

RUSSIAN NAVY & TECHNOLOGY GUIDE

Special analytical export project of Industrial Weekly

№ 06 (13) June, 2017

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EDITORIAL



For Any of the Oceans

Russian navy technologies cooperation with other countries is developing very actively. Experience in the supply of Russian technology to countries in the different confirms the high quality and reliability of these weapons and military equipment, including ships and other things for navy. Today efficiency and reliability are the main criteria. This is especially important given the difficult situation on the world stage. Threat of local conflicts to be evolved into global ones, failure of worldwide system of safety and non-ending 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. With hi-tech technology, solid aftersales service and proven reliability of products, Russia is honest and friendly partner for many countries, ready for mutual work. At the exhibition IMDS2017 Russia again represents their best products and programs of modernization, prepared for use all over the world.

Valeriy Stolnikov

RUSSIAN PREMIERE AT FAMEX 2017

JSC Rosoboronexport (part of the Rostec State Corporation) organized the first Russian display at the FAMEX 2017, Mexico's Aerospace Exhibition, to be held at Air Force Base 1, Saint Lucia, Mexico.

'Rosoboronexport has pursued a coherent policy to cement its positions in the countries of Latin America. The region accounts for more than 9 per cent of the entire export of Russian military equipment since 2001. The majority of this equipment is made up of aircraft and helicopters making up the centerpiece of FAMEX,' said Alexander Denisov, Head of Rosoboronexport's Marketing Department, who leads the company's delegation to the exhibition. Rosoboronexport presented over 160 pieces of Russian military equipment. Russia's joint delegation to FAMEX 2017 also included the representatives of the Russian Helicopters holding company.

Rosoboronexport's specialists expect the following aircraft to gain the greatest popularity in the region: the Yak-130 combat trainer, Su-30MK multirole air superiority fighter and MiG-29M multirole front-line fighter. Russian helicopters that may catch the interest of foreign customers include the Mi-28NE and Ka-52 attack helicopters, Mi-17V-5 and Mi-171Sh military transport helicopters, Mi-35M attack/transport helicopter, Ansat light multirole helicopter and Mi-26T2 heavy transport helicopter. Foreign customers have also shown invariable interest in the Russian air defense assets, such as the Pantsir-S1 air defense missile system.

Regional countries also seem to be interested in military equipment used by security forces in their war on crime, terrorism and illegal drug trafficking. Therefore, Rosoboronexport expects representatives of the military and special units to turn their attention to the BTR-80A/82A armored personnel vehicles, Tigr-M multipurpose vehicles, small arms, grenade launchers and the Ural regionally reputed vehicles.

Full-size models presented at FAMEX 2017 include the Mi-17 helicopter and Goret-M vehicle highly commended by their Mexican operators. Specialists were particularly interested in the Goret-M Russian Special Forces armored vehicle, which has been successfully undergoing tests after it was handed over to Mexico more than two months ago. Exhibition models of the Mi-17 helicopters have been provided by the Ministry of National Defense of Mexico. The company also presented in Mexico its Comprehensive Security System ensuring comprehensive cyber security and monitoring of aerial and coastal areas, state borders, large cities, districts and facilities.

Crab-fishing vessels

Vyborg Shipyard (part of United Shipbuilding Corporation) and a group of companies members, along with Arkhangelsk Trawl Fleet, of the Non-profit Partnership North-West Fishery Consortium, signed contracts for construction of six crab-fishing vessels ST-184 AS.

The contracts were concluded under the option agreement for the continuation of the series of vessels which was signed between the companies in January 2017. The crab vessels measuring 61.9 m in length and 15 m in breadth will be built based on design of the Norwegian Engineering Company Skipsteknisk.

The vessels are intended for catching royal, snow crab and other crab species and will have Ice3 class. The signing of the contracts took place as part of the official ceremony of keel laying of the first-in-series freezer trawler ST-118L-ATF on

May 31 at Vyborg Shipyard. The contracts will become effective after the appropriate corporate procedures by the Customer and VSY.



Project 1155

Turbine-powered Project 1155 (7,480t) large antisubmarine ships (thus classified since they were designed for anti-submarine rather than anti-shipping operations as the Project 956) have proved more robust and less susceptible to poor maintenance.

This is chiefly due to the propulsion system employing two boost and two cruise gas-turbines. In the period of 1980 — 1991 the navy received twelve Project 1155 ships including eight made by the Northern Shipyard in St. Petersburg and eight at the Yantar Plant in Kaliningrad enclave. Four — Vinogradov, Tributs, Panteleyev and Shaposhnikov —

remain operational in the Pacific. Together with Boris Butoma fleet oiler, Tributs took part in the recent Russo-Japanese joint exercises centering on rescue operations at sea. She engaged with Japanese warships after a visit to Manila and Indra Navy 2016 exercises with the Indian navy. The Northern Fleet operates five hulls: Severomorsk, Vice-Admiral

Kulakov, Admiral Levchenko, Admiral Kharlamov and Admiral Chabanenko (the last one built to improved Project 1155.1). The Russian navy has recently declared plans for lifetime extension and modernization, till 2022, of five Project 1155 ships with the Northern and Pacific Fleets out of eight currently in active service (and production run of twelve).



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INVESTMENTS TO KALASHNIKOV CONCERN

Kalashnikov Concern will allocate 4 billion rubles for upgrading the Izhevsk Mechanical Plant. The investments will be used to upgrade production facilities and commence the manufacture of new hunting rifles. In accordance with the development strategy up to 2025, attracting investments and increasing the share of civilian products are among the priorities of the Weapons Cluster of Rostec State Corporation.

Before the end of 2018, private shareholders of Kalashnikov Concern forming part of Rostec State Corporation will allocate 4 billion rubles for upgrading the Izhevsk Mechanical Plant. Investment projects include comprehensive modernization of woodworking facilities, foundry and weapons manufacture, as well as commencing the manufacture of hunting rifles such as Los, Izyubr, Bars and Sobol, which are to supplement the existing Kalashnikov Concern product range.

Today, the Izhevsk Mechanical Plant is one of the largest diversified enterprises in Russia. It manufactures up to 90% of Russian guns. Its products also include specialist equipment and civilian products such as pacemakers, packing machines, and geophysical and microelectronic equipment.

'Our results for 2016 are good: revenue increased by a third, and the manufacture of military products added almost 70%. As for civilian products, the increase totaled 25%. I am confident that the investment program of the Izhevsk Mechanical Plant will make it possible to put high-tech products on the market, including segments which are new to the enterprise,' said Alexey Krivoruchko, CEO of Kalashnikov Concern.

MI-171SH FOR BANGLADESH

Rosoboronexport, a member of Rostec, signed a contract with Bangladesh's Air Force for supply of five Mi-171Sh military transport helicopters. The signing ceremony was held in presence of the Chief of the Air Staff of the Bangladesh Air Force, Chief Air Marshal Abu Esrar.

'Bangladesh is focused on upgrading the national aircraft pool. We are happy that the state picked Russian high-quality equipment. We signed a contract to supply five Mi-171Sh helicopters to our partners. This is to be implemented in 2018,' said Director General Alexander Mikheev of Rosoboronexport.

The fact that the contract was signed attests to stable high-level cooperation between Russia and Bangladesh. Rosoboronexport delivered Mi-17s, Yak-130 combat-trainers, and armored equipment to the Bangladeshi Ministry of Defense between 2013 and 2016.

New ice-breaking laser

Rostec has developed a new marine laser device. This will help guarantee year-round navigation in the Arctic region.

The marine laser device has been developed that can cut through ice which is more than one meter thick, thanks to its 200 kW capacity. Developed by the Shvabe, a Rostec subsidiary, the new equipment is unique and has no analogue in the world.

'This laser device will ensure navigation of all ships through ice fields, regardless of the thickness, and this will guarantee year-round navigation in Russia's subarctic and Arctic regions. Pilot testing is planned in the Arkhangelsk region in the end of 2017,' said Alexey Patrikeev, Director General of Shvabe.

The device's unique design consists of a fiber laser, a fiber-optic cable, an installation to point and focus the laser beam, and a power supply system. The marine laser will

first determine stress concentration lines along the ice cover, then focus the laser irradiation there and provide the thermal influence necessary to crack the ice.



Industrial gas turbines

As part of the Fourth China-Russia Expo, United Engine Corporation (UEC, a company of Rostec) and Harbin Turbine Company (HTC), a Chinese state-owned company, concluded a strategic partnership agreement on the development, manufacturing and delivery of small and medium-sized industrial gas turbine units.

The agreement was signed by Alexander Karaoglanov, Sales Director and Head of the Sales Department of the Energy and Industrial Programs Division of JSC UEC, and by Yao Hongwei, President of HTC. The agreement was initialed in the presence of representatives of the government of the Heilongjiang Province of China.

