. In the second half of this year, we shall have the Festival of Russian Culture.

We welcome the fact that from February 15, India will take the baton of chairmanship in BRICS from Russia. We hope that India's chair will be productive, fruitful and rich in content. India can offer the world so many good things according to traditions of Indian diplomacy, which we also value very highly. In our view Indian negotiators and diplomats are of highest professional caliber. We highly value our interaction with them, they are excellent but at times rather tough negotiators. A special trademark of Indian diplomacy is a very well prepared background for talks. They are very thoroughly versed in the situation and they have very flexible briefs for talks. There are many things we can borrow from our Indian colleagues.

You can write in capital letters: wrong are those people who try to compare us with other countries. Our friendship and strategic partnership has a separate niche in our mutual interaction. And it would be wrong to say that India is drifting towards the US. Russian-Indian friendship as a bedrock – has been there, as Mr Modi said in Moscow, is there and will remain there. We give India the best we have at our disposal. If India finds anything better elsewhere, we do not feel offended. Olden time notions of "fighting for India" are ideological clichés. We are not going to fight for India, we are going to fight with India against terrorism and other evils of our times.

These clichés were there when the world was divided into two opposing blocks and we were ideologically infested by Marxism-Leninism or whatever it was. Now we do not have any guiding ideology. For example, as Ambassador I cannot be a member of any political party. It is forbidden by law. We are honest in helping India, in maintaining friendship with India. We want to see India strong. We do not have any second thoughts about that. Even in the worst of nightmares we cannot imagine that we shall ever be enemies or be against each other. It is impossible because this friendship has so deep roots and it has permeated into the psyche of the two nations that it is impossible to think of anything like this. We are clear, we are honest, we are sincere in pursuing this course of action. **/RA&MG/**

Alexander M. Kadakin

Ambassador Extraordinary and Plenipotentiary of the Russian Federation to the Republic of India
Born: July 22, 1949 in the city of Kishinev, USSR. Ethnic Russian. Education: Graduated with honours from the Moscow State Institute (University) of International Relations under the Ministry of Foreign Affairs of the USSR in 1972. Language proficiency: English, Hindi, Urdu, French, Romanian.

Employment:

Joined the diplomatic service in 1972.
1971, 1972–78 — probationer, attaché, third secretary of the Embassy of the USSR in India, New Delhi.
1978–1983 — second, first secretary, counsellor of the Secretariat of the First Deputy Minister of Foreign Affairs of the USSR. (1979–85 — Asst. Professor of the Department of Indian Studies, the Moscow State Institute of International Relations).
1983–1989 — Assistant, Senior Assistant (Chef du Cabinet) to the First Deputy Minister of Foreign Affairs of the USSR.
1989–1991 — Minister-counsellor (DCM) of the Embassy of the USSR in India , New Delhi.
June-September 1991 — First Deputy Head of the Foreign Minister's Secretariat.
1991–1993 — Minister-counsellor (DCM) of the Embassy of the USSR/Russia in India, New Delhi.
1993–1997 — Ambassador Extraordinary and Plenipotentiary of the Russian Federation to the Kingdom of Nepal.
1997–1999 — Member of the Collegium, Director of the Linguistic Support Department of the Ministry of Foreign Affairs of the Russian Federation.
1999–2004 — Ambassador Extraordinary and Plenipotentiary of the Russian Federation to the Republic of India.
2004–2005 — Ambassador-at-Large, Secretary of the Council of the Heads of Entities of the Russian Federation , MFA.
2005–2009 — Ambassador Extraordinary and Plenipotentiary of the Russian Federation to the Kingdom of Sweden.
Since October 27, 2009 — Ambassador Extraordinary and Plenipotentiary of the Russian Federation to the Republic of India.

Publications: Authored and translated several books from English and Hindi. Published over 50 articles in scientific journals and press in Russia and India . Visited more than 30 countries. Has a number of Government decorations. The Order of Honour (2009) Was awarded the title of the Honoured Diplomatist of the Russian Federation (2004). Academican, Russian Academy of Natural Sciences.

BRICS COOPERATION

India continues to develop global interbank

On February Deputy Foreign Minister and Russian BRICS Sherpa Sergei Ryabkov met with the ambassadors of BRICS countries. In light of India's upcoming BRICS Presidency, the ambassadors received copies of a final report on the results of Russia's BRICS presidency released by the Foreign Ministry. It covers the events and initiatives that have been supported within BRICS, the implementation of which will be launched during the Indian and, subsequently, Chinese presidencies.

In compliance with the Terms of Reference for BRICS Chairpersonship, this report offers a clear view of the diverse spheres of cooperation in the interests of the BRICS countries in the period under review.

"BRICS has strengthened its global standing as an important factor in international affairs and an efficient mechanism for harmonizing the five countries' positions on the modern-day pressing challenges. The Group has been continuously improving its extensive architecture of cooperation mechanisms intended to promote hands-on enhancement of the global financial system's stability and reliability and the strengthening of trade, economic and investment cooperation between the BRICS participants and with other countries," the report reads. He sad also, that one of the main instruments of the BRICS economy policy is the BRICS interbank.

In order to develop and strengthen economic ties and investment cooperation between BRICS coun-

tries, in 2010 state financial institutions for development and export support of the BRICS nations entered into a Memorandum on cooperation, thus creating the BRICS interbank cooperation mechanism. The Memorandum is mainly designed to promote all-round, long-term, interbank cooperation between partners in order to enhance trade and economic relations between BRICS member nations as well as provide support for socially meaningful and regional projects. The BRICS interbank is considered further and as the investment tool for a wide range of developing countries of the whole world, in Asian and ATR also.

One of the main purposes of cooperation is to set up a scheme designed to provide financing and banking services for future investment projects that could be beneficial for the economic development of the BRICS countries.

The participants of the BRICS interbank cooperation mechanism are the Brazilian Development Bank (BNDES), State Corporation 'Bank for Development and Foreign Economic Affairs (Vnesheconombank)' (Russian Federation), Export-Import Bank of India, China Development Bank Corporation, Development Bank of Southern Africa (DBSA).

On the basis of agreements that have been signed within the framework of the BRICS interbank cooperation mechanism, the member banks have taken steps towards developing multilateral financial cooperation within the BRICS countries and created basic mechanisms for settling payments and financing investment projects in local currencies.

In the course of the official ceremony at the 6th BRICS Summit, interbank cooperation mechanism member banks signed an Agreement on Cooperation in innovations in the presence of Heads of State. The Agreement provides for the BRICS financing development institutions to support innovation activity and would help to ensure sustainable growth and inflow of investments in infrastructure sectors of economy and in energy efficient and high technology manufacturing sectors.

One of the major partners of Vnesheconombank in China is China Development Bank (CDB) being a competent development institution. Vnesheconombank and CDB initiated and became active partners in the Interbank Association of Shanghai Cooperation Organization (established in October 2005) and BRICS interbank cooperation mechanism (established in March 2010). The major line of cooperation between CDB and Vnesheconombank both in the context of multilateral mechanisms of interbank cooperation and on a bilateral basis is the implementation of collective investment projects.

Mutually profitable relationships between VEB and CDB have been underway within over 10 years now. 'Ten years of cooperation between the two banks demonstrated mutual understanding upon our joint implementation of development projects and assisted in creating such multilateral formats as SCO and BRICS Consortiums. I believe that we have huge potential for promoting further cooperation', says Vladimir Dmitriev, Chairman VEB. Over the past period VEB and CDB have undersigned credit agreements for a total amount of over 10 billion US dollars. Among Russian financial institutions VEB is still one of the heaviest borrowers of China Development Bank.

Within the frameworks of the 18-thregular Heads of Russian and Chinese Government meeting in Beijing held in October 2013 in the presence of Chairman of the Government of the Russian Federation Dmitry Medvedev and Premier of the State Council of the PRC Li Keqiang VEB and China Development Bank undersigned a credit agreement amounting to $ 400 million to fund the construction of the third unit of Ekibastuz GRES-2 power plant in the Republic of Kazakhstan. This project launched in 2009 shall meet growing requirement sin electrical power and capacity for Kazakhstan as well as fill the shortage of electrical power in Russian regions of the Southern Urals, Western Siberia and Altai. The project total cost is 12 billion Russian rubles. Now it involves 400 skilled workers and by the time the unit is started (scheduled for 2017) it is going to involve 1200 workers.

In May 2014 in the course of the formal visit by Vladimir Putin to China CDB, China Development Bank Corporation, Russian VEB, Gazprom and Yamal LNG, JSC undersigned Memorandum on fundraising Yamal LNG project. China Development Bank Corporation hall be a common coordinator of cooperation with Chinese financial institutions. It is expected that for the project funding credits will be obtained at Chinese banks for a term of 15 years. Yamal LNG project envisages LNG (liquefied natural gas) plant having a capacity of 16.5 million tons per year to be based on resource potential of South Tambei field. The project is being implement-

ed by Yamal LNG, JSC shares of which are held by NOVATEK, JSC (60%) Total (20%) and CNPC (20%).

Russian and Chinese development banks also cooperate in the field of Russian social programs. In autumn 2014 VEB Chairman Vladimir Dmitriev, CDB Chairman Zheng Zhijie and Agency for Housing Mortgage Lending (AHML) Director General Alexander Semenyaka have under signed Memorandum of funding AHML programs. Two programs, i.e. 'Housing for the Russian Family' and 'Leased Housing' shall involve the total funding of 135 billion rubles for a term of up to 25 years for 25 million square meters of low-income housing to be built.

Such housing is to be sold at a price that is 20% lower than a market one but no more than 30 thousand rubles for a square meter. At present, AHML is considering an opportunity for cooperating with Chinese construction companies and it is determined to study CDB's business experience in funding affordable housing construction in China.

The program of Russian chairman ship of BRICS (in Ufa city) involves series of activities with regard to security, foreign cooperation, information policy, economic and humanitarian cooperation. Financial activities are managed by Russian VEB.

The major part of activities shall be held in Moscow, Beijing and Ufa. Thus, in April Expert Meeting of BRICS financial organizations was in Moscow. In July under Shanghai Cooperation Organization and BRICS summits Vnesheconombank was to coordinate annual meeting of the heads of BRICS banks as well as BRICS and Shanghai Cooperation Organization Financial Forum in Ufa.

Development of cooperation with Brazilian financial institutions is prevailing for Vnesheconombank in order to promote Russian economic interests in Latin America and in BRICS format. The bank cooperates with all prominent Brazilian financial institutions including Banco do Brasil and Banco Nacional de Desenvolvimento Econômico e Social (BNDES). All this allows for wide range of interbank payments. The corresponding agreement son cooperation have been signed; country limit for conducting operations with Brazil and limit of documentary operations with Banco do Brasil have been set.

To involve more banks which could be potential participants of mutual payments made in national currencies, with in the frameworks of Intergovernmental Russian and Brazil Commission of commercial, science and technical cooperation a Working Party for interbank cooperation was established in October 2010.

The priority of Russia an and Brazil an Working Party is intensification of partnership between Russian and Brazil an financial institutions including working out popular interbank mechanisms for operations to be executed, i.e. setting liability limits, working out issues of mutual correspondent account so pening and managing, under signing memorandums of cooperation, extending credit facilities etc., as well as considering the possible Vnesheconombank participation together with authorized BRICS financial institutions to manage bilateral payments in Brazil an reals and Russian rubles.

In 2012 under BRICS interbank cooperation mechanism, where Vnesheconombank and BNDES are authorized financial institutions of Russia and Brazil, currency exchange Master Agreement and Agreement of acceptance of letters of credit were signed. **/RA&MG/**

PROSPECTS FOR RUSSIAN-INDIAN COOPERATION

On January, 2016, two St. Petersburg International Economic Forum panel sessions on bilateral relations between Russia and India took place in New Delhi: "Fulfilling the Indian–Russian economic promise" and "BRICS growth agenda: investment hot spots in Russia". It was the first time that SPIEF sessions had been held at The Global Business Summit. Prime Minister of India Narendra Modi greeted the members of the Russian delegation in person. The delegation consisted of Deputy Prime Minister and Economy Minister of the Republic of Mordovia Vladimir Mazov, and Minister of Economic Development of the Republic of Bashkortostan Sergey Novikov.

The panel discussions were organized by the Roscongress Foundation and the Times of India media group. The first panel session, entitled "Fulfilling the Indian–Russian economic promise," focused on issues related to developing and broadening economic ties, as well as collaboration in energy, health care, IT, and environmental protection. Taking part in the debate were Corporate Director of the Agency for Strategic Initiatives Marina Korotaeva; Vice-President of AFK Sistema Andrey Terebenin; Vice-President of SUN Group Shiv Vikram Khemka; CEO of Tata Power Delhi Distribution Limited Praveer Sinha; Vice-President of Inspur Technologies India Verinder Aggarwal; and Chairperson of New Delhi's Institute of Social Sciences, George Matthew. Presiding over the discussion was Founder and Managing Editor of Frontier Funds, Gavin Serkin.