'We believe that cooperation between UEC and a major Chinese manufacturer such as HTC will enable

us to achieve impressive results on the Chinese market,' commented Alexander Karaoglanov.

The agreement provides for cooperation between UEC and HTC aimed at launching licensed production of 16 MW gas turbine power units in China on the basis of Russian GTU-16 gas turbines and joint development of 40 MW gas turbine units for mechanical and electric drive applications.

UEC is currently expanding its cooperation with Chinese partners both in the supply of power generation equipment manufactured by UEC to the Chinese market and in joint development of advanced industrial gas turbine equipment. In addition, the company is working with Chinese manufacturers of compressor equipment, generators and metal structures to enable the use of Chinese products in UEC's projects in Russia and in other countries.



RUSSIAN NATIONAL PAVILION AT EXPO-2017

Russia has opened its pavilion at the International Specialized Exhibition EXPO-2017 in Astana (Kazakhstan) that started its work on the same day. Shortly before the opening, the Russian pavilion was visited by Russian President Vladimir Putin. During the tour the Head of the state was accompanied by Denis Manturov, Minister of Industry and Trade of the Russian Federation, Alexander Novak, Minister of Energy of the Russian Federation, Alexey Likhachev, Director General of Rosatom. Russian participation in EXPO-2017 is organized by the Ministry of Industry and Trade of the Russian Federation. The operator of the exhibition is Formika Group.

The Russian pavilion surprised visitors with an unconventional opening ceremony. Instead of cutting the ribbon in the usual way, Georgy Kalamonov, General Commissioner of the Pavilion, and his colleague Rapol Zhoshybayev, Commissioner of the International Specialized Exhibition EXPO-2017, broke the ribbon made of ice. Mikhail Bocharnikov, Ambassador Extraordinary and Plenipotentiary of the Russian Federation to the Republic of Kazakhstan; Alexander Merten, Director General of Rosatom

International Network, and other officials and representatives of big business have also participated in the opening ceremony, including representatives of URALCHEM United Chemical Company JSC, Uralkali PJSC, Republic of Tatarstan, Nor Nickel, Rosatom, Chelyabinsk Oblast, Transneft PJSC, Sverdlovsk Oblast, Rosseti PJSC.

'We are exploring the key theme of EXPO-2017 'Energy of the Future' with the example of a unique region of the Russian Arctic. This is the region that is considered to have the best prospects from the point of view of developing alternative energy in Russia. It is also rich in natural resources,' Georgy Kalamonov noted in his speech at the opening.

The Pyatnitsky State Academic Russian Folk Choir came to Astana specifically for the opening; it presented a program developed specifically for the opening of the Russian pavilion.

The 'Energy of the Arctic' introductory installation, multi-faceted sets with luminous texture of arctic ice, the

'Polar Semisphere' multimedia attraction as well as theme-based sectors devoted to the achievements of the domestic power industry and future developments in water power, carbon industry, alternative and renewable energy surprised the first guests of the Russian Pavilion. One of the most vivid elements of the exhibition is going to be a real arctic ice block. The pavilion is also going to demonstrate the achievements of Russian companies in the energy industry. For example, Rosatom presented a game-changer in the history of the Russian icebreaking fleet — a research development of the 'Leader' nuclear-powered icebreaker. This is an icebreaker of the future that will make year-round navigation in the Arctic possible regardless of the weather; it will be able to break through 4-meter ice and achieve unprecedented speed. These features will significantly reduce the duration of transporting goods along the Northern Sea Route.

EXPO-2017 will operate until September 10, 2017. /RA&MG/



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ROSOBORONEXPORT WITNESSES INTEREST IN RUSSIAN NAVAL EQUIPMENT

Rosoboronexport, a member of Rostec, will take part at IMDS-2017 to log an eighth iteration to its track record of attendance at the International Maritime Defense Show. This year's event, sponsored by the special arms exporter, is to take place at Lenexpo, St. Petersburg, in pavilions 3, 4, 7 and 8A (Harbor of Vasilevsky Island).

Frade in naval weapons and equipment accounts for 12 percent of Rosoboronexport's total sales. We work ceaselessly toward broader product range and supply footprint. Today, the greatest

interest in Russian ships and weapons for them comes from South-East Asian states, i.e. Indonesia, Thailand, Sri Lanka, and the Philippines, as well as our traditional partners, Vietnam, India, and China. Besides, we are active in consultations with

Latin American countries, including Uruguay, Peru, and Brazil,' says Deputy Director General Igor Sevastyanov of Rosoboroexport heading the company's delegation at IMDS-2017.

The company exhibits at booth 701, pavilion 7 as part of Rostec's

Rosoboronexport is the only state-owned arms trade company in the Russian Federation authorized to export the full range of military and dual-purpose products, technologies and services. It is a subsidiary of the Rostec Corporation. Founded on 4 November, 2000, now Rosoboronexport is one of the leading world arms exporters to the international market. Its share in Russia's military exports exceeds 85 percent. Rosoboronexport cooperates with more than 700 enterprises and organizations in the Russian defence industrial complex. Russia maintains military technical cooperation with more than 70 countries around the world.

joint exposition. Complementing the booth is a touchscreen terminal for two users integrated into a network of demonstration displays, capable of capturing pictures of physical models and providing on-line catalogs. The displays are deployed in the demonstration area featuring mock-ups of ships, missile and patrol boats, submarines, and other products.

Rosoboronexport will bring 200-plus pieces of military equipment to the exhibition. The arms exporter anticipates a keen interest of foreign customer in the Project 20382 Tigr corvette, Project 636 large diesel-electric submarine, ship-borne system of Yakhont cruise missiles, as well as Caliber-PL (Club-S) and Caliber-NKE (Club-N) integrated missile systems.

Berthed at the marine passenger terminal and offshore will be some 30 ships, craft and vessels of the Russian Navy, Border Guard, and facilities participating at the show. These include the Project 12700 coastal minesweeper, Project 12150 Mangust high-speed patrol craft, Project 03160 Raptor patrol boat, Project 21980 Nakhimovets anti-sabotage craft, and Project 19920 large surveying motor-boat. All of them are top in the most-wanted list of Rosoboronexport's partners.

Representatives of official foreign delegations and mass media will be invited to visit the Rzhevka range of the Russian Ministry of Defense to have a look at naval guns and small arms in action. In keeping up with

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Igor Sevastyanov

a long-standing tradition the IMDS-2017 program is to include demonstration flights of the Russian Nights, Swifts, and Rus aerobatic teams.

The special arms exporter is resolved to fulfill a rather extensive

business program on the sidelines of the exhibition. This is expected to include meetings with foreign delegations representing militaries and businesses of various countries all over the world.

/RA&MG/

Rostec Corporation is a Russian corporation that was established in 2007 to facilitate the development, production and export of high-tech industrial products designed for civilian and military applications. The corporation comprises over 700 organizations that are currently part of eleven holding companies operating in the military-industrial complex and three holding companies working in civilian sectors. The group also includes more than 80 direct management companies. Rostec's portfolio includes such well-known brands as AVTOVAZ, KAMAZ, Kalashnikov Concern, Russian Helicopters, VSMPO AVISMA, etc. Rostec companies are headquartered in 60 entities of the Russian Federation and supply products to more than 70 countries. In 2015, the consolidated revenue of Rostec reached RUB 1.14 trillion. According to its new strategy, the main objective of the corporation is to ensure that Russia has a technological advantage in highly competitive markets. The corporation plans to invest a total of RUB 4.3 trillion in development through 2025.

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BUSINESS CLIMATE IN RUSSIA

Meeting with heads of major foreign companies

As part of the St Petersburg International Economic Forum, Vladimir Putin met with the heads of major foreign companies and business associations. The main topic of discussion included Russia's investment climate and business potential. Also Vladimir Putin took part in the Russia–USA Business Dialogue panel discussion.

Opening the meeting President of Russia Vladimir Putin said: 'It is a good venue for sharing opinions, sharing experience and talking about the prospects of working on the Russian market or from the Russian market, on other markets from the Russian platform. We are trying to create the most favourable conditions for our joint work. We are doing a great deal to create a favourable business climate and above all to provide macroeconomic conditions for sustainable economic growth and a stable social

system — so that working in Russia is beneficial and pleasant.

As you may know, and if somebody does not know I will say it, and I said this earlier today at the plenary session: we are seeing very modest economic growth, but the economy has begun to grow nonetheless. During the last several months of the past year, we recorded GDP growth of 0.4 percent; in the first quarter of this year, it was 0.5 percent, and in April, 1.4 percent.

Industrial production is growing at a rate of 2.7–2.9 percent. Judging by the volume of rail shipments and

judging by the amount of electricity consumed, this figure may in fact be a little higher. We are fulfilling our inflation control and inflation targeting plans.

As you know, the Central Bank has set itself the target of 4 percent. At the moment, it is 4.1 percent. As a matter of fact, we are running on schedule. I believe that this year we will achieve a result that will be unique for Russia's new economy: Inflation will be less than 4 percent. We will see what the results will be, but the way things are going, this will be roughly the level.

All of this comes against the backdrop of, thank God, a stable social situation. Unemployment is very low, a little over 5 percent. And we continue to work on this problem. As you know, and I believe I also said this today, our current account is quite good, well balanced and is improving.

We are selling a large amount of goods and our reserve funds are growing. Yesterday, I spoke to the world's biggest investment funds. I recalled that at the beginning of the year we had, I think, 370 billion in gold and foreign-exchange reserves. At the moment it is already 470 billion — and that with very low foreign debt, at around 12–13 percent.

In short, all of this creates favourable conditions for successfully working and growing businesses here. Of course, like any other country, we still have a lot to do. In general, we are not being idle; we are trying to do this. As I also mentioned earlier today, we went up 80 spots in the Doing Business rankings. This is something.

As you have seen, we are introducing ratings and monitoring the business climate not only in the country as a whole but also paying close attention to the Russian regions, directing regional teams accordingly,

and we are achieving some results, to put it modestly.

Today, I have enumerated the regions that we consider as leaders. As a matter of fact, this also reflects on our cooperation: Last year, the inflow of direct foreign investment in the Russian economy increased by a factor of five, from \$6.8 billion to \$33 billion. On the whole, we are seeing an upturn.

Needless to say, that is not enough and this is precisely why we invite you to such events — to discuss with you what else needs to be done to make your work more effective and profitable and to ensure that this also contributes to Russia's economic development. Perhaps at this point I should end my lengthy monologue. I hope that you enjoy your tea and coffee and I invite you to share your opinions and join the discussion.'



Also Vladimir Putin took part in the Russia–USA Business Dialogue panel discussion, where Mr. Putin spoke about Russian role in the world too. He said: 'Of course, as influential world powers, Russia and the US have been keeping the dialogue alive in various multilateral formats, including the UN, the Group

Industrial production is growing at a rate of 2.7–2.9 percent. Judging by the volume of rail shipments and judging by the amount of electricity consumed, this figure may in fact be a little higher. We are fulfilling our inflation control and inflation targeting plans.



of Twenty, which will soon meet in Germany, as well as within APEC and other frameworks, and have continued to cooperate on key global and regional matters. There is no getting away from it, and it is so much better that this process carries on.

However, it has to be recognised that it took decades to lay the groundwork for cooperation that was all but annihilated over the past few years. Our bilateral relations deteriorated to their lowest point since the Cold War.

This could not fail to affect the economy and our business ties. Bilateral trade was modest to begin with, but in 2014–2016 it decreased by 30 percent.

From a realistic, pragmatic perspective, neither Russian, nor American businesses can be satisfied with a situation where mutually beneficial projects are being curtailed. Of course, taking into account the modest trade volumes, this could be viewed as having little importance. However, once we factor in



the missed opportunities, it turns out that this was harmful for everyone. In this regard, let me stress that only solid trade and investment ties can ensure a reliable safety net from political oscillations.

Even in the most challenging periods of history, when our two countries represented different political and ideological systems, the United States always remained an important

trade partner for us. This was the case in the early days of the Soviet state, when US businesses contributed to the industrialisation effort. This was also the case with the lend-lease programme during the Second World War. By the way, modern Russia completely paid off its debt under this programme.

Americans are good businesspeople. When they saw big money in Russia with the rise of oil and gas prices, they asked for lend-lease debts to be paid back. We did not want to be greedy, and paid them back. We all have to keep this in mind. Incidentally, we also paid back all of the debts contracted by the Soviet Union, including those of all the former Soviet republics. Russia assumed all these debts and paid them off.

Still, even in the 1970s and 1980s, during the Cold War, we cooperated with the United States.

Today major US companies continue to operate in Russia and to maintain a notable presence on the Russian market. There are about 3,000 firms with American capital in Russia. The total assets of these enterprises amount to about \$75 billion, and they employ over 180,000 people.

To reiterate, our economic interaction with the United States is balanced and diversified, and focuses on technology-intensive projects. The ongoing projects are in good shape, in general. Thus, from 2014 to 2016, the share of innovative products in Russia's total exports to the United States fluctuated between 9.7 and 14 percent.

Today, I have enumerated the regions that we consider as leaders. As a matter of fact, this also reflects on our cooperation: Last year, the inflow of direct foreign investment in the Russian economy increased by a factor of five, from \$6.8 billion to \$33 billion



Exports of high-tech services, such as space transport, information technologies, engineering and scientific designs, amounted to about \$900 million in 2015, or about one-third of our total exports of services to the US market.

We intend to promote in every possible way bilateral business projects based on equal and constructive partnership and cooperation. We are interested in technology transfers and bringing in international firms to help us expand our domestic industry and infrastructure.

We operate on the premise that such mutually beneficial joint initiatives will contribute to the success of the work we are doing in Russia to step up socioeconomic development, and help us establish on our territory the production of competitive world-class products with a view to exporting them to third countries. Of course, we will do our best to make this business in Russia lucrative for our American partners.

It is good to know that the business communities of the two countries continue to maintain close contacts. Today's meeting is a good example of this. Last year as well, Russian and US business associations

organized several events and roundtable discussions, including those at the St Petersburg Economic Forum.

I believe that improved bilateral relations will benefit both countries. We will continue the dialogue on this with the new US President, Mr Trump, and the new Administration.

However, success requires serious efforts on both sides. It also takes

political will and a willingness to solve problems of mutual practical interest.

I hope that today's discussion, your initiatives and specific considerations contribute to forming a favourable environment for expanding this complicated task in order to restore trust and constructive dialogue.'

/RA&MG/





NAMING CEREMONY

Christophe de Margerie tanker

Vladimir Putin has attended the naming ceremony for the Arctic LNG tanker Christophe de Margerie, a flagship in a line of 15 similar vessels. The event was held at the Bronka deepwater port in St Petersburg, June 3.

The ceremony was attended by Federation Council Speaker Valentina Matviyenko, Energy Minister Alexander Novak, Transport Minister Maxim Sokolov, Economic Development Minister Maxim Oreshkin, Novatek CEO Leonid Mikhelson, Total CEO Patrick Pouyanné and Christophe de Margerie's family members.

The tanker has been designed for year-round transportation of liquefied natural gas (LNG) in the severe environment of the Kara Sea as part of the Yamal LNG project. This project allows for the development of the Yuzhno Tambeiskoyegas condensate field and the construction of a plant with a capacity of 16.5 million tonnes of LNG per year.

The vessel will bear the name of Christophe de Margerie, a French entrepreneur and former Total CEO, who died tragically in a plane crash at Moscow's Vnukovo Airport in 2014.

President of Russia Vladimir Putin said: 'I am extremely glad to welcome you at today's solemn ceremony dedicated to the naming of the new Arctic LNG tanker of the Sovcomflot



company. After successfully going through ice testing in March, the tanker has made its first arrival at the Russian port of Sabetta in the North.

From now on, this modern vessel will bear the name of a French entrepreneur and a real, big friend of our country, of Russia — Cristophe de Margerie. He possessed a unique strategic vision and did so much to strengthen friendly, partnership relations with Russia, while being the driving force behind the implementation of a range of large joint energy projects. Naming the ship in his honour serves as another symbol of our sincere and kind disposition to this outstanding man and as a commemoration of his memory.

Cristophe de Margerie, the most modern tanker of a high ice class, will become the flagship in a line of 15 similar vessels. They have all been designed for Yamal LNG, a large-scale project being carried out jointly with both our French and Chinese partners.

I would like to stress that this project, without exaggeration, is highly important, not only for our country, and not only for Europe: but this project, in general also contributes immensely toward the development of the world's power industry.

It serves to promote the successful development of global spaces, creates demand for innovative tech-

nology in production and transportation of hydrocarbons, and creates jobs, both in our country and abroad.

Yamal LNG plays an important role in the development of the Northern Sea Route, and in the further study and exploration of the Arctic. I hope that the pace at which the project is being implemented will only grow and that all our joint plans will be, unquestionably implemented.

And, of course, I am counting on the successful launch of new, promising, large-scale projects with our French, Chinese and foreign partners, as well as on our growing cooperation in the extremely rich Arctic Region.'