"Our cooperation has made advances in healthcare, education and pharmaceuticals. Ties between universities should be built too: India must have more centres for Russian studies," observed George Matthew, Chairperson of the Institute of Social Sciences in New Delhi.

During the session entitled "BRICS growth agenda: investment hot spots in Russia," organized in conjunction with the Agency for Strategic Initiatives (ASI), there were presentations about projects in the republics of Bashkortostan and Mordovia, the Kostroma and Penza regions, and the Russian Far East.

Commenting on the outcome of the event, Anton Kobyakov, Advisor to the President of the Russian Federation and Executive Secretary of the St. Petersburg International Economic Forum Organizing Committee, said that the meetings were held in an impressive, business-like way. "The event was certainly a constructive one. Participants discussed the prospects for bilateral cooperation between our countries, and the practical plans for an expansion of our economic ties," said Anton Kobyakov. "In particular, we touched upon issues related to the holding of the upcoming 20th St. Petersburg International Economic Forum. Some useful proposals were put forward, including those related to the preparation of the programme for the Forum."

After the panel events in New Delhi, a Memorandum of Cooperation between the Confederation of Indian Industry (CII), the St. Petersburg International Economic Forum, and the Eastern Economic Forum (represented by the Roscongress Foundation) was signed. SPIEF and the CII have been working together since 2012. The document was signed with a view to increasing mutually beneficial cooperation in the field of promoting and organizing major congresses and exhibitions of international scope. **/RA&MG/**

REC: NATIONAL EXPORT CENTER

One of the key factors of long-term economic growth

At present, Russian economic policy measures are more focused on the development of full-cycle local production and production with high added value. Speaking at the recent session of the State Council devoted to import substitution held in Nizhniy Tagil President of Russia Vladimir Putin noted: 'The goal is not to substitute the imported goods with domestically produced ones in one way or another. Support should be provided to projects able to compete with foreign analogues on equal terms – both by quality, and by price.'

> ***"The goal is not to substitute the imported goods with domestically produced ones in one way or another. Support should be provided to projects able to compete with foreign analogues on equal terms – both by quality, and by price."***
>
> *(Vladimir PUTIN)*

The Center's range of services

development was based on a principle of conformity to the stages of export project life cycle. Otherwise, it is an arrangement of routing and support of requests submitted to governmental structures, rendering organizational and consulting, training and informing, and financial services. The basic idea of the Center is to combine the state opportunities with the client-oriented business approach.

The sales appeal on the world market is one of the key factors of long-term economic growth. But competition on foreign markets is not just a comparison of price and qualitative characteristics – it is also a competition of export support systems, which governments offer to non-raw-materials exporters.

Today, many agencies, development institutions and organizations — Ministry of Economy, Ministry of Industry and Trade, Finance Ministry, FAS, FCS, Vnesheconombank and others — are involved in activity aimed at supporting export in Russia. However an exporter lacked a single counterpart who would become a starting point for Russian manufacturers striving to reach the global market. For that reason, the Government of the Russian Federation decided to establish the Russian Export Center (REC) to operate in a single window format to support producers and provide their access to the most complete set of services for supporting export activity.

The Russian Export Centre is a joint-stock company established as part of Vnesheconombank . It offers a specialised one-stop-shop for exporters, providing financial and non-financial support, and interacting with relevant ministries and agencies. The establishment of the centre was mandated by the Russian government, with the decision to institute the company taken by Vnesheconombank's Supervisory Board on 13 April 2015. The centre was officially registered as a fully owned subsidiary of Vnesheconombank 21 April 2015.

With due consideration given to the strategic significance of the centre, the Russian government designated the legal status of the centre as a state export support institution in Federal Law No. 82-FZ dated 17 May 2007, "On the Bank for Development". On 29 June 2015, President Vladimir Putin signed a bill into law implementing the corresponding amendments to the legislation.

Following the confirmation of the centre's federal status, further work has been launched to formalise the centre's procedure for collaborating with the relevant federal executive bodies. This procedure is to be enshrined by a corresponding act of the Russian government. As part of establishing the one-stop-shop service, the Russian Export Centre will integrate the corporate aspect of Vnesheconombank Group organizations, with EXIAR and Eximbank of Russia to fall under the Centre's ownership.

The centre has been established to provide a specialized service for exporters. Its areas of expertise include export transactions, providing consultations on issues related to exports, assistance in organizing exports, and providing support related to export procedures.

Among other things, the centre focuses on supporting requests made by exporters working with relevant ministries, agencies and government services.

In providing non-financial assistance, the centre aims to coordinate the activities of Russian trade representative offices abroad in supporting export projects. At this initial state of the centre's development, services are provided to exporters free of charge.

The Center's range of services development was based on a principle of conformity to the stages of export project life cycle. Otherwise, it is an arrangement of routing and support of requests submitted to governmental structures, rendering organizational and consulting, training and informing, and financial services. The basic idea of the Center is to combine the state opportunities with the client-oriented business approach. Such approach will promote creation of favorable environment for the development of Russian export. The Center has already started to work both with experienced and with starting exporters independently on their volume and industrial specialization.

The financial block of REC is represented by the tools of Vnesheconombank Group. In the nearest future, RECIIA and Rosexim bank will be moved under REC corporate management and thus the financial "wing" of support is to be created. Integration of REC, RECIIA and Rosexim bank will help, first of all, to exclude duplication of functions, secondly, to reduce the volume of document circulation, and thirdly, to save the time of all participants of export activity. In order to establish efficient interaction of REC with RECIIA and Rosexim bank, a special end-to-end business process will be arranged, while all the clients who have addressed REC, RECIIA and Rosexim bank, will be included into an integrated client base.

In order to implement non-financial measures of rendering assistance to exporters, the Center will cooperate with partners and service providers in the key spheres of interaction. A model of obtaining the state support and the scheme of payment for services rendered through outsourcing will be developed. Potential spheres of interaction shall be: protection of intellectual property, legal support (including abroad), and logistics. Skolkovo Foundation, RBC and the Scientific and Technological Valley of the Moscow State University could be potential partners of the Center.

In spite of the fact that REC operates for only few months, it has already succeeded to buildup a portfolio of more than 100 projects in au-

The Russian Export Center

has chosen a way of direct communications with business. Meetings with representatives of industrial organizations and individual exporters are arranged on a regular basis. One of REC's goals is the accumulation of market information and transmitting business urgent requests to governmental structures. In order to find the most demanded requests it is planned to arrange regular quantitative and qualitative assessment of export environment.

tomotive, agricultural, aviation, mechanical engineering sectors, the sectors of nanotechnologies and microelectronics, etc.

The Russian Export Center has chosen a way of direct communications with business. Meetings with representatives of industrial organizations and individual exporters are arranged on a regular basis. One of REC's goals is the accumulation of market information and transmitting business urgent requests to governmental structures. In order to find the most demanded requests it is planned to arrange regular quantitative and qualitative assessment of export environment. The first research project is devoted to the transportation and logistics sphere of export activity. REC engages the widest possible audience of businessmen in its studies, which allows it to involve, on the one hand, new clients to work with REC, and on the other hand, to use the accumulated base to continue research in the future. Such an approach, together with regularly arranged studies, helps to monitor the dynamics of export support system development, and to obtain digital data of the results of work of all federal executive authorities involved in the support of export, and to elaborate recommendations for their further works in this sphere.

Besides, REC plans to carry out active educational activity. Thus, the first major educational project of the Russian Export Center will start in spring of 2016. It is not just a plan of regional seminars or a series of webinars, but it is a full-fledged systemic software product, which will include two key opportunities for the regions:

• Opportunity for starting exporters to obtain knowledge needed to start their export activity.

• Opportunity of professional development for employees engaged in regional infrastructure of export support.

Mini-MBA format was chosen for the program, which stipulates a practice-focused approach. Advisers competent in various spheres are engaged to develop and implement the programs, which gives an opportunity to create a really high-quality educational product. Training will be arranged in the full-time and remote modes, which will help to cover many regions within a short time period. Currently the Center is selecting pilot regions for the project approbation.

The urgency of the educational project was stipulated by the fact that one of the main challenges the enterprises faced in their export activity was the lack of knowledge in the field of foreign trade activities – it was especially true for the regional companies. Regular surveys of businessmen confirmed high demand for and motivation to training. /RA&MG/

The Russian Export Center

is a state export support institution, established as part of Vnesheconombank with the support of the government of the Russian Federation

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Vladimir Maximovsky

ROSCOSMOS

STATE CORPORATION FOR SPACE ACTIVITIES

Among the priority tasks of Roscosmos is cooperation with other countries related to study and use of space. Roscosmos develops bilateral and multilateral international political, economic, science and technical as well as legal collaboration. The Agency is internationally involved in fundamental space studies, satellite observations, global satellite navigation systems, earth remote sensing, use of space operating results and so on.

Roscosmos keeps on cooperating with its partners in terms of space exploration despite the challenging geopolitical environment. Russian space industry reform has not and will not influence obligations being fulfilled by Russia concerning international space cooperation including such of International Space Station (ISS) program and delivery of rocket engines to the USA.

Focus areas

Russia has concluded peaceful space study and use agreements with such countries as the USA, European states, China, India, Brazil, RSA and others as well as European and US space agencies (ESA and NASA) and other bodies.

Among the priority focus areas is carrying of foreign spacecraft by Russian launch vehicles with joint enterprises also involved for international marketing purposes. In this regard Russia has an obvious priority by making the major part of international commercial space launches.

It goes without saying that International Space Station Program is the current biggest international space project being implemented by Russia, the USA, European Space Agency members, Japan and Canada. Thus far the station cannot be reached without our launch vehicles since Russia is the only state to have spacecraft capable

of delivering cosmonauts and astronauts into orbit.

Last year it was agreed in principle to extend ISS operation till 2024, to develop station-based scientific and technical experimental procedures and make their outcomes available for all 15 ISS member states. It is going to ensure making many scientific experiments, the outcome of which will be further possibly used during training for long-term flights, to the Moon or Mars, for example.

The works over Center Spatial Guyanais-based Russian and European 'Soyuz' project are still under way now. The improved medium capacity vehicle 'Soyuz-ST' was launched for the first time from Kourou Space Center in October 2011. As of September 2015 12 such vehicles have been successfully launched from this center.

The very important area of Roscosmos international activity is Russian GLONASS positioning system-related cooperation with a number of foreign partners.

To accomplish tasks assigned Roscosmos along with other involved government authorities is engaged in developing and approving draft agreements with other countries with regard to various areas of space activity as well as implementing projects involving international bodies and associations (APEC, ASEAN, BRICS).

Roscosmos is fully engaged in the activities of UN Committee on Peaceful Uses of Outer Space (UNCOPUOUS), its scientific and technical and legal subcommittees, Inter Agencies Space Debris Coordination Committee (IADS), Committee on Space Research (COSPAR), Space Agency Forum, Committee on Earth Observation Satellites (CEOS), International Astronautical Congress (IAC), International Charter on Space and Major Disasters as well as other bodies.

The current situation is that manned cosmonautics and outer space research may be performed on the basis of extended international cooperation. Russia cannot be avoided in such projects.

Last Year Events

Quite recently, at the end of January, European Space Agency, NASA and Roscosmos discussed the opportunities of would-be International Lunar Station. Currently international expert group is working on defining how international space cooperation is to be implemented after ISS shutdown.

Russia has fully carried out its international obligations. 6 foreign spacecraft were launched, 4 space transports and 4 manned spacecraft under ISS-related program were successfully launched too. In 2015 Roscosmos trained four ISS crews.

Khrunichev Space Center subsidiary company International Launch Services and Intelsat, the leading world satellite service provider have undersigned a contract for 'Proton-M' to be launched five times from Baikonur space center till 2023.

NPO Energomash Scientific and Production Association named after academician Glushko and and US RD Amross company have concluded an additional agreement to deliver rocket engines. Up to and including 2019 NPO Energomash is to deliver to the USA 20 more RD-180 engines to be used as part of first stage launcher of Atlas V vehicle.

Roscosmos director general Igor Komarov has held negotiations with director general of French National Center for Space Studies (CNES) Jean-Yves Le Gall. They discussed conditions and opportunities of the bilateral space cooperation includ-

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ing Center Spatial Guyanais-based 'Soyuz-ST' program implementation. We agreed that French experts would be fully engaged in a number of Russian promising scientific and applied programs. Following the negotiations a long-term cooperation declaration of intentions has been signed with regard to space studies. An important event is to be a celebration of 50th anniversary of Russian and French space-related cooperation to be held in 2016.

In September negotiations with the head of Italian Space Agency (ASI) Roberto Battiston were held with regard to development of cooperation related to manned cosmonautics, use of ISS and improvement of European launch vehicle 'Vega'.