/RA&MG/



'From now on, this modern vessel will bear the name of a French entrepreneur and a real, big friend of our country, of Russia — Cristophe de Margerie. He possessed a unique strategic vision and did so much to strengthen friendly, partnership relations with Russia, while being the driving force behind the implementation of a range of large joint energy projects. Naming the ship in his honour serves as another symbol of our sincere and kind disposition to this outstanding man and as a commemoration of his memory...'

Vladimir Putin



FSMTC OF RUSSIA

Military-technical cooperation between the Russian Federation and foreign states

Since 2000, the Russian Federation has established a sufficiently effective system to manage its military-technical cooperation with foreign partners. The system is headed by the Federal Service for Military-Technical Cooperation ('FSMTC of Russia'). The Federal Service for Military-Technical Cooperation is empowered with control and supervision over the MTC area. FSMTC of Russia is a decision making authority on import to and export of military purpose products as decreed by the President of the Russian Federation. FSMTC of Russia is authorized by the President of the Russian Federation to issue licenses to Russian defense companies and other entities required to import and export military purpose products.

FSMTC of Russia is in charge of the system of military-technical cooperation with other countries. Major areas of FSMTC of Russia activities are:

- control and supervision in the area of military-technical cooperation in compliance with laws of the Russian Federation;
- participation alongside with other federal government authorities in implementing policy in the area of military-technical cooperation;
- submission of relevant proposals to the President of the Russian Federation, the Government of the Russian Federation, and Defense Ministry of the Russian Federation.

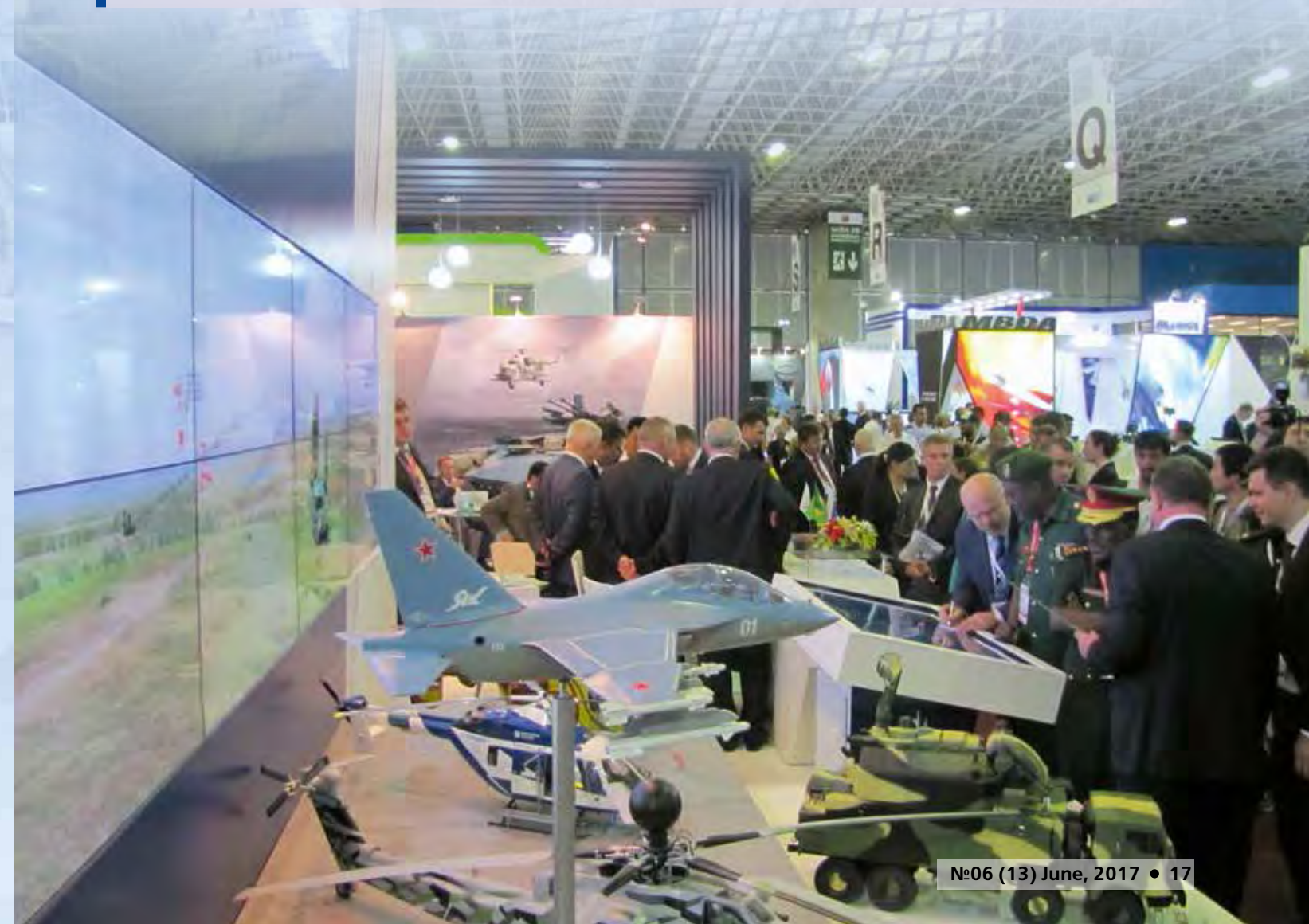
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Federation. It is authorized by the President of the Russian Federation to issue licenses to defense companies and other entities required to import and export military purpose products. FSMTC of Russia is authorized to grant and revoke trade licenses to/from manufacturers of military — purpose products. It is the head decision-maker in the matters of Russian participation in defense exhibitions and shows in terms of showcasing military purpose products and technologies both in the Russian Federation and abroad. Yet another crucial function of FSMTC of Russia is to issue end-user certificates for import military purpose products

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to manufactures of military purpose products.

In conformity with the law of the Russian Federation, FSMTC of Russia performs control and supervision functions relating to:

- Compliance by federal government authorities, government authorities of the Russian Federation constituencies and Russian organizations in the field of military-technical cooperation 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;
- Marketing, advertising, and exhibition activities in the field of military-technical cooperation;
- Efficient allocation of funds 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

FSMTC of Russia submits draft decisions to be signed by 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.



international treaties of the Russian Federation in the field of MTC and submits proposals for concluding and implementation of any such treaties.

FSMTC of Russia submits in the established manner proposals for creating, composition and arranging activities of bilateral and multilateral intergovernmental commissions relating to MTC, sets up relationships with international organizations relating to MTC. FSMTC of Russia is in charge of intergovernmental commissions relating to MTC on behalf of Russia and therefore it is instructed by the President of the Russian Federation and the Government of the Russian Federation.

The Federal service for military-technical cooperation receives requests from foreign customers for supplies of military purpose products, registers them, appoints contractors among Russian entities, informs foreign customers on the state of their requests, and supervises preparation and approval of relevant decisions, monitors how MTC-affiliated entities progress in meeting the requests of foreign customers for supplies of military purpose products. /RA&MG/





INTERNATIONAL MARITIME DEFENCE SHOW

One of the world leading exhibitions in the field of shipbuilding and naval armament

The International Maritime Defence Show (IMDS) is one of the world leading exhibitions in the field of shipbuilding and naval armament. The project IMDS initially originated and was successfully implemented for the first time in St. Petersburg in the days of 2003 when the 300 anniversary of the city was celebrating. In the following IMDS was successfully held seven times which includes IMDS-2015 with 423 participants from 28 countries, among them 40 foreign companies. IMDS-2015 was visited by 46 official delegations from 39 countries, among them almost all the countries involved in production and operation of marine equipment. Two Deputy Ministers of Defence, nine Commanders of Naval Forces and other high-ranked officials visited the Show as official delegations.



The organizer of IMDS-2017 is the Ministry of Industry and Trade of the Russian Federation. The Exhibition is held with participation of the Ministry of Defence of the Russian Federation, the Ministry of Foreign Affairs of the Russian Federation, Federal Service for Military-Technical Cooperation, the Government of St. Petersburg and Rosoboronexport JSC. The Exhibition Operator is Morskoy Salon Co. Ltd.

IMDS-2015 wide format allowed presenting in a single exhibition space an exposition based on 17,000 square metres, 39 ships, boats and vessels at the berths. At the artillery range of the Ministry of Defence of the Russian Federation firing demonstrations from 10 naval artillery systems were held for mass-media representatives and foreign official delegations. There were four research and training conferences, 20 congress and business protocol events within IMDS-2015 (round tables, seminars, presentations, press-conferences etc).

In its 14 years in existence the project IMDS received a steady dynamics of development, reaffirming its





relevance, acquired wide popularity and took its place in the top world famous exhibitions of naval arms and equipment.

The 8th International Maritime Defence Show (IMDS-2017) will be held under the Russian Federation Government's order №1140-p from 19 June 2015 in St. Petersburg from 28th of June till the 2nd of July, 2017.

The organizer of IMDS-2017 is the Ministry of Industry and Trade of the

Russian Federation. The Exhibition is held with participation of the Ministry of Defence of the Russian Federation, the Ministry of Foreign Affairs of the Russian Federation, Federal Service for Military-Technical Cooperation, the Government of St. Petersburg and Rosoboronexport JSC. The Exhibition Operator is Morskoy Salon Co. Ltd.

The results of the Seventh International Maritime Defence Show

IMDS-2015 demonstrate its high demand among marine industry enterprises. Its high status and position in the world system of defence exhibitions were reconfirmed. IMDS-2015 wide format allowed presenting products of enterprises at stands and full-scale models at the quays, on outdoor areas and in the adjacent waters as well as to demonstrate naval artillery weapons in action at the artillery range and to discuss

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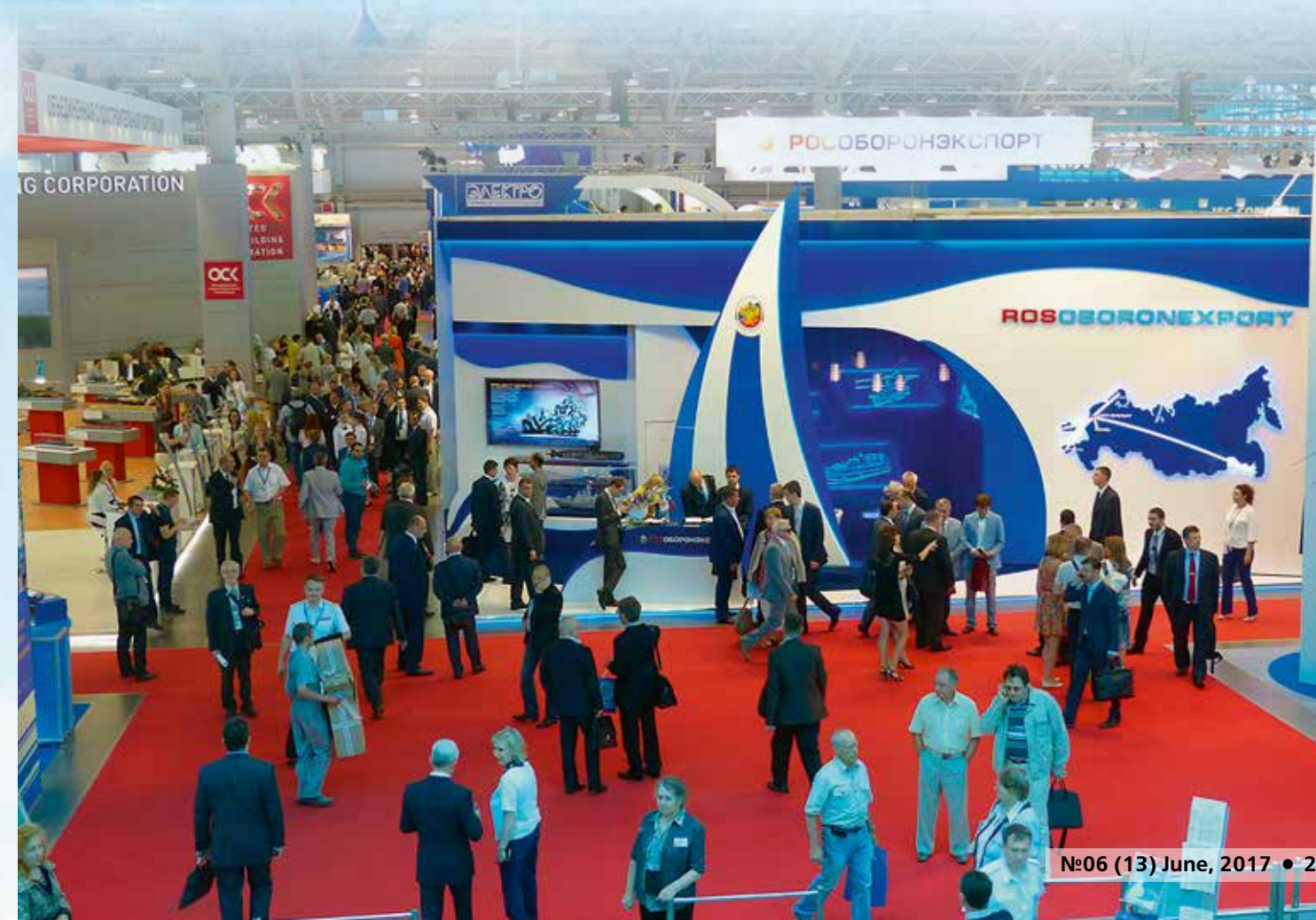
According to the Show program the aerobatic teams' flights of Russkiye Vityazi, Strizhy, Rus were twice demonstrated as well as paraborne unit display of 118 special training center. Two traditional IMDS Prize Sailing Regattas were held within the Show.



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Russian high-ranked officials took part in the Show: Deputy Prime Minister of the Russian

Federation D. O. Rogozin, Minister of Industry and Trade of the Russian Federation D. V. Manturov, Presidential Plenipotentiary Envoy to the Northwestern Federal District V. I. Bulavin, Governor of St. Petersburg G. S. Poltavchenko, Aide to the President of the Russian Federation for military-technical cooperation V. I. Kozhin, Deputy Minister of Industry



MAIN PHOTO



THE HISTORIC MOMENT

The historic moment of signing the act of laying the nuclear submarine 'Kniaz Pozharsky' (project 955A 'Borey-A') at Sevmash Shipyard 2016, December 23.

Foto by Vladimir Karnozov



and Trade of the Russian Federation A.V. Dutov, Deputy Minister of Industry and Trade of the Russian Federation G. M. Kadyrova, Deputy Minister of Defence of the Russian Federation Y. I. Borisov, Commander-in-Chief of the Navy V. V. Chirkov, Director of the Federal Service for Military-Technical Cooperation A. V. Fomin and other officials. Over 43000 specialists attended IMDS-2015 as participants and visitors.



The United Shipbuilding Corporation was the biggest participant at the IMDS-2015, and also will be the biggest at IMDS-2017. The United Shipbuilding Corporation (USC) — the largest shipbuilding company in Russia.

The USC is an open joint stock company established on March 21, 2007 in accordance with Russian President Vladimir Putin's Decree # 394. 100% of its shares are pub-

licly owned. The Corporation is the largest shipbuilding company in Russia employing over 80,000 people. It includes about 40 domestic shipyards, design offices and ship repair yards. USC's enterprises operate in all major port and transportation hubs of the country — from Kaliningrad in the west to Vladivostok in the east and from Severodvinsk in the north to Astrakhan in the south.

IMDS-2017, exhibits profile

Naval and Commercial Shipbuilding

- Design & construction of submarines and deep submergence vehicles
- Design & construction of surface ships & boats
- Design & construction of dynamic-lift vessels & boats
- Design & construction of vessels and boats of single purpose and support
- Ship repairing, modernization of naval engineering and equipment

Weapons, Armaments, Weapon Control Complexes and Systems

- Missile weapons & armaments
- Surface-to-air missile weapons & armaments
- Artillery weapons, armaments & ammunition
- Torpedo & torpedo-missile weapons & armaments
- Mines and counter-mine weapons & armaments
- Weapon control complexes and systems
- Launchers & launching systems
- Complexes & systems of reconnaissance, surveillance, target indication & weapon guidance
- Weapons & armaments transportation and its embarkation on delivery vehicles
- Equipment, systems & complexes for weapons & armaments utilization

Combat Direction Systems, Navigation Sets and Systems, Communications, Radio-Electronics, Radio-technical and Hydroacoustic Armament

- Naval and coast automate control systems of fleet forces and facilities
- Special automatic control systems
- Navigational equipment, complexes & systems
- Information security systems
- Complexes, systems and means of communication
- Complexes of monitoring & direction finding location & classification of radio signals
- Radio-electronic & radio-technical armament
- Hydroacoustic equipment and communications

- Complexes of radioelectronic warfare & sonar countermeasure

- Radioelectronic equipment electromagnetic compatibility

- Radioelectronic, TV, thermal, electrooptical, optical systems & surveillance means

- Electronic components and devices

Marine Power Plants, Ship Systems and Facilities, Auxiliary Machinery

- Main propulsion machinery
- Auxiliary propulsion machinery
- Drives & propulsors
- Ship electric power systems. Electromotors, generators, power switchboards, transducers, transformers, current leads, electrical connectors, electrics
- Weak-current equipment, systems of control & shipboard communications & transmission
- Security & protection ship systems of physical fields (demagnetization devices, shock mounts, protectors, etc)
- Pumps, filters, compressors
- Hydraulic and pneumatic equipment and systems
- Steering & manoeuvring devices
- Ship devices: ground tackles, mooring gears, towing gears, cargo gears, landing brow and access boards
- Ship lifting devices
- Complexes, systems and devices of take-off & landing, servicing of aircraft
- Ship-damage control systems, including alerting services & fire-fighting systems
- Life-support systems & devices
- Furniture, medical & galley equipment

Naval Aviation (Deck and Shore-Based)

- Deck planes & helicopters
- Shore-based planes & helicopters
- Amphibian planes & aircrafts
- Unmanned aircrafts & aerial systems
- Aircraft weapons
- Avionics
- Aerodrome engineering & equipment



USC has consolidated over 80% of design and production capacities of the industry and is the leader in shipbuilding across the area stretching from the Baltic Sea to the Pacific Ocean.