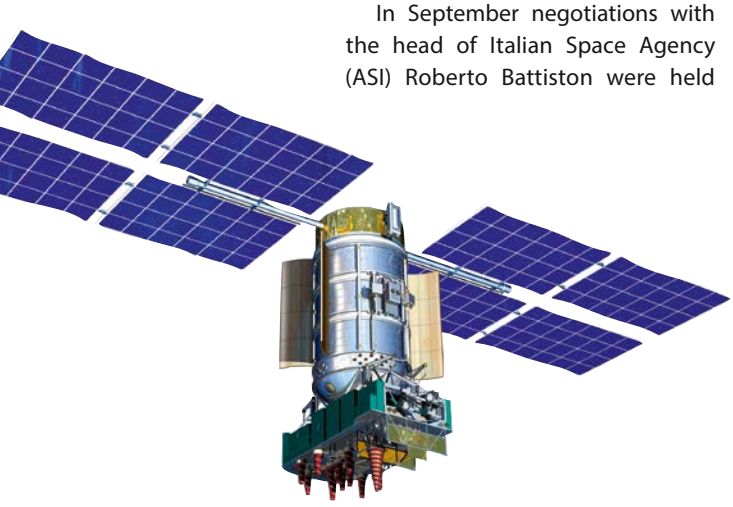
The same September there was a meeting with Brazilian Space Agency authorities. The parties intend to develop cooperation in navigation and Earth remote sensing, Brasilia-based land GLONASS stations and perform joint monitoring of space debris. Brasilia has taken a favorable view of our two land GLONASS stations and expressed its interest in increasing their number.

The head of Roscosmos met Ambassador Extraordinary and Plenipotentiary of Republic of Korea, Pak Ro Bek in November. They discussed practical issues of cooperation in creating methane engines, space electronic components and launch facility for new vehicles.

There was a declaration of compatibility and complementarity of GLONASS system and Chinese navigation system BeiDou as well as Memorandum on Cooperation in exchange of data of Earth remote sensing agreed with and signed by China National Space Administration (CNSA).

ExoMars-2016

The preparation of ExoMars-2016 expedition has come to its completion stage. This mission has to be the second largest after Russian and European project involving Kourou-based 'Soyuz-ST' vehicles launches. In the end of December 2015 ExoMars-2016 scientific units, i.e.



Last year it was agreed in principle to extend ISS operation till 2024, to develop station-based scientific and technical experimental procedures and make their outcomes available for all 15 ISS member states. It is going to ensure making many scientific experiments, the outcome of which will be further possibly used during training for long-term flights, to the Moon or Mars, for example.

orbital and demonstration landing modules Schiaparelli were delivered with 'Volga-Dnepr' An-124 aircraft to Baikonur Space Center. 'Proton-M' vehicle is due to be launched in the period from 14 to 25th of March, 2016. The unit will be launched by means of 'Briz-M' upper stage-equipped vehicle. Orbital platform and demonstration module are made by EKA. The orbital module with scientific instruments half of which has been produced by Russia will be engaged in studying trace gases in the atmosphere and water ice distribution in Mars soil. **/RA&MG/**

Roscosmos is fully engaged in the activities of UN Committee on Peaceful Uses of Outer Space (UNCOPUOUS), its scientific and technical and legal subcommittees, Inter Agencies Space Debris Coordination Committee (IADS), Committee on Space Research (COSPAR), Space Agency Forum, Committee on Earth Observation Satellites (CEOS), International Astronautical Congress (IAC), International Charter on Space and Major Disasters as well as other bodies.

RUSSIA: THE LARGEST PRODUCER OF WEAPONS

A defensive collaboration between Russia and India has long history and is for both countries a very important factor. Military and technical cooperation between Russia and India is on the rise now. India account for considerable part of Russian defense products delivery. This number may quite possibly rise significantly. Russian military and aviation products have proven themselves highly efficient for many reasons. India is one of the world's largest buyers of Russian arms, and also it sees a lot of projects with Russia in the framework of the biggest national program «Make in India». Cooperation between India and Russia in this area are based on the achievements of Russia as the largest producer of weapons in the world.

Since 2000, the Russian Federation has established a sufficiently effective system to manage military-technical cooperation between the Russian Federation and foreign states, incorporating the Federal Service for Military-Technical Cooperation ("FSMTC of Russia") as its critical enabler. The Federal Service for Military-Technical Cooperation is empowered with control and supervision functions in the MTC area. FSMTC of Russia shall be a decision making authority on import to and export from the Russian Federation of military purpose products as decreed by the President of the Russian Federation, also in the established manner and as authorized by the Russian Federation President, issue of licenses to military-technical cooperation-affiliated entities for import to and export from the Russian Federation of military purpose products;

"FSMTC of Russia" granting in the established manner foreign trade licenses to (from) corporate developers and manufacturers of military-purpose products and arranging exhibitions and shows of specimens of military purpose products in the Russian Federation and foreign states as required by the Government of the Russian Federation; and in the established manner and as required by competent authorities of foreign states, issue of end user's certificates for import military purpose products to corporate developers and manufactures of military purpose products.

For example, on the conference on summarizing of the results of advertising and exhibition activity in the area of military-technical cooperation of the Russian Federation with foreign countries in 2015 and activity planning for 2016 with participation of representatives of the interested federal executive authorities, military-technical cooperation affiliated entities and other Russian organizations was held on December FSMTC of Russia presented the departmental awards to the most active participants of the advertising and exhibition activity in the area of military-technical cooperation. Among the award recipients were the representatives of the Ministry of Defence of the Russian Federation, the Ministry of Internal Affairs of the Russian Federation, the Federal Service for Technical and Export Control, State Corporation «Rostec», «Rosoboronexport», «UAC», «Almaz-Antey» Corp., «Russian Helicopters», «RPC «Uralvagonzavod», «SPA «Bazalt», «KBP», FSUE «Gamma Scientific and Production Enterprise»…

From recent examples of successful participation equipment in the international exhibitions can remember a little. So, Russia took part in the arms exhibition in Gulf Defence & Aerospace 2015, an international exhibition of arms and military equipment to be held from 8 to 10 December in Kuwait City (Kuwait). «Rosoboronexport» seeks to intensify cooperation with the Gulf countries,

Major areas of FSMTC of Russia activities shall be:

— To perform control and supervision functions in the area of military-technical cooperation in compliance with laws of the Russian Federation;

— To participate jointly with other federal government authorities in elaboration of state policy in the area of military-technical cooperation and submit in the established manner relevant proposals to the President of the Russian Federation, the Government of the Russian Federation, and Defense Ministry of the Russian Federation;

— To ensure jointly with other federal government authorities implementation of key state policy guidelines in the area of military-technical cooperation as set by the President of the Russian Federation; and Within its competence and jointly with other federal government authorities, to implement state regulations in the area of military-technical cooperation.

which are interested in strengthening their armed forces. Russia has deservedly earned recognition as a reliable and independent partner while Russian weapons have proven their effectiveness and reliability in challenging combat and climatic conditions. The participation in the exhibition in Kuwait was another step to strengthen our position in the region," said Rosoboronexport Deputy Director General Sergey Goreslavsky, who heads the Company's delegation at the exhibition.

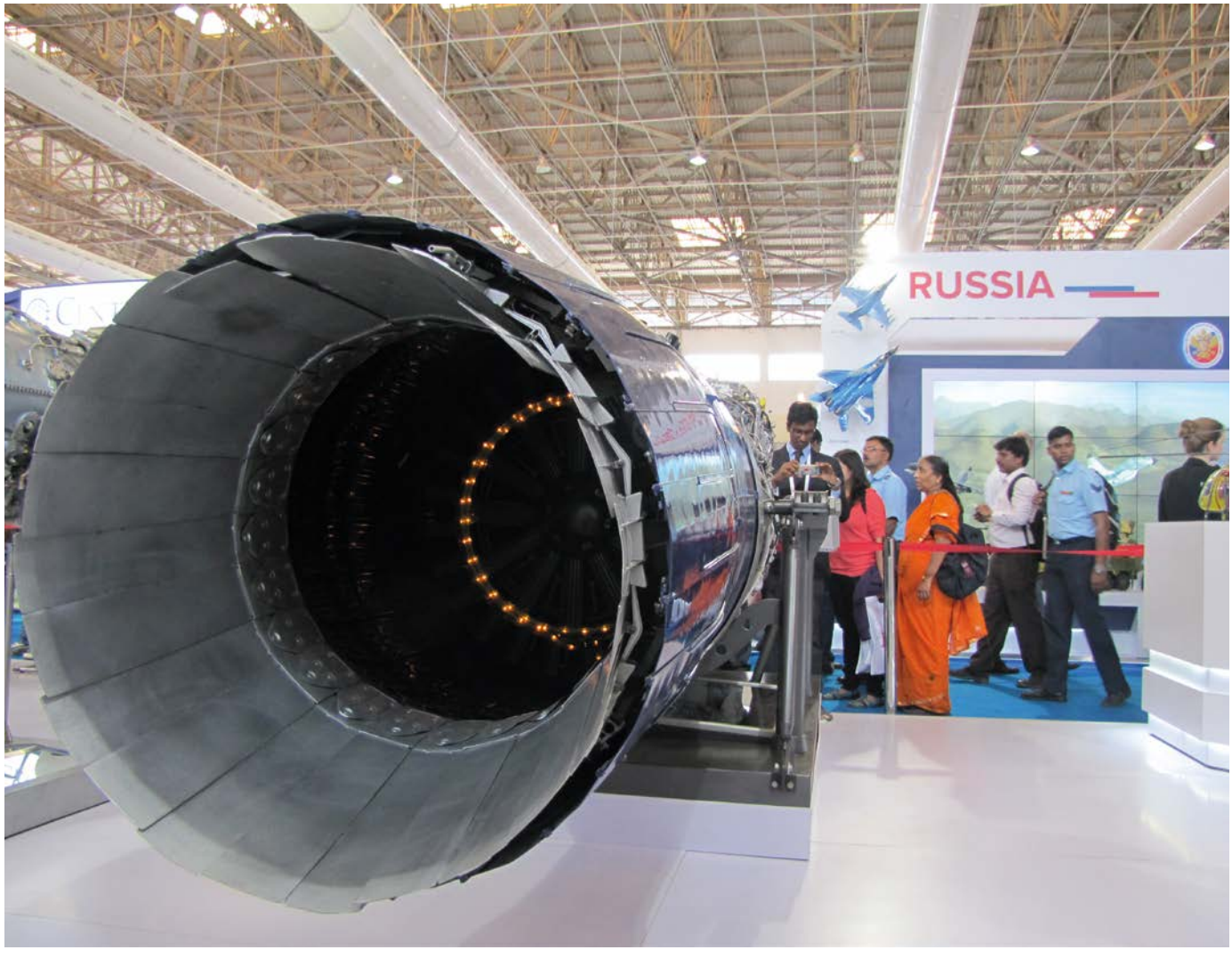
The Gulf states are showing interest in Russia's army, air force and air defense weaponry. In addition, Rosoboronexport promotes naval equipment here such as patrol boats, frigates, and coastal missile systems. The foreign delegations are expected to pay more attention to the T-90MS MBT, TOS-1A heavy flamethrower system, Typhoon-K MRAP vehicle, Kornet-EM ATGM system, Su-35 and MiG-29M/M2 fighters, Ka-52, Mi-28NE and Mi-35M attack helicopters, Mi-17 and Mi-26T2 transport helicopters, Yak-130 combat training aircraft, Il-76MD-90A military transport aircraft, as well as air defense weapons of various classes, including the Antey-2500 and S-400 long-range air defense missile systems, Buk-M2E medium-range SAM system, Pantsir-S1 air defense missile/gun system and Igla-S MANPADS.

At Gulf Defence & Aerospace 2015, Rosoboronexport talked with the representatives of the armed forces of the countries from the Middle East and other regions over the prospects for expanding military-technical cooperation.

The Russian delegation also included JSC NPO Splav (part of JSC NPO Tehmash) and JSC High-Precision Weapons (Vysokotochnye Kompleksy) represented by JSC Shipunov KBP Instrument Design Bureau, JSC Tula Arms Plant, JSC Kovrov Electromechanical Plant, JSC VNII Signal Research Institute and JSC Nudelman Precision Engineering Design Bureau (KBtochmash)

Military and technical cooperation with the region's nations tends to increase both in terms of quality and quantity. Thus, recently FSMTC of Russia experts have participated in 'DUBAI AIRSHOW-2015' international airspace exhibition held on November 8-12, 2015 in Dubai (United Arab Emirates). Russia has been an exhibitor at 'DUBAI AIRSHOW' since 1993. The Russian display area has been 678 square meters. The exposition involved 23 Russian enterprises including the largest ones like 'Rostech' State Corporation, 'Rosoboronexport', 'Almaz Antei', Russian aircraft Corporation MiG, 'Sukhoi', 'Vertoley Rossii' (Russian Helicopters). Altogether about 200 samples of Russian advanced defense products have been shown in Dubai.