USC's design offices are responsible for almost all warships that are built and developed for the Russian Navy and foreign customers. Moreover, our naval materiel and weapons are traditionally distinguished by high reliability combined with combat efficiency, easy maintenance and low cost operation.

Along with implementing state defense order for the Russian Navy and export orders under MTC agree-

ments, the Corporation builds a modern fleet for operations at sea, in offshore and inland waterways.

At the same time, meeting local companies' demands for icebreakers, transport, research, rescue and auxiliary vessels, as well as a wide range of marine equipment for continental shelf development is the largest industrial challenge facing USC in civil shipbuilding.

Shaping our export policy, we focus on the areas of international coopera-

tion that encompass the entire lifecycle of naval products: market research, specifications preparation, design, production planning, manufacturing, delivery, operation and disposal.

We are the shipbuilding professionals with unique experience of successful Arctic development, construction and support of one of the most capable fleets in the world.

The United Shipbuilding Corporation is the largest shipbuilding holding company in Russia



The United Shipbuilding Corporation is the largest shipbuilding holding company in Russia and Eastern Europe. The company has consolidated almost all of the Russian design bureaus and 80% of the domestic shipbuilding capacity. Today, our Corporation is one of the few in the world supplying the market with the entire range of naval hardware, from fast patrol and multifunctional craft to nuclear-powered submarines and aircraft-carrying ships.





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Relying on the advanced design centers, recognized schools of thought and strong engineering traditions, USC keeps up with all the innovative trends in shipbuilding technology and actively undertakes a number of advanced developments efforts.

USC's products are in high demand in the world. Moreover, in addition to the traditional supply of naval equipment, the Corporation's package of export proposals includes ample opportunities for science and technology cooperation with leading design organizations, services and

technical assistance in construction at the customer's shipyards.

Almost all of warships being built and developed for the Russian Navy and foreign customers are the result of efforts made by USC's design bureaus. Furthermore, our naval equipment and weapons are



traditionally distinguished by high reliability combined with combat effectiveness, ease of maintenance and operation economy.

Along with the strict implementation of State Defense Order for Russia's Ministry of Defense and export orders under military-technical cooperation contracts, the Corporation is building a modern civilian fleet for operations at sea, offshore and on inland waterways. The major industrial challenge facing USC in the civil shipbuilding area is to meet the needs of domestic companies for icebreakers, transport, research, rescue and auxiliary vessels, as well as a wide range of marine equipment for offshore field development.

'Our main goal is to build a full-fledged management company on the basis of the United Shipbuilding Corporation, which will be the center of making major decisions in the industry. We are on the way to centralize a number of key functions: financial management, human resources management, logistics,



capital construction, engineering, etc. The objective is to establish a smoothly and effectively operating mechanism from relatively isolated businesses that have been quite successfully integrated under the USC brand. And, of course, we are always open to the widest possible cooperation to implement our primary mission — to build a fleet of the strong country,' Alexey Rakhmanov, president of USC said.

/RA&MG/

**Information and pictures
from IMDS**



On the artillery range named Rzhevka of the Ministry of Defence of the Russian Federation 10 naval artillery demonstrations were held successfully for official foreign delegations and mass-media representatives.





Vladimir Karnozov

ROYAL NAVY 2017

This story is based on an interview with Rear Admiral Alex J. Burton at LIMA'2017. He is a Royal Navy officer who serves as Commander United Kingdom Maritime Forces.



First off, Mr. Burton reminded us that last autumn the Secretary of State publically announced that 2017 was going to be 'year of the Royal Navy'. This decision was to reflect a number of major events were be pressed into the twelve months of the calendar. Milestones to be achieved during 2017 include:

- The Queen Elizabeth aircraft carrier is moving down to her base port in Portsmouth and commencing her sea trials.
- The Prince of Wales will be named.
- The first of the Tide-class fleet tankers (Tidespring) built in the Republic of Korea is arriving in the UK, and will be operational shortly.
- First of the off-shore patrol vessels (River-class Batch 2) will be starting her trials (HMS Forth).
- First metal cut on a series of Global Combat Ships also known as the Type 26 frigates.

'In terms of milestones for the Royal Navy, we see an extraordinary renaissance. So, this year of 2017 is a defining moment for the Royal Navy', Alex Burton stated.

STRATEGIC ASSETS

'Our navy sees a re-birth around the two strategic core capabilities, of strategic deterrence and carrier strike. We will end up with a really strong, incredible mix of forces with the two aircraft carriers and the Vanguard SSBNs to continue our sea deterrence.' During the next decade the Vanguard-class will be replaced with the Dreadnought class submarines. The ballistic missile undersea fleet will be supplemented by seven hunter-killer submarines of the Astute class, the final of which is coming in the next decade.

Collaborating further on the carriers, Mr. Burton said that the Queen Elizabeth is coming down to Portsmouth. She has already come of the dockyard. 'It is really exciting as it gives space on the jetty for the Prince of Wales to come out and to start being fitting out. So, the two of them are racing to operations'.

The Queen Elizabeth will do trials this year and early parts of the next year around the U.K. Later on, she will start doing some trials over in the United States. After the fixed-wing trials are completed, the carrier will be starting operations. 'We are looking to deploy her on the first operation early next decade'. Following induction into service of the first ship of the class, the Royal Navy will induce the second one within a year.

Answering questions about possibility and timing of future deployment of a carrier into Asian waters, the United Kingdom Maritime Forces Commander said that any major warship that has a fifty-year life is going to be in Asia at some stage. This statement came with the following rider: 'It is not my place to commit, but the Sea Lord's'.

What we know from the practices of the other nations that operate carriers — and these are U.S., France, Russia and China — is that the presidents and prime-ministers decide where strategic assets, like a carrier, go. 'So, it will be our prime-minister to decide where the Queen Elizabeth and Prince of Wales go. But I am pretty sure that over their fifty-year life, both ships will be in Asia at some stage. With the level of uncertainty we are at the moment, I imagine that

the carriers will be operating in and round the Gulf, too'.

ESCORT FLEET

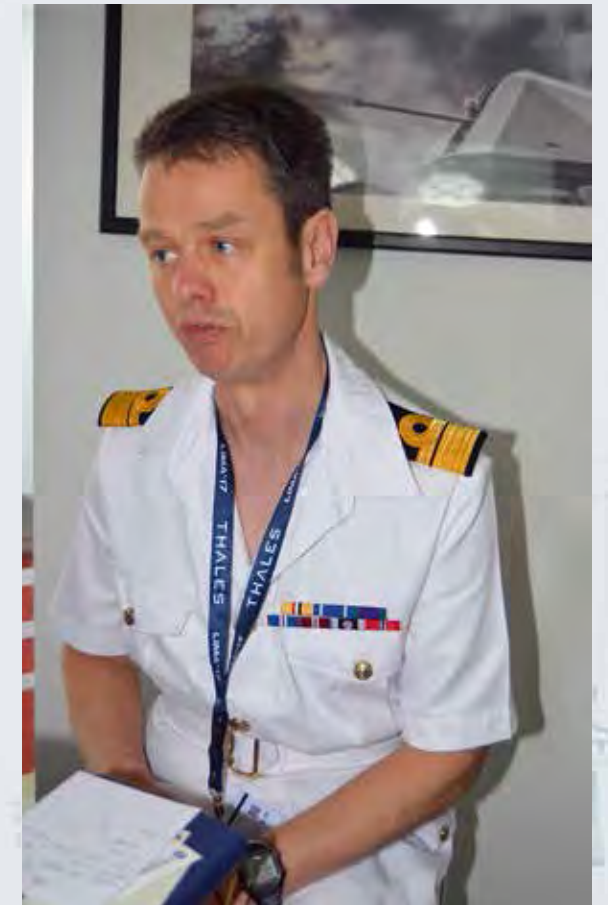
Strategic assets such as the Queen Elizabeth and Prince of Wales need escorts. These will be provided by the frigate and destroyer force.

The Type 45 destroyers — a total of six — were built earlier this century. They are operationally and tactically proven. 'We have the Type 45 operating alongside of U.S. carriers and the French carrier in the Gulf for several years now, providing that area defense. We have them deployed across the Pacific. These destroyers were in the Hawaii conducting ballistic defense missile trials'. Mr. Burton further said that the six Type 45 destroyers can go through a mid-life upgrade early in the next decade.

It must be noted that the ship-building program on the destroyers was cut from eight hulls originally envisioned. Perhaps to amend this, the U.K. government has committed to eight Type 26 frigates. By displacement and dimensions, they are slightly smaller than the Type 45. 'They will be the mainstay of our anti-submarine warfare [ASW] capability, both to ensure at-sea deterrence and to provide the strategic conventional deterrence of the carrier task group', the Rear Admiral said. BAE Systems company acts as the developer and

manufacturer of these new ships. First metal cuts on all six are planned for this summer.

'The Type 26 will be undoubtedly the most capable ASW platform that will be afloat, arriving early next decade. But so much more than just an ASW platform, with the ability to take Tomahawk strike missiles, a five-



inch [Mk45] naval gun, a considerable local area defense capability and the Integrated Mission Bay which can take a whole range of mission support packages.'

Next in line are so-called 'export frigates.' The Strategic Defense and Security Review 2015 released in November that year mentions the Type 31. 'This is a smaller, cheaper frigate that would allow the Royal Navy to return to providing a sort of enduring point of presence around the globe over the course of the next few years,' Alex Burton explained.

The first ship of the Type 26 is expected to become fully operational about the middle of the next decade. 'The next of class is coming after the first one shortly afterwards.' As per the Type 31, there are no certain dates given, as they are dependent on the time the final design is complete and where the ships are going to be built.

TYPE 31

We asked our source to explain the difference between the two classes. 'Type 31 export frigate will be less complex than the Type 26 and cheaper. We should be able to get more of them. It will have a sort of capability that we see as more readily exportable around the globe.'

The Type 31 is in the very early design stages at the moment, whereas the Type 26 is a very mature design. 'So it is difficult for me to give specifics on differences. In conceptual terms, you get a high-end war-fighting world-beating ASW frigate with the Type 26. With that comes a price tag, and with that comes a scale. With the Type 31, what customers are getting is a lower price — so that it can increase the volume of the order.'

The fact that the Type 31 is being developed as 'a less sophisticated, cheaper to build ship' allows the Royal Navy to buy more hulls within a certain budget. In future, frigates of that class will provide 'the points of presence across the globe.' Unlike the Type 26, which is the responsibility of BAE Systems, the Type 31 will be different as far as manufacturers are concerned. 'We will give it to whoever builds warships, and it may not be BAE Systems. There are opportunities to export ships or export design around the world.'

It is yet to be decided which company or consortium will see to design of the newer class. 'The Royal Navy is working with the industry on the Type 31 design. There is no certainty about its production run, only suggestions. 'It will be the ship that we use ourselves. At least five ships are in the list for the Royal Navy, according to the guide lines we are given... There will be a trade between cost and capability.' In other words, the U.K. government will decide on number versus capability so as to provide a sufficient 'permanent points of presence' around the globe with this new class.

Is the Type 31 going to be similar to the Littoral Combat Ships being built for the U.S. navy? 'I always find it slightly awkward to make comparisons. But if you considered the Type 26 to be an Ali Burk (again, it is smaller) that you could consider the Type 31 to be closer to a Littoral Combat Ship. We are not focused on the littoral, whereas LCS is clearly focused on the littoral. Ours is a light frigate, not a littoral combat ship.'

TYPE 26

Even though the British strategists see the Type 31 in the intend-

ed role of an export frigate, certain importing nations are a lot more interested in the Type 26. The latter is among contenders in the Australian competition known as the SEA 5000 'Future Frigate' program to replace the Anzac-class. Alex Burton says: 'The Canadians are also looking at Type 26 as a contender in their frigate program. If we got three nations with the same class of ship, each tailored to their own warfighting capability, then there is a global opportunity for a global support network.' It would also provide the base for common training and other joint activities.

What's special about the Type 26? 'The ship has been designed from the hull up to be world class ASW frigate, extremely quiet, with very quiet engines and further cladding. We made lots of investment to reduce the flow noise not just in the hull but in the movement of water in the waves that surround the ship.' Similar to the preceding Type 45, the newer one also makes use of the electric drive. The Type 26 features CODLOG configuration for a combined diesel-electric and gas-turbine propulsion, employing Rolls-Royce turbines, MTU diesels and electric motors.

Touching on the sensor fit, Rear Admiral Burton mentioned a passive/active towed array and a hull-mounted sonar. 'We are really comfortable with the Type 2087 [towed array] sonar, and the hull array [Type 2050 bow sonar] we are putting in the Type 26. This sensor fit is combined with an Agusta Westland Merlin helicopter.' Let's us add that the new class is likely to employ the Artisan 3D radar that BAE Systems has recently attested on a number of earlier-built Royal navy ships.

WOULD-BE EXPORT VERSION

How much modification will be necessary for an Australian version of the Type 26? There is no definitive answer to that question because the completion is still ongoing. However, Australia and U.K. signed agreements providing the base for BAE Systems to work with the local industry on current and future shipbuilding programs. 'The Royal Navy is working with the Australian Navy [on a ver-

sion of Type 26] because... there is a competition,' Burton explains.

'It will be for Australia to decide which sensors they put on. We have spoken about the Australian requirements... The key requirement is obviously the CEAFA2-C radar, the U.S. combat system, and the SM series [of anti-aircraft missiles]. Australia has its own helicopter program which has been hugely successful. But the [original] combination of a very credible ASW helicopter, a very credible sonar and a very quiet platform offers a huge value.'

If the Type 26 wins the competition, it will require design changes necessary to install the aforementioned systems and to accommodate a different rotorcraft type. 'I am sure there will be partial changes, but the Australian Navy shall be able to accommodate them within the Type 26 design. I am absolutely convinced that it is as quiet as you can get a hull, and needs no changes in that respect.'

The Australian navy is already working with BAE Systems. 'Undoubtedly, the Australian Navy will want to have its own design, taking the fantastic CEAFA2-C radar into the design of its own. For obvious reasons, the Australian Navy has chosen an American systems' approach, with the SM series and with the American command systems. But outside of that, there will be a whole lot of components within the ship which will be common. That

provides a real opportunity for a broader fleet.' Winning export orders for the Type 26 shall enable BAE Systems to increase the production run and cut manufacturing costs.

A SECOND PRODUCTION LINE

Australia wants to build new frigates at home. This implies technology transfer and BAE Systems sharing original drawings with local companies. In the United Kingdom, Type 26 steel cutting starts this summer. Australia will cut steel in 2020. 'This time difference gives Australia an opportunity to learn from BAE Systems' experience,' Burton says.

Meantime, both industries are undergoing 'a serious transformation of their shipbuilding programs' that involves commercial shipyards. 'U.K. and Australia go through very similar transformation' according to the Rear Admiral. In his view, these processes are in common and so expand the base for possible coordination and learning from each other. What the Australian Navy will be benefiting from with BAE Systems as a prime contractor? 'What the maker is learning from building Type 26 in the U.K. can be folded into a slightly later program of Type 26 in Australia. In terms of pragmatics, I think it is a fantastic opportunity.'

Sharing with journalists some moments of his interaction with the head of the Australian navy, Alex Burton recalled that one of the conversations was on the topic of 'where

our design was three years ago?' He believes that it was an important thing. 'Anyone who builds ships knows that you need not a perfect and mature design, but you need a level of maturity between now and then you cut the steel. BAE Systems has reassured both the Australian navy and the British government that they got the capacity to continue to mature the design.'

This means that the time between now and the first metal cut in Australia is long enough for the intended Type 26 customer to introduce design changes beforehand. Also, it implies that the original and evolved designs have much in common, since this is the way for Australia to get a mature design. 'We should work with BAE systems to understand how common the design is... because we do not want a distraction for the company.'

'In terms of dynamics, I am reassured by all the engagement I have had with BAE Systems that, if that company be a prime contractor for the Australian bid, they are able to deliver on both programs at the same time. In terms of pragmatics of delivering two ships on both sides of the world, I think it is achievable.'