During the exhibition Russia has held negotiations with delegations



of UAE, Kuwait, India, RSA, Malaysia, Bahrain, Egypt, Iraq, Indonesia, Jordan, Oman and other countries. They discussed prospects for Russian armament supply including aircraft, air weapons and air defense equipment as well as issues of creating maintenance facilities and establishing after-sale service.

Russia considers Kuwait to be among the most significant partners as to military and technical cooperation in this region and in whole Asia. Military and technical cooperation between our two countries goes deep. It began in 1978 and advanced in a rather active manner. Thus, back then our country provided Kuwait with about 700 'Strela' portable anti-aircraft missile systems and twenty 'Osa' air defense missile systems.

Extending cooperation between Russia and Kuwait is spoken by the Memorandum of military and technical cooperation between 'Rosoboronexport' and Defense Ministry of Kuwait undersigned in November last year, which shows Kuwaiti military's profound interest towards purchasing Russian military equipment. In particular, Kuwait is interested in Russian battle aircraft and air defense systems. Besides, much attention has been paid to creation of heavy infantry fighting vehicle (IFV) based on Enigma IFV developed by UAE and Russian AU-220M weapon station equipped with 57mm gun.

In this year at the Bahrain International Airshow 2016 (January 21-23) many countries displayed an interest in buying Russian aircraft, helicopters and air weapons. The Su-35 and MiG-29M/M2 multirole fighters, Yak-130 combat trainer, Il-76MD-90A military transport, Ka-52 and Mi-28NE attack helicopters, Mi-35M transport/attack helicopter, and Mi-17 type military transport helicopters have great export potential in the region.

"Rosoboronexport's order portfolio for aviation equipment exceeds currently $22 billion. Interest from foreign customers, including in the Middle East and North Africa, is growing. This stems from both launching new aircraft models to the international market and high operational effectiveness of modern Russian military aircraft, including its capabilities for delivering surgical strikes on ground targets. Demand is supported by an excellent cost-effectiveness ratio and Russia's reputation as a reliable and responsible partner in military-technical cooperation," said Sergey Kornev, Head of Air Force Equipment Export Department, who leads the Rosoboronexport's delegation at the exhibition. At the exhibition, Rosoboronexport showed the open presentation "Russian Military Aircraft Fighting against Terrorism," which analyzes the Russian aircraft's capabilities for use in counter-terrorist operations.

The Bahrain International Airshow has been held since 2010. This year, along with Rosoboronexport, it was attended by Russia's Federal Service for Military-Technical Cooperation, Russian Helicopters and United Aircraft Corporation delegations.

The special story is demanded by a subject of the Russian-Indian relations. The Russian-Indian scientific and technical conference "Effective after sale service – assurance of high operability of arms and military equipment" was held within the International Aviation and Space Salon "MAKS-2015" in Zhukovsky at the House of Scientists TSAGI under the aegis of FSMTC of Russia on August 25, 2015.

A.V.Fomin, Director of FSMTC of Russia, A.V.Potapov, Deputy Minister of Industry and Trade of the Russian Federation, representatives of JSC "Rosoboronexport" and leading military-industrial complex enterprises, whose production is in demand at Indian arms market, took part in the conference work from the Russian side.

A.K.Gupta, Secretary (Defence Production) of the Ministry of Defence of the Republic of India, S.Garg, Joint Secretary (Defence Industry Development) of the Indian Ministry of Defence, representatives of Armed Forces Headquarters (Air

In conformity with laws of the Russian Federation, FSMTC of Russia shall perform control and supervision functions relating to:

— Compliance, of activities in the field of military-technical cooperation of federal government authorities, government authorities of the Russian Federation constituencies, and Russian organizations empowered in the established manner to carry out foreign trade activities regarding military purpose products, corporate developers and manufacturers of military purpose products, other legal entities, officials and individuals, with legal acts and regulations of the Russian Federation and key state policy guidelines in the field of military-technical cooperation, requirements of the Russian Federation laws on export control over procurement of military purpose products;

— Implementation of underlying state policy principles in the field of military-technical cooperation including state monopoly;

— Efficient functioning of state regulatory system in the field of military-technical cooperation;

— Fulfillment of international treaties of the Russian Federation in the field of military-technical cooperation;

— Activities in the field of military-technical cooperation of representative offices of military-technical cooperation–affiliated entities in the Russian Federation and foreign states, as well as those of other organizations;

— Marketing, advertising, and exhibition activities in the field of military-technical cooperation;

— Efficient application of funds allocated from the federal budget to finance activities in the field of military-technical cooperation, as well as efficient use of federal property by military-technical cooperation–affiliated entities;

— Level of foreign trade prices for export and import military purpose products with due regard to protection of economic interests of the Russian Federation;

— Level of local prices for military purpose products to be funded out of the federal budget, and supplied to foreign customers under international treaties of the Russian Federation.

Force, Navy, Army), Indian enterprises concerned with operating, maintenance and repair of Russian origin military equipment.

During the Conference, its participants discussed the existing issues in area of after sale service of Russian origin military equipment in India and exchanged opinions about its effectiveness increase. It was proposed to Indian partners a comprehensive approach for maintenance of arms and military equipment during the whole life cycle from delivery to utilization. During the Conference, held in close friendly atmosphere, the representatives of Russian and Indian military-industrial complex established direct contacts and achieved a number of arrangements on improving of maintenance quality of Russian origin arms and military equipment.

In his interview for Russian Industrial Weekly newspaper Alexander Fomin, Director of FSMTC of Russia has described the extent to which the current stage of military and technical cooperation with other countries is significant. Among other things he said the following.

"Today the situation of world armament and military equipment market depends on many factors. These are ongoing global economic crisis, complex military and political situation in Middle East and North Africa, stepping up of military production competitors which include first of all the USA, Germany and France.

We should recognize stepping up of such armament exporters as China, Republic of Korea, Israel and Turkey as well as entry of new ambitious players like Japan and Republic of South Africa. It is needless to say that development of military and technical cooperation between Russia and other countries is to some extent influenced by so-called 'anti-Russian sanctions'. Nevertheless, Russia is still one of the largest global defense suppliers and it is keeping intensive military and technical cooperation underway.

Indian Air Force and Navy are armed with many Russian (Soviet) aviation equipment such as Su-30MKI, MiG-21, MiG-23, MiG-29 ground and ship-based fighters, Il-76 transport aircraft and Il-78 tankers,

TULSKY ORUZHEINY ZAVOD

Anti-Tank Guided Missile 9M113M of the «Konkurs-M» System

The missile is intended to engage modern vehicles equipped with the reactive armor, fortified fire emplacements, both moving or stationary surface and afloat targets and low flying helicopters at any time and weather conditions.

The operating temperature range is from –50°C to +50°C. The missile is launched from a combat vehicle, remote launcher or other units. The control of the missile is semi-automatic, the commands are transmitted over the wire communication line.

Caliber, *mm*	135
Average flight speed, *mps*	206
Firing range, *m*	75-4000
Sighting range, *m*	500
War head type	Tandem, cumulative
Average homogeneours armour equipped and unequipped with an active armour penetration with frequency not less 0,5, *mm*	750
Container length with a missile, *mm*	1263
9M113M.00.00.090 Packing for a missile: Dimensions (length, width, height), *mm*	1380x312x353
Weight with a missile, *kg*	49,4

7,62 mm Special Self-loading Pistol

The SSP is an individual weapon for the secret attack and defense also it is intended for noiseless and flameless shooting.
It shoots CP4 cartridges at a range of up to 50 m.
The reloading is carried out automatically with the aim of the blowback bolt recoil energy. The pistol has the firing and trigger mechanism that allows to fire with the full-cocking or self-cocking.
The safety system prevents accidental shots even if the trigger has been accidentally pulled or the pistol has been dropped.
The reliable work of the pistol is guaranteed in any climate conditions in the temperature range from –50°C to +50°C.

Caliber, *mm*	7,62
Bullet muzzle velocity, *mps*	200
Magazine capacity, *cartridges*	6
Overall dimensions, *mm*	30x140x165
Weight with an empty magazine, *kg*	0,7

5,45 mm Kalashnikov Short Assault Rifle with Folding Stock

The Kalashnikov 5,45-mm short assault rifle with a folding stock is an exceptionally effective individual firearm for shooting in the conditions of limited space. The small size and high hitting capability allow to use the assault rifle in every extreme situation. The conventional (with a steel core), tracer and high-penetrating bullets are used for firing. The energy of powder gases is used to reload the assault rifle.

Caliber, *mm*	5,45
Rate of fire, *r.p.m.*	650-700
Bullet muzzle velocity, *mps*	735
Sighting range, *m*	500
Magazine capacity, *cartridges*	30
Length of assault rifle, *mm*:	
with folded stock	490
with unfolded stock	730
Weight with a loaded magazine, *kg*	3,2

The firing and trigger mechanism of a hammer type is capable of delivering both automatic and single-shot fire. The folding buttstock is very handy, the fire may be delivered from various positions. The assault rifle dimensions are considerably smaller with a folded stock. The magazine is detachable of double-column sector type with the location of cartridges in a chess-board order.
The operating temperature range is from –50°C to +50°C.

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naval Tu-142M and Il-38, Mi-17, Mi-26, Ka-28 and Ka-31 helicopters. The mentioned aircraft are going to be used by Air Force and Navy of India for next decades and should be constantly maintained by Russia.

Nowadays India is much interested in establishing production of Ka-226T helicopters in India. There are negotiations underway as to cooperation conditions under this project. There is a possibility of additional lots of Mi-17V-5 helicopters to be delivered and increasing the number of Su-30MKI planes being produced under license in India. All this makes us enthusiastic in Russian and Indian cooperation in terms of battle aircraft.

Main areas of cooperation with Malaysia in this regard include after-sale service of Su-30MKM aircraft. In 2012 a maintenance facility was established under the delivery contract. Besides, there are efforts to promote additional lot of Su-30MKM's to Malaysian market. Currently Malaysia is considering proposals for upgrading MiG-29 planes delivered before.

Military and technical cooperation between Russia and China as to battle aircraft is also promising".

Answering the question of joint defense production to be established by Russia in partner countries, Director of FSVTS emphasized as follows:

"Decisions to establish joint defense-oriented enterprises are made by the President of the Russian Federation and the Government of the Russian Federation. Our Federal

TULSKY ORUZHEINY ZAVOD

1712

9 mm Special Assault Rifle AS

The 9 mm assault rifle AS is intended for noiseless and flameless shooting. The automatic reloading is based on the work of powder gases. The assault rifle is intended to engage the enemy manpower protected with bulletproof jackets and the non-armoured vehicles.

The design features of the assault rifle are:

— high characteristics in the accuracy of fire and closely-grouped fire are achieved due to original design of the assault rifle barrel;

— the high hitting is guarantied due to the sub-sonic velocity of a bullet;

— making single and automatic shots;

— the folding metal buttstock and the quick detachable silencer make it possible to reduce assault rifle dimensions;

— mounting seats for optical and night sights;

— absolute harmless handling is guarantied with safeties;

Caliber, *mm*	9
Bullet muzzle velocity, *mps*	up to 295
Magazine capacity, *cartridges*	20
Sighting range, *m*:	
with open and optical sight	up to 400
with night sighting device	up to 300
Length of assault rifle, *mm*:	
with unfolded stock	878
with folded stock	615
Weight with an empty magazine and without sights, *kg*	not more 2,5

The advantage of the assault rifle is a detachable double-column sector-type magazine with the cartridges located in a chess-board order and inter-changeable with VSS and SR-3 magazines. It fires the 9-mm armor – piercing cartridge SP6 and 9-mm sniping cartridge SP5.

9 mm Special Sniper Rifle VSS

Caliber, *mm*	9
Bullet muzzle velocity, *mps*	282 – 292
Magazine capacity, *cartridges*	10
Sighting range, *m*:	
with open and optical sight	up to 400
with night sighting device	up to 300
Weight with an empty magazine and without sights, *kg*	not more 2,6
Length of assault rifle, *mm*	894

The special sniper rifle is intended for noiseless and flameless shooting. The rifle is equipped with an optical sight also it is possible to install a night sighting device. The automatic reloading is effected by the energy of powder gases. The firing and trigger mechanism of a striker type allows to deliver both single-shot and automatic fire.

The design features of the sniper rifle are:

— the original design of the barrel allows to achieve high characteristics in the accuracy of fire and closely-grouped fire;

— the subsonic speed of a bullet and its high hitting effect;

— a silencer ensures noiseless and flameless shooting;

— a quick assembling into three parts makes it comfortable to carry the rifle secretly (in a special bag or case);

— the presence of safeties makes the rifle harmless in handling and prevents making any shots even if the trigger is accidentally pulled or the rifle is dropped or hit when the barrel bore is not locked.

The advantage of the sniper rifle is the presence of a detachable double-column sector-type magazine with the cartridges located in a chess-board order and interchangeable with AS and AM magazines.

The 9-mm armor-piercing cartridge SP6 and 9-mm sniper cartridge SP5 are used for the shooting.

9 mm Small-Size Assault Rifle AM

The 9-mm small-size assault rifle is intended to engage the enemy manpower wearing bulletproof jackets as well as the non-armored vehicles at a distance of 200 m. The automatic reloading is based on the work of powder gases.

The design features of the assault rifle are:

— the magazine quick "ejection" mechanism;

— the metal folding buttstock reduces the overall dimensions and allows to deliver aimed fire with folded or non-folded stock;

— the assault rifle dimensions are the same as a submachine gun has but the firing range and hitting effect of the assault rifle are considerably better.

Caliber, *mm*	9
Bullet muzzle velocity, *mps*	295
Magazine capacity, *cartridges*	10; 20
Length of assault rifle, *mm*:	
with unfolded stock	640
with folded stock	396
Weight of assault rifle with an empty 10-round magazine, *kg*	2,1
Rate of fire, *rpm*	840

The advantage of the assault rifle AM is a detachable double-column sector magazine with the cartridges located in a chess-board order and interchangeable with magazines of the AS and VSS firearms.

The 9-mm armour-piercing cartridge SP6 and 9-mm sniper cartridge SP5 are used for shooting.

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Service is responsible for implementing the mentioned decisions and monitoring.

In this regard I would like to state that while the decision to establish a joint enterprise is being prepared, the issue is to be addressed comprehensively in all departments and agencies including FSMTC of Russia, Russian Defense Ministry, and Ministry of Foreign Affairs, Ministry of Industry and Trade and other agencies in order to avoid losses for the Russian Federation. Besides, all factors like political, economic, military and technological ones should be taken into account. Targeted decisions are made as to each separate joint enterprise. Joint development and production are cross-pollinating and allow consolidating and developing technological potential of Russia as well as facilitate future innovation-driven growth".

Nowadays, promotional and exhibition activity is becoming one of the most important mechanisms of strengthening political and economic positions of states-exporters of arms to different regions of the world and also a set of actions efficiently assisting in innovative development of economy, primarily, of all the military-industrial complex, manufacturing of competitive goods through attracting investments and new technologies.

From 2000 till 2010 FSMTC of Russia in association with the concerned federal bodies of the executive branch created a harmonic and effective system of exhibitions regarding military purpose products (further – MPP) in the Russian Federation. This system is based on 3 nationwide exhibitions, held in the Central Region of Russia and covering principal areas in the field of production of arms and military equipment:

The International Aviation and Space Salon MAKS held starting from 1992 in odd-numbered years at the grounds of FSUE Flight Research Institute named after M.M.Gromov in Zhukovsky, Moscow Oblast;

The International Maritime Defense Show IMDS held starting from 2003 at Lenexpo Exhibition Complex in St.-Petersburg;

The International Show of Weapons and Military Equipment MVSV organized since 2004 in Moscow, which in 2010 has become the core exhibition within the International Forum "Engineering Technologies" held at the grounds of JSC "TVK "Russia" in Zhukovsky, Moscow Oblast.

The International Exhibition of Arms, Military Equipment and Ammunition "Russian exhibition of arms. Nizhny Tagil" at the grounds of the State Exhibition Centre of FSE Nizhny Tagil Institute of Metal Testing held in odd-numbered years is an attractive show and a salon of significant interest for foreign customers and partners. The pivotal and obvious advantage of this event is a unique test range which makes it possible to showcase in action a great deal of arms and large-sized samples of military hardware of the Land Forces.

The exhibitions organized in the Russian Federation proactively assist in promoting military-technical cooperation of the Russian Federation with foreign states and strengthening political and economic stands of Russia in various regions of the world. **/RA&MG/**

FSMTC of Russia shall:

— Submit in the established manner draft decisions of the President of the Russian Federation and the Government of the Russian Federation on deliveries of military purpose products to foreign customers, as well as on other foreign trade issues relating to military purpose products;

— Develop jointly with federal government stakeholders conceptual approaches for higher MTC efficiency, as well as review trends in the development of the world's market of military purpose products;

— Elaborate jointly with federal government stakeholders draft international treaties of the Russian Federation in the field of MTC and submit in the established manner proposals for concluding and implementation of any such treaties;

— Elaborate and submit in the established manner proposals for working out a state defense order regarding export and import military materiel under international treaties of the Russian Federation;

— make analysis of effective long-term international treaties of the Russian Federation providing for export military materiel adjusted for mutual debts, ability to settle them through goods exchange, and, if necessary, submit in the established manner relevant proposals;

— participate jointly with federal government stakeholders in drafting proposals for establishment, suspension, termination and resumption of MTC;

— submit in the established manner proposals for creating, composition and arranging activities of bilateral and multilateral intergovernmental commissions relating to MTC;

— set up relationships in the established manner with international organizations relating to MTC;

— be in charge of Russian sections of intergovernmental commissions relating to MTC as instructed by the President of the Russian Federation and the Government of the Russian Federation;

— review orders of foreign customers for supplies of military purpose products, record them, appoint contractors among MTC-affiliated entities, agree with federal government authorities on contractors among corporate developers and manufacturers of military purpose products contracted for supplies of the said products, inform foreign customers on accepting their orders for consideration, and supervise preparation and approval of relevant draft decisions, monitor progress of implementation of orders of foreign customers for supplies of military purpose products by MTC-affiliated entities;

— maintain record of orders of foreign customers for supplies of military purpose products placed directly with MTC-affiliated entities, and monitor progress of their implementation;

— streamline and supervise activities of MTC-affiliated entities, review and summarize results of their activities;

— maintain the register of MTC-affiliated entities and issue to them appropriate certificates;

— maintain record and registration, approve contracts for foreign trade activities relating to military purpose products, as well as maintain control of implementation of those contracts;

— if necessary, participate in talks conducted by MTC-affiliated entities with foreign customers for supplies of military purpose products;

— submit in the established manner proposals for implementation of key objectives and performance of functions of representative offices of the Russian Federation in foreign states regarding MTC;

— make proposals in the established manner for empowering corporate developers and manufacturers of military purpose products to carry out foreign trade activities and revoke the same from them;

— arrange exhibitions and shows of specimens of military purpose products in the Russian Federation and foreign countries as required by the Government of the Russian Federation;

— participate in working out proposals for MTC development with CIS-member states, and draft international treaties with those states on MTC issues;

— maintain relationships with authorized authorities of CIS-member states relating to export of military purpose products to third countries;

— take interdepartmental joint efforts relating to supplies and control over intended use of military purpose products under the Agreement of MTC Fundamental Principles dated 15 May 1992 between member states of the Organization of the Collective Security Treaty;

— maintain record of man-portable air defense systems sold and acquired by CIS-member states and promptly notify stakeholder states and international organizations of man-portable air defense systems sold and acquired by the Russian Federation;

— elaborate a consolidated volume of export military purpose products for the next year and control its performance;

— sponsor research and development of MTC-related works including its information coverage;

— streamline specialty retraining and skill enhancement system for staff involved in MTC;

— communicate to foreign customers scheduled phase-out of spare parts, plants, units, devices, and completing articles, specialty, training, and support materiel required for operability of earlier supplied military purpose products, as well as report about results of such communications to MTC-affiliated entities; and perform as state customer for export and import operations in the field of MTC to be carried out under international treaties of the Russian Federation, as well as customer for research and development works on MTC information coverage.

RUSSIAN HELICOPTERS FOR INDIA

Russian Helicopters, part of State Corporation Rostec, delivered the final batch of helicopters to India under a previously signed agreement. India received 151 Mi-17V-5 military transport helicopters produced by JSC Kazan Helicopters through Rosoboronexport. Under an agreement between the Russian and Indian governments with regard to cooperation in the helicopter industry, the production of no less than 200 Ka-226T helicopters and its modifications will be organized in India.

Russia and India have commenced a large project aimed to produce no less than 200 Ka-226T light utility multirole helicopters, as RIA Novosti was informed on Thursday by the press office of Russian Helicopters (part of State Corporation Rostec). During Indian Prime Minister Narendra Modi's visit to Moscow last December, the Russian and Indian governments signed the agreement on cooperation in the helicopter industry. According to the document, no less than 200 of the Ka-226T helicopters and its modifications will be manufactured in India.

The agreement also includes maintenance, operation, repairs of helicopters and provision of technical support. "Currently, the sides have begun implementing the agreement. Large-scale international deals usually have a lengthy preparation period, with deal details kept confidential. All work is being carried out in accordance with the terms of the agreement. Technical consultations and talks between the Russian and Indian companies involved in the project are already being conducted," said the company's press service.

The press office noted that "there are no contradictions between the partners". "In the nearest future we

will approve technical and organizational details covering all key parameters. The holding specialists are currently assessing production capacity of our Indian partners," informed the holding company.

According to the agreements, the localization of components "will be very deep: the contract will be implemented in accordance with the 'Make in India' program adopted by the Indian government."

The light multirole Ka-226T helicopter was designed by Kamov Design Bureau (a subsidiary of Russian Helicopters) and is serially produced at Kumertau Aviation Production Enterprise. It has a coaxial main rotor system and is noted for excellent controllability and power-to-weight ratio.

KA-226T is equipped with modern flight control equipment. The helicopter easily maneuvers in dense urban and mountainous areas. Absence of a tail rotor and compact size make it possible to use on small landing pads. Ka-226T boasts low noise level and meets all latest environmental performance requirements. It has a swappable transport module allowing to change the helicopter's functionality within a short time.

"India is one of the key markets for Russian helicopter building industry and the largest operator of Russian-made helicopters in the South-East Asia. Today, this country uses more than 400 helicopters, which have proved themselves well," said Russian Helicopter CEO Alexander Mikheev. "We produce high-tech multirole helicopters capable of solving the most difficult tasks anywhere in the world."

The Mi-17V-5 helicopters supplied to India are some of the best technically equipped helicopters of the Mi-8/17 series and gathered the best solutions of previous generations. Every Indian Mi-17V-5 helicopter is fitted with a KNEI-8 avionics suite. The suite has replaced multiple systems indicators with four large multifunctional that are easy to read and reduce the intensity of pilot's workload. This avionics suite also helps to cut down pre-flight inspection time by displaying all systems data and alerting the crew when necessary.

Besides, the helicopters supplied to India are equipped with the latest and more powerful engines, which will greatly enhance its payload carriage capability at higher altitudes, characteristic of the Indian landscape.

As recently announced, Russia and India have started to implement a large project aimed to manufacture of no less than 200 light multirole Ka-226T helicopters. According to documents signed by the governments of the two countries, no less than 200 of the Ka-226T helicopters and their modifications will be manufactured in India. The agreement also includes maintenance, operation, repairs of helicopters and provision of technical support.

In addition, the Indian Air Force is planning to order another 48 Mi-17V-5 helicopters. These new helicopters will be used for flights over various landscapes, in deserts as well as in mountainous regions.

The Indian Air Force (IAF) has received the last of the Mil Mi-17V-5 'Hip' medium-lift platforms it ordered from Russian Helicopters, ahead of the expected signing soon of a contract for more, it was announced on 2 February.

Delivery of this final batch of the 151 Mi-17V-5 helicopters for India marks the end of a procurement programme launched in 2008 (including 12 ordered for India's paramilitary forces). In July 2015, the IAF announced its intention to procure 48 additional platforms, but it has yet to sign a contract.

Russian Helicopters, (part of State Corporation Rostec), is one of the global leaders in helicopter production and the only helicopter design and production powerhouse in Russia. Russian Helicopters was founded in 2007 and is headquartered in Moscow. The company comprises five helicopter production facilities, two design bureaus, a spare parts production and repair facility, as well as an aftersale service branch responsible for maintenance and repair in Russia and all over the world. Its helicopters are popular among Russian ministries and state authorities (Ministry of Defence, Ministry of Internal Affairs, Emergency Control Ministry), operators (Gazpromavia, UTair), major Russian corporations. In 2014 its IFRS revenues increased 22,8% to RUB 169,8 billion. Deliveries reached 271 helicopters.

Produced by JSC Kazan Helicopters through Rosoboronexport, the Mi-17V-5s fielded by India are among the most advanced variants of the 'Hip' helicopter family. They are equipped with more powerful engines for 'hot and high' conditions (the IAF has employed them to sustain Indian Army formations deployed along the 6.4 km-high Siachen glacier in the Himalayas) and the KNEI-8 avionics suite that replaces the previous analogue cockpit with modern digital instrumentation.

India has also issued a request for information for its fleet to be fitted with an advanced electronic warfare (EW) suite that comprises radar warning receivers (RWRs), missile approach warning systems (MAWS), and countermeasure dispensing systems (CMDS).

A growing mission for the IAF is humanitarian and disaster relief (HADR), and the service is looking to procure the additional helicopters specifically to give it more capacity in this role. In 2013 one of the Mi-17V-5 helicopters was lost while participating in rescue operations in the flood-affected north of India, killing five.

While most of the delivered Mi-17V-5 helicopters have been weaponised, it is not clear if the additional 48 will be.

Kazan Helicopters produces Mi-8/17 series helicopters that are operated in over 100 countries worldwide. A wide range of configurations are produced: transport, passenger, search and rescue, landing and transport, among many others. Preparations are underway to launch production of the Mi-38 passenger transport helicopter. Since 1997, Kazan Helicopters has been certified to develop helicopter technology: today the light twin-engine Ansat helicopter is in series production.

Russian Helicopters demonstrated its newest multipurpose helicopters during the 4th Bahrain International Airshow – 2016 at Sakhir Air Base, Bahrain. The holding company not only showcased its products and capabilities in after-sales service for helicopters produced by Russian Helicopters but also conducted negotiations with current operators and potential buyers from North Africa, Near and Middle East.

One of the key focuses during negotiations was the development of an integrated after-sale service system and ensuring quick first-rate services for helicopters throughout their entire life cycle. The fleet of Soviet/Russian-made helicopters in Near and Middle Eastern countries today exceeds 500 civil and military aircrafts. The possibility to conduct timely maintenance and repairs in the target region would allow local operators to achieve better operability of helicopters and cut costs.

The Mi-171A2 helicopter, the successful heir of the most popular Mi-8/17 series of medium helicopters, has significantly better specs for consumers. With VK-2500PS-03 engines developed by Klimov, APU Safir that ensures engine start at heights up to 6,000 m, advanced aerodynamics of the main rotor's composite blades, and the X-shaped anti-torque rotor, this helicopter has better speed performance, lifting capacity, enhanced capabilities in mountain areas, at high temperatures and humidity, and lower operational expenses. The helicopter's ability to operate in adverse weather conditions, day and night, in mountain areas and above water is ensured by its new avionics, including the KBO-17 integrated open-architecture flight and navigation system and advanced automatic control system which allows piloting in automatic, automated and manual modes. High automation level makes it possible to use crews with just two members. At the present time, a flight test program with two prototypes is underway.

The Ansat light helicopter with the largest cabin in its class, up to seven passenger seats, will be of substantial interest to the air-show visitors. Certification of its VIP variant with five seats and an air-conditioning system makes the helicopter attractive for corporate and private customers. The cabin has shock-absorbing seats and vibration-reducing armrests. For additional passenger comfort there are also flight kits with active noise reduction. With the use of quick-detach equipment kits, Ansat can be quickly refit for a wide range of tasks including transportation of cargo and passengers, search and rescue operations, and medevac missions.

Russian Helicopters will also feature its multipurpose Ka-32A11BC model, which is capable of solving a variety of tasks, from cargo transportation internally and on an external sling to patrolling, search and rescue operations, and firefighting. The availability of quick-detach equipment kits makes it possible to quickly adapt the helicopter for the operator's tasks. The Ka-32A11BC is certified according to international standards; one of its main features is the ability to operate day and night in adverse weather conditions, above land and water. The helicopter is designed to land on unprepared and unpaved landing pads, with air temperatures up to + 45°C.

The Ka-226T helicopter has a unique set of features that make it indispensable for operations on small pads, including mountainous areas. Due to its excellent maneuverability, small size, absence of the antitorque rotor and high power-to-weight ratio, the helicopter is capable of performing transportation and special tasks under rough conditions. In addition to the above, its low noise level and compliance with modern and future environmental requirements make it possible to use the Ka-226T over densely populated areas. **/RA&MG/**

According to information from the Russian Helicopters

State Corporation Rostec is a Russian corporation founded in 2007 for the purpose of promoting the development, production and export of hi-tech civilian and military industry products. It comprises 700 organisations, nine of which have now been formed as holding companies of the military-industrial complex, five of them are involved in civil industries and 22 are directly controlled. Rostec's portfolio includes recognised brands such as Avtovaz, Kamaz, Russian Helicopters, and VSMPO-AVISMA. Rostec's organisations are located in 60 constituent entities of the Russian Federation and supply their products to the markets of more than 70 countries. The revenue of Rostec in 2014 amounted to RUB 964.5 billion. The tax deductions into the treasuries at all levels exceeded RUB 147.8 billion.

PALMA

PALMA is a close defensive line naval automated air defense missile/gun system designed forelimination all types of air attack means, including anti-ship missiles flying at low and extreme-low altitudes at close approaches to the warship.

Combined armament consists of 8 SOSNA-R guided by the laser beam high-precision missiles and 2 AO-18KD rapid-fire cannons. This combination provides for full scale air defense against the enemy air attack means in system area of responsibility. Main design features of PALMA system are: high precision unique multichannel automatic all-weather day/night optoelectronic control system, deployment of armament, target guidance and follow-up means directly inside the artillery mount on "the same axis" in order to exclude the errors caused by ship strains; automatic, semi-automatic and inertial operating modes.

PALMA firing module is comprised of an artillery mount with gear and optronic control systems. The armament of firing module consist of 2 AO-18KD rapid-fire cannon guns with link less feed system, with increased projectile muzzle velocity and with essentially increased service life, and 8 small size high effective SOSNA-R missiles.

SAM SOSNA-R has two stages and consists of march stage and droppable solid-propellant low smoke booster that has short working time.The missile has canard configuration and two-channel aerodynamic guidance system that is realized by two pairs of orthogonal aerodynamic control surfaces. SOSNA-R missile is deployed in a launcher container. It is maintenance-free. The missile is rolling during the flight. Initial rotating is received during its movement inside the container, during the flight the rotating is continuing due to wing unit. Control of the rolling missile implements by mean of gyroscope, which measures missile attitude position towards its list.

The combined control system is used for missile guidance. On launching trajectory – a radio command system is used, which is functioning in radiolocation mode. The guidance of marchstage is realized withhigh-

precision in laser information field received by photo receiver installed in the missile back end.

The missile munitions includes blast warhead, rod-fragmentation warhead, impact fuse and laser non-contact target sensor with continuous emission.

The optronic control system of PALMA ensures the target detection, automatic acquisition, tracking, measuring of angular coordinate and distance, and also laying of an information field of laser-beam control channel to the target at any time in the conditions of jamming and natural noise.

Optronic control system consists of gyrostabilized platform with two-channel stabilization and guidance system, TV system, thermal imaging channel, thermal imaging channel of missile direction finder, missile control laser-beam channel, laser range finder, digital computer, automatic control unit for target and missile acquisition and tracking, stabilization and guidance system equipment, display and control equipment.

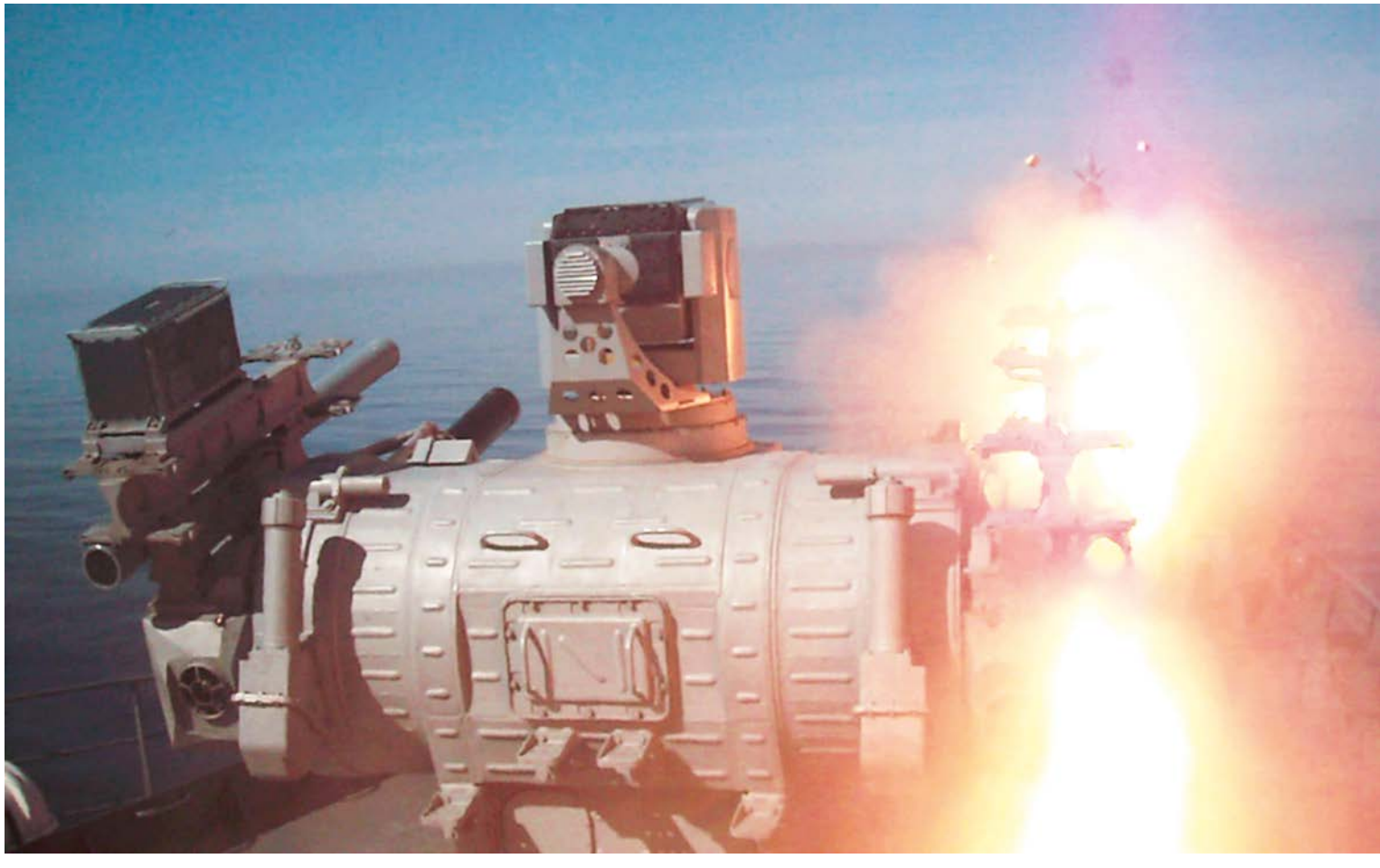
MAIN ADVANTAGES OF PALMA ADGMS:

1. Combination of high combat performance, jamming immunity, hiding operations, impossibility of the system destruction by anti-radar missiles.

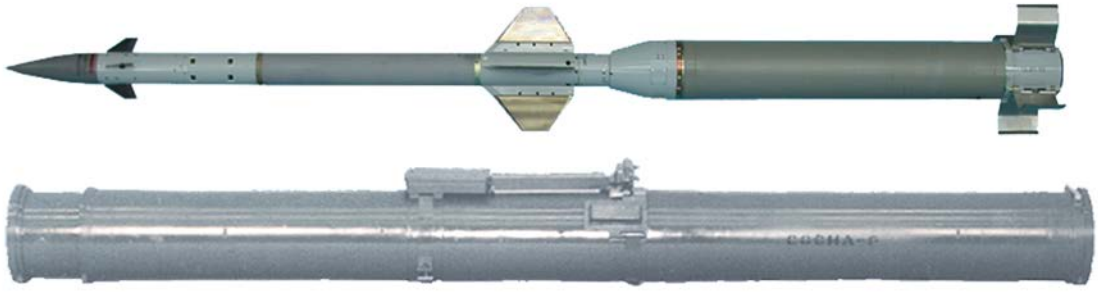
2. High firepower, short flying time of the missile to the target and the ability of the gun mount to conduct rapid fire.

MAIN PERFORMANCE CHARACTERISTICS

ARMAMENT	
missile	SAM SOSNA-R
weight, kg	30
weight in container, kg	42
maximum velocity, m/s	875
gun	two AO-18KD guns
caliber, mm	30
firing rate, shorts per minute	10 000
ammunition	HVAP-T; HEF-I, F-T
muzzle velocity, m/s	1100; 940
engagement zones, km	
in range	
missile	up to 10.0
gun	up to 4.0
in altitude	
missile	up to 5.0
gun	up to 3.0
reaction time, s	3.0 – 5.0
ammunition load, pcs	
SAM	8
projectiles	1000
weight with ammunition load, kg	7200

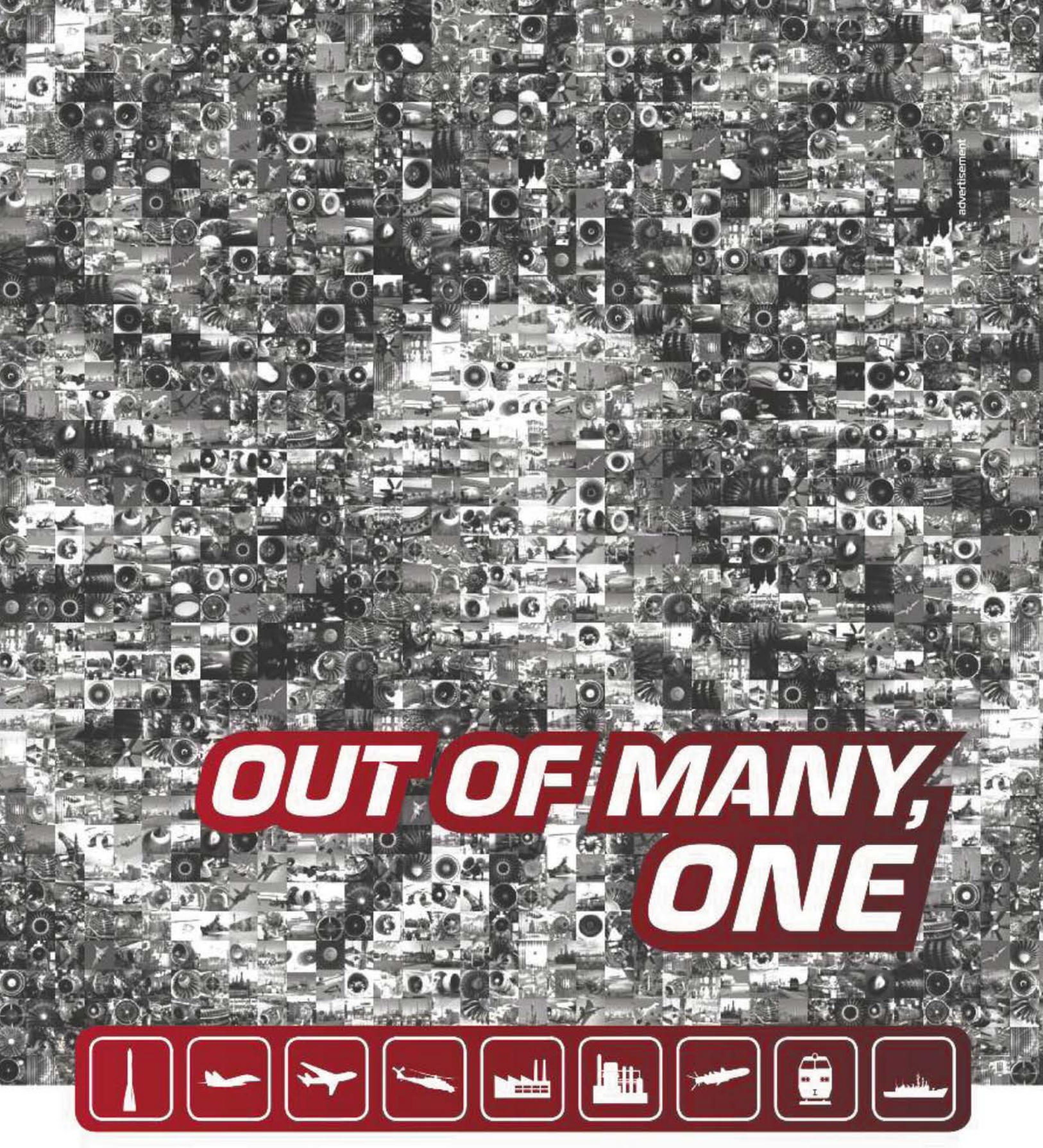


MAIN PERFORMANCE CHARACTERISTICS OF THE OPTRONIC CONTROL SYSTEM	
Operating modes	automatic, semi-automatic, inertial
Target detection	external target designation, autonomous automated target sector search
Range of guidance angles	
azimuth / elevation, deg	± 178 / -20...+82
Max angular velocity and acceleration, deg/s, deg/s^2	50/150
Field of vision, deg	
television system	2.0 x 3.0 / 7.1 x 9.4
thermal imaging channel	2.3 x 3.0 / 5.3 x 7.1
Acquisition range (meteorological optical range = 15 km, RH = 80%), km	
airplanes	12...30
helicopters	13...16
cruise missiles	8...14
armoured installations	8
Measured range, km	up to 20
Accuracy (MSE) of	
stabilization, mrad	0.07
inding coordinates / distances, mrad/m	0.2 / 5.0
laser range finder guidance	0.1
information field of laser beam control channel guidance, mrad	0.08 … 0.12



SAM SOSNA-R

MAIN PERFORMANCE CHARACTERISTICS OF SOSNA ADMS	
Armament	SAM SOSNA-R, 12 pcs.
Guidance system	combined: in start zone: radio command on the march: remote orientation in laser beam
Engagement zones, km	
in range	up to 10
in altitude	up to 5
Jamming immunity	very high, including modern radar and optical countermeasure equipments immunity
Day/night use	available
Time	
reaction, s	5 – 8
reloading, min	10
Operating mode	autonomous and centralized control



SPLAV:
NEW POSSIBILITIES OF MRLSS

SC "SPLAV SPA" is the leading Russian enterprise in development and organization of production of the Multiple Launcher Rocket Systems (MRLS) for the Army, Navy, and Air Force. Over its history from the time of its foundation in 1945, such outstanding systems as GRAD, URAGAN, SMERCH for the Army, GRAD-M, UDAV-1M, OGON', DAMBA, RPK-8 for the Navy have been developed at JSC "SPLAV SPA", dozens of unique techniques for the rocket projectiles, the artillery shell cases of calibers from 24 to 152 mm made of various materials have been elaborated. Nowadays our engineering developments and production techniques in the field of the rocket artillery and shell cases production are known worldwide

The distinctive feature of the Russian MRLSs development is striving of their designers to constantly enhance the rocket artillery combat capabilities through development of the new types of the rocket projectiles fitted with different-purpose warheads, as well as upgrade of the launch vehicles for the army-accepted systems.

Specialists of the enterprise have developed modernization programs for the GRAD and SMERCH systems which ensured execution of the fire missions on destruction of the enemy over a distance of, correspondingly, 40 and 120 km, enhancement of capabilities of fire engagement against the typical targets, computerization of the fire preparation and delivery, upgrade of the launch vehicles.

JSC "SPLAV SPA", being the world leader in delivery of ammunition for the Russian-produced MRLSs, conducts active operations in the field of military and technical cooperation through JSC "Rosoboronexport", the Russian State Intermediary.

Nowadays JSC "SPLAV SPA" offers at the international defense market upgraded GRAD and SMERCH MRLSs, including different-purpose warheads rocket projectiles with the range of fire of, correspondingly, 40 and 120 km, as well as the new generation of the 80mm unguided aircraft rocket armament, C-80FP HE-Fragmentation penetrating warhead unguided aircraft rocket projectile and a small-type high energy solid rocket propellant motor.

JSC "SPLAV SPA",

being the world leader in delivery of ammunition for the Russian-produced MRLSs, conducts active operations in the field of military and technical cooperation through JSC "Rosoboronexport", the Russian State Intermediary.

Presently the following systems are being offered for export:

GRAD MRLS:

1. 122mm Rocket Projectiles (RPs):

— 9M521 RP with increased power warhead;

— 9M522 HE-fragmentation separable warhead RP;
— 9M218 shaped-charge fragmentation submunitions RP.

2. 2B17-1Launch Vehicle (LV) is equipped with automated laying fire and control system (ALFCS).

Besides, the algorithm has been elaborated in order to upgrade GRAD and GRAD-1 MRLSs standard RPs by increasing the range of fire up to 40 km.

SMERCH MRLS:

1. 300mm RPs:
— 9M525 fragmentations submunitions warhead RP;
— 9M528 HE-fragmentation separable warhead RP;
— 9M529 fuel-air explosive warhead RP;
— 9M531 shaped-charge fragmentation submunitions warhead RP;
— 9M533 sensor-fuzed fragmentation submunitions warhead RP.

2. 9A52-2 LV (on MAZ chassis), 9A52-2T LV (on Tatra chassis) 9A52-4 LV (lightweight six-round launcher mounted on elongated KAMAZ chassis) equipped with ALFCS.

3. 9T234-2, 9T234-2T, 9T234-4 Transporter-Loaders.

4. 9F819 Arsenal Equipment.

5. 9F827 Training Aids.

6. 9F840 Training Set.

7. MP32M1Unified Command and Staff Vehicle.

8. 1B44 Radio Direction-Finding and Meteorological Complex.

Upgrade of GRAD and SMERCH LVs ensured the new capabilities of these systems:
— Fire delivery from the unsurveyed in the topographical respect firing position thanks to the autonomous calculation of the LV ramp longitudinal axis azimuth and plotting of the own coordinates;
— Cutting time from the moment of taking up of the temporary firing position to the moment of commencing fire by a factor of three;
— The LV ramp laying operable from the cab and without usage of the aiming points;
— Visual presentation on the computer screen of a graphical information for the LV ramp laying, the ground map with indication of the LV position, destination point, and route of advance;
— Increase in the LV survivability thanks to cutting time in the firing position;
— Increase of the operator-layer comfortability, especially in the adverse weather conditions and at night;
— Increase of the LV self-sustainment thanks to imparting to it of the navigation and topographical survey functions, which ensures shoot-and-scoot tactics, autonomous movement to the assembly point after firing, compensation of errors due to the human factor;
— reduction in the crew number up to 2 persons (GRAD MRLS), and up to 3 persons (SMERCH MRLS).

Beginning from 2003, the enterprise has been granted the right to independently carry out foreign trade activities with respect to the products for military purposes to the extent concerning delivery of spare parts, aggregates, assemblies, devices, completing units, special, training, and auxiliary equipment, technical documentation for the earlier delivered products for military purposes, carrying out of works on technical inspection, repair (including modernization subject to carrying out of R&D works), and other works ensuring complex service maintenance of the earlier delivered products for military purposes, as well as training of the foreign specialists in carrying out of the above works. **/RA&MG/**

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SECURE RESCUE AT ANY HEIGHT

Unique autonomous rescue parachuting back-pack system for emergency escape

The innovative Russian private Space Rescue Systems Ltd. (SRS Ltd.) company (www.cosmic-rs.com) proposes a unique and unrivalled emergency rescue vehicle SPARS® — an Autonomous Rescue Pneumo Transformable Chute Back-pack System — a validated forefront rescue solution for guaranteed secure individual emergency escape from nearly any high elevation structure (skyscrapers, offshore platforms etc.). The SPARS® project is resulted in a creation of a brand new pneumo-framed aerodynamic devices technology. There is no doubt in the near future this solution is going to be a must-have in skyscrapers construction all over the world

The SRS Ltd. proposes a SPARS® high rise escape technology that has a global nature. It is uncovered market niche with an obvious but unrealized human requirement to be and to feel safe while living or working in high elevation buildings. In case of emergency than traditional evacuation is impossible or ineffective those people all over the world have practically no means of urgent secure rescue from the height and need an alternative solution.

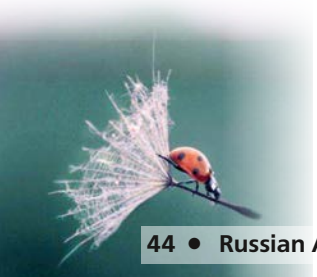
Actually the technical reviews shows that at present there are practically no means for secure alternative escape starting from 60÷80 m height and higher available on the market. But according to the sad firefighter's statistics about 3÷5% of people being caught in alarm situation on the high-rise building used to try escaping from the windows and usually perished. On the other side homeland security analytics says that in average an every skyscraper in the world is expected to be subjected to a fire case (terroristic attack or other emergency) once in every 47 years.

So the SRS Ltd. has decided to resolve the problem in finding an alternative to traditional evacuation methods technical solution. It takes about eight years of R&D to resolve the task. Finally it is resulted in creation a brand new escape technology - an Autonomous Rescue Pneumo Transformable Chute Back-pack Solution for secure personal rescue from high-elevation structure in case of emergency than traditional evacuation methods are impossible.

The SRS. Ltd company in outsourcing cooperation with 18 leading Russian and foreign aerospace companies has fulfilled full-scale research and development activities to develop the project from conceptual proposal stage to releasing operating prototypes unparalleled anywhere in the world.

The SPARS® escape technology is based on a synergy of sophisticated aerospace technologies such as Air-Aspirator Rapid Inflation; Elastic Pneumo-Frame Catapult Ejection; Air-Drag Deceleration; Air-Bag Shock Absorbing and others. Such technologies were invented for space probes deceleration during descent in atmospheres of Solar system planets and its landings on surfaces.

The SPARS® device provides a secure individual escape of untrained person or valuables cargos with weights 45÷120 kg. from about any of existing high-rise (50÷1000m) facilities (skyscrapers; towers; offshore platforms etc.) with guaranteed safe landing on any underlying surface in urban terrain or water in



case of emergencies than traditional evacuation methods are impossible.

The SPARS® solution meets the Russian Ministry of Emergency Situations (EMERCOM) requirements for high-rise emergency escape apparatus (GOST R 22.9.08–2005; GOST R 12.4.206–99) and provides for the following unique capabilities, never implemented before:

1. Alternative of emergency escape (so-called 'last resort rescue')
2. Emergency evacuation of an untrained person having weight of 45÷120 kg, from heights of 50÷1,000 m;
3. Ready-for-use in 45÷60 sec;
4. Self-sustained operation and independently selected escape route;
5. User-friendly operation for untrained persons and fully automated rescue procedure right from start;
6. Personal protection against external hazards during evacuation;
7. Appropriate weight of a back-pack-type carried device;
8. Secure injury-free landing on any underlying surface.

The SPARS® unit for individual use had required a special certificate basis. In this regard the National Standard (GOST) 4240-001-2012 specifying medical and technical requirements for injury-free operation by untrained persons rescued by means of new type SPARS® shock-absorbing systems entered into force in 2013.

To have certification tests performed a special Hybrid-III (USA) crush test dummy-based anthropomorphous (bionic-like) instrumentation station has been developed and created by the SRS Ltd., which has no equals in Russia.

A full cycle of comprehensive calculations and testing to validate design properties and performance has been performed. Up to now the SPARS® device technical operational reliability is 98.7% but further testing is under way.

New SPARS® escape solution provides the following advantages:

1. Alternative (a "last resort") escape mean for ordinary person in case of emergency in the high-rise structure;
2. Secure rescue of untrained personnel (18÷70 years old) from high elevations from 5 till 1000m (no practical means available starting from 50 m height);
3. Off-line capability of the system provides mobility that helps to find optimal self-escape way of out from emergency situation;
4. Smooth automated ejection from the emergency object after manual initialization of the system;
5. Guaranteed deploy of the canopy with 3÷5 m loss of height irrespective of air flow speed pressure;
6. Protection from dangerous external factors (fire, hits, smoke) during descent;
7. Safe landing on any underlying surface in urban terrain;
8. Reusable and does not sink.

In packed and assembly complete mode the SPARS® system weights 25 kg with back-pack dimensions

The SPARS® General Specifications

1. Total Assembly Weight – 25 kg
2. Rescue Payload Weight – 45÷120 kg
3. Descent Elevations – 5÷1000 m
4. Landing Velocity – 5÷7 m/s
5. Landing Angle – < 30°
6. Footboard Barrier Elevation – 1.5 m
7. Descent Time – 3÷150 s
8. Ready-to-use Time – 45÷60 s
9. Launch Initialization Time – 15÷20 s
10. Inflating Gas – Air;
11. General Dimensions:
    a. Aassembled – 900x450x300 mm
    b. In Descent mode – 6,500x2,700mm *(without conopy)*

Actual Landing Impact Loads:

Acceleration directions:

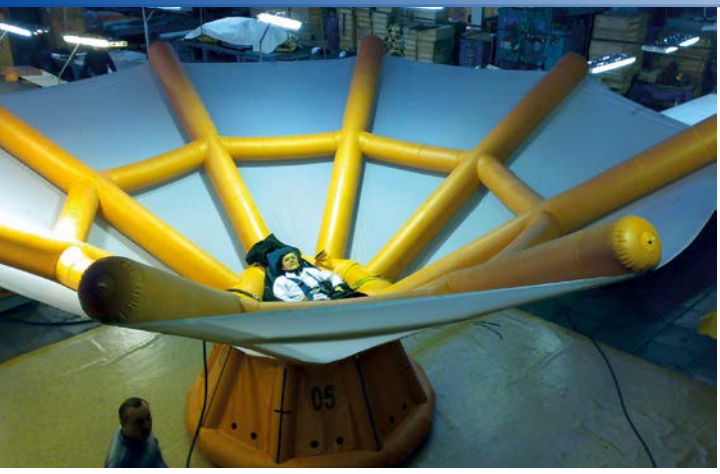
'chest-to-back' – up to 8÷10 g

' side-to-side', 'head-to-pelvis' – up to ± 6 g

Acceleration Exposition Time – less than 0.5 s

Acceleration Growth Velocity – less than 500 1/s

User's age – 18÷70 years



850x450x350mm and has easy- to-use suspension system.

The SPARS® has its Technical Data Sheet (TU 801130–5047075064–01–10) and working design documents issued. Under the SRS Ltd requirements Russian gas-filling systems (GFS) manufacturing company has mastered Autonomous Two-Stage GFS for SPARS® (TU 8042–017–45307693–2013).

The SRS Ltd. Intellectual Property Rights on SPARS® and its 'know-hows' have been completely protected within Russia (9 Patens, 3 Trade Marks) and abroad under PCT (Patent Cooperation Treaty) procedures 2 'umbrella' requests for SPARS® have entered national level in 15 countries and covered 78% skyscrapers and 95% potential SPARS® manufacturers. 13 Patents of the US, China, Japan, Canada, South Korea, Singapore, the Ukraine, Indonesia, Malasia and Australia have been already received.

Three Russian EMERCOM Certificates of Conformity were received for the SPARS®. 'Aerospace medicine and military ergonomics' R&D Institute of the Russian Air Force has granted an official approval for the SPARS® physical adaptability.

The SRS Ltd. company now is looking for cooperation with a strategic Partner and/or investor in order to industrialize the brand new SPARS® product; to make it commercial; to prepare and set up its production and to enter with it into a global commercial market having all necessary intellectually property rights protected.

An accurate assessment of the terms, timeframes and investments required for the SPARS® industrialization it is foreseen that a Partner from the region where product itself (or its production) could be demanded (Middle East, China, US, Europe, Asia-Pacific etc.) could formulate and provide the SRS Ltd. Company with the regional authority technical requirements to upgrade the product specifications and also could determine the necessary level of licensing.

At the same time in order to reduce production costs it is desirable to find and select a local manufacturer taking into account its technical capabilities and possibility to use appropriate production process technologies.

Upon receiving necessary information from a Partner the SRS Ltd. Company could finalize the design documentation, to fabricate a prototype with specifications meeting local needs and to determine expected investments and timeframes necessary to prepare and to run mass production of the product in the region.

Shares and Conditions in the business organization is a matter of further negotiations. The SRS Ltd. Company would be ready to demonstrate its good willing approach and to meet a Partner in negotiations halfway with necessary flexibility in some critical questions aiming to achieve mutually beneficial cooperation.

Such forms of cooperation as Joint Venture, Technical, Manufacturing or License Agreements are feasible.

For a strategic industrial Partner sought who would be interested to

There are following innovations in the proposed SPARS® technology:

1. A brand new free parachuting technology (means and escape method) was created for emergency escape from heights higher than 50 m where practical methods for safe evacuation of a person are not available on the market.
2. Sinergy solution based on specially designed and produced from film-laminated fabric a rapid inflatable air-beam single volume frame structure for:
   - Elastic catapult ejection of a human from a window of an emergency object;
   - Forced deploy of the canopy with only 3÷5 m loss of height and irrespective of air flow speed pressure for deployment (usual parachute requires of 25÷100 m free fall and/or 250÷350 km/h speed of airplane to be deployed);
   - Guaranteed safe landing with 5÷6 m/s vertical velocity on any underlying surface in urban terrain using integrated air-frame shock absorbing pneumo dumper.
3. Fully automatic mode of usage (after manual initialisation of the apparatus) and all the descend envelope accelerations bearable for an ordinary person make the escape solution available for use by untrained people from 18 till 70 years old;
4. New type of light weight air-proof film coated fabric for air-beam inflatable frame structure was created.

The Special National Standard (GOST) for shock acceleration limits for untrained human using new type of lodgment Rescue Parachuting Systems was issued.
The Crash test dummy Hybrid-III 50% percentile was instrumented, calibrated with the help of centrifuge, certified and used as anthropomorphic instrument for human acceleration checking during field tests and validation of the Autonomous Pneumo Transformable Escape Chute.

run mass production of the SPARS® in the region and enter an empty market with protected rights it would be necessary to have production technology experience in the fields of:

- thin coated/laminated fabric manufacturing;
- assembly from these fabrics a complex air-beam-frame air-proof inflatable structures;
- parachute canopy manufacturing;
- air-aspirator gas filling manufacturing;
- plastics (carbon) manufacturing and forming
- human field (air-borne) tests plastic forming and others.

A Partner sought may be expected to undertake part of those activities or provide financing for already SRS Ltd. Company existing outsourcing manufacturing solution in Russia on a mutually beneficial basis.

As for the SPARS® solution operation such a potential entity sought (hotels, profitable houses; skyscraper's management company; offshore platform management; airborne attractions & entertainment companies etc.) should only require a free window exit sized 1000x500 mm at the appropriate height to use Autonomous Pneumo Transformable Escape Chute and propose to its clients an additional exceptional secure service with limited warranty.

General market estimations shows there are over 7,303 finished and 2,500 under construction skyscrapers worldwide with the heights of 100÷828m, over 100,000 buildings having height of 50÷100m and more than 800 offshore platforms. Taking that analysis into account the SPARS® may have potential market capacity of up to $700-850 million annually.

Furthermore, the SPARS® estimated potential market capacity is worth over $3.5 billion in commercial sector alone. The Governments market is bigger but for accepting that new technology implementation it may require some updates of the appropriate local norms and regulations. **/RA&MG/**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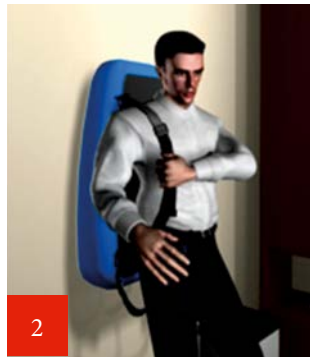
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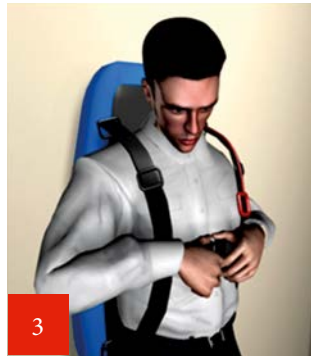
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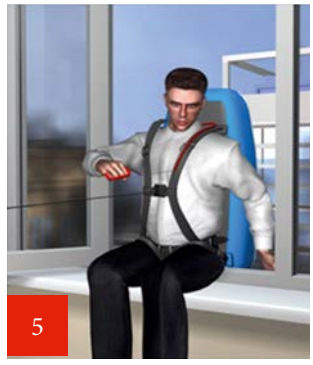
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Plan of the magazine «Russian Aviation & Military Guide» 2016

	Release dates	Additional distribution
«RA&MG» №01	February 15th	SINGAPORE AIRSHOW-2016 *(Singapore, February 16-21)*
«RA&MG» №2	March 14th March 27th	INDIA AVIATION 2016 *(India, March 16-20)* DEFEXPO INDIA 2016 *(India, March 28-31)* International Naval exhibition and the conference DIMDEX 2016 *(Qatar, March 28-31)* International exhibition of aerospace and military equipment FIDAE 2016 *(Chile, March 29th – April 3rd)*
«RA&MG» №3	April 16th	International Asian conference and the exhibition of systems and services for the defense industry DSA 2016 *(Malaysia, April 18-21)* International air show in North Africa MARRAKESH AIR SHOW 2016 *(Morocco, April 27-30)*
«RA&MG»№4	May 5th May 27th	International conference and the exhibition of the special rapid reaction forces SOFEX 2016 *(Jordan, May 10-12)* International aerospace exhibition and the conference ILA Berlin Air Show 2016 *(Germany, May 31th — June 5th)*
«RA&MG»№5	June 10th	International exhibition of arms, security technologies and instruments of defense EUROSATORY-2016, *(France, June 13-17)*
«RA&MG»№6	September 12th	nternational African exhibition of the defensive aerospace industry and security technologies Africa Aerospace and Defence 2016 *(South Africa, September 14-17)*
«RA&MG»№7	October 14th	International exhibition of the naval equipment and arms EURONAVAL 2016 *(France, October 24-28)*
«RA&MG»№8	October 31th	International exhibition of arms and the military equipment InfoDefence *(Indonesia, November 2-5)* International aerospace exhibition Air Show China *(China, November 1-6)* DUBAI Helishow, *(Dubai, November 7-9)*
«RA&MG»№9	November 15th	International exhibition of the Navy in Latin America ExpoNaval *(Chile, December 1-8)*
«RA&MG»№10	December 10th	The results of the export of Russian aviation and military equipment in 2016

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