COMPETITION

Australia has made decision to narrow the ongoing competition by naming three most suitable bidders for further consideration. 'So, there are three contenders in the Australian competition. But there is





only one ship which is a contemporary design that reflects the current threats, and draws on the most contemporary technology. If the Type 26 were to win, the Australian Navy will get the most capable ASW platform afloat anywhere in the globe.'

The other two candidates are 'established' ones, and thus carry some strong points with it. 'This means there will be less teeny problems. In our case, Australia benefits because the teeny problems will be for the Royal Navy to resolve, while getting a very contemporary design.' In fact, as far as the Australian program is concerned, what it will benefit from is a ship that it is a very contemporary. 'The other two contenders are mature designs, which means that by the time the Australian navy has the capability, they will be at least 15 to 20 years old in design terms. The Type 26 is far more contemporary and exploiting far more contemporary technology, and be able to respond to the latest threats.'

Selecting the British design shall also give Australia benefits in terms of joint operations with other nations. As a naval officer who commanded a Type 23, Burton knows the benefits that arise from navies operating the same platform together. 'Should

Canada, Australia and U.K. down select the Type 26 as their choice, it could become a global class of frigate. This means reduced support costs, a common training doctrine and so on.'

PARTNERSHIPS

Australia and U.K. are working closely in the Persian Gulf, where they have been operating warships alongside each other for years. 'Given how we operate in the Gulf together and given our shared security interests, I think that the value that comes from the Type 26 is quite compelling,' Burton insists.

Touching on other Asian nations that keep interaction with the British, the Commander of the United Kingdom Maritime Forces also mentioned India, Singapore and Malaysia. At LIMA'2017, he met with vice-chief of the Indian navy and also talked to the Malaysian navy officers. 'There are fantastic partnerships born from history,' he says. These partnerships create 'an exciting opportunity,' which can be further exploited through a common frigate project. 'The Type 31 will give us a greater opportunity to work alongside each other.'

The Royal navy plans to bring a Type 23 frigate to an international naval

exercise in the Asian waters next year. 'We are hopeful of a greater presence there. But the reality is that the world is an uncertain place. Mediterranean and the Gulf at the moment require our increased interest.'

There are certain areas in the South Asia with some strategic issues. Has the Royal Navy experienced any difficulties when meeting a Chinese ship or coast guard vessel in the disputed waters of the South China Sea? 'It has been awhile that we had a warship in that region, some couple of years ago. We have a warship coming out next year.'

Is there a competition of the naval forces in the region? Alex Burton gives the following answer: 'We (the Royal Navy) uphold the international laws of the sea. We look to nations in the region, to resolve their differences [that they have] peacefully. So far the Asia-Pacific region has been relatively peaceful. Any support we can give to the resolution of that, we will be delighted to do so. But it is not for me to offer judgements on how nation states determine their territorial positions. We exercise our rights on the high seas, and will continue to exercise our rights on the high seas. We up-hold and we use as authority the U.N. law of the sea.'

At the same time, the Commander of the United Kingdom Maritime Forces admits that his subordinates 'provide less worldwide presence over the past few years that we had done previously'. In this connection, the big and costly shipbuilding program that the nation is busily executing these days is thought-provoking. Are the British rebuilding the Empire? Burton's answer is negative: 'No, we are not rebuilding the empire, we are strengthening the partnerships!'

OFFICIAL INFORMATION ON THE INTERVIEWEE

Rear Admiral Alex Burton became Commander UK Maritime Forces in January 2016. As the Royal Navy's 2* formation level commander he is responsible for providing a rapidly deployable maritime, amphibious, joint, coalition or national contingent headquarters and also responsible for generating the Royal Navy's two deployable 1* commanders. He is also Rear Admiral Surface Ships (RASS), responsible for providing independent advice on the fighting prowess and moral component of the surface ship community.

The early part of his career was spent in a variety of warships in many theatres of operations including the Gulf, Far East, Falklands and Caribbean.

He has enjoyed three Commands: HMS INVERNESS which included operations in the Gulf and a period clearing ex-Soviet minefields in the Baltic Sea. HMS NORTHUMBERLAND, an anti-submarine frigate, which included a seven month deployment with NATO on Operation Active Endeavour delivering Counter Terrorism Operations in the Eastern Mediterranean and through the Suez to support national operations during the invasion of Iraq. Finally, he commanded HMS BULWARK, the Fleet Flagship, between late 2010 and 2012, which culminated in the command of all maritime forces during the 2012 Olympic and Paralympic sailing competitions. His operational experience beyond the maritime includes seven months in Baghdad as the Senior Advisor to the Vice Chief of the Iraqi Armed Forces, expanding his list of travel destinations to Tikrit, Fallujah and Babylon amongst others. Whilst in the UK, Alex undertook a joint appointment within the UK's Permanent Joint Headquarters leading the day to day operations for all three Services in Iraq, the Near and Middle East, counter piracy and global counter terrorism. He has undertaken two appointments in the MOD, initially working within the policy area before being selected as the Military



Assistant to the Under Secretary of State during the last Government. As a Commodore, Alex was responsible for the development and delivery to market of the majority of the Royal Navy's surface capability including the Type 26 Global Combat Ship. He was promoted to Rear Admiral in Oct 2014 and took up the appointment of Assistant Chief of Naval Staff (Ships) responsible for the in-service management of all ships. Alex is married to Helen who is a university law lecturer and they have two children at university. He is President of RNRM Rugby League and a mentor for Durham University, where he gained a degree. He plays most outdoor sports to varying degrees of success.

/RA&MG/



AVIATION CLUSTER OF FORUM 'ARMY-2017'

At the end of this year a special aviation cluster considerably extended as compared with 'Army-2016' is due to be introduced within the frameworks of International Military and Technical Forum 'Army-2017', which is to be held from 22 to 27 August in the largest Russian Patriot Convention and Exhibition Center located in Moscow region. Aviation equipment is to be deployed at Kubinka airfield near Forum 'Army-2017' site.

The aviation cluster is to be a further development of International Military and Technical Forum 'Army' which is an integrated business platform for promoting all types of military equipment including aviation necessary both for sustaining Armed Forces of Russia and promoting the best aviation equipment at world arms market.

It is worth noting that the new aviation cluster will entirely use the unique opportunities of both International Forum 'Army' (the largest in Russia and among the largest in the world) and opportunities of the site hosting the International military expo.

One of the tasks to be solved at Forum is searching for technologies which can be used in civilian industry of Russia including aviation. This

will provide the additional prospects for the participants including foreign aircraft manufacturers.

The aviation cluster of International Military and Technical Forum 'Army-2017' is to introduce the whole range of modern and advanced military and civil aviation equipment at a static site and inflight, show technological innovations by leading world aircraft manufacturers in exhibition halls, enable to have key trends of international aviation

industry discussed in the context of Forum business program.

There is a great professional interest in 'Army-2017' including its aviation cluster. Russian and foreign aircraft manufacturers focused on searching for new partners, new technologies and products, are expected to be fully engaged in the process.

A number of aviation aspects will be shown within the frameworks of 'Army-2017' main display at the exhibition. The thematic areas will

include 'Military and civil aircraft', 'Engine technology', 'Aircraft weapons', 'Simulators', 'Airfield facilities', 'Maintenance facilities' etc. There is also a special display dedicated to intra-industry and international cooperation related to aerospace programs and projects.

Among the major participants are Russian Aerospace Forces, 'Roscosmos' corporation, rocket and space industry enterprises of Russia and other countries, 'UAC', 'PAO', 'Rostech' and its members such as 'Technodinamika', 'KRET', 'ODK', 'Russian Helicopters' and others. An eventful flight program with in air demonstration by individual planes and air display teams is also expected.

/RA&MG/

For more details on the aviation cluster of 'Army-2017' as well as terms and conditions, see:
<http://www.rusarmyexpo.ru>; info@rusarmyexpo.com



Sergey Kulik

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 said 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 devel-

op 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

As part of the International military-technical forum "ARMY-2017"

★ ARMY2017



www.intelltechexpo.ru



IntelTechEXPO

Intellectual technology exhibition

August 22-27, 2017
Russia, Moscow

EXHIBITION PROFILE:

- Integrated technologies based on high-performance machines, tools, and equipment for modernization of factories
- Automation of production. Robotic production facilities
- Test, measuring and diagnostic equipment
- Materials
- Electronic components and modules
- Additive technologies
- Energy
- Building technologies
- Industrial design
- Personnel training
- Specialized Innovation Club exhibition

Location:



Official partners:



Organizer:



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 $45 \div 120$ kg, from heights of $50 \div 1,000$ m;
- 3.** Ready-for-use in $45 \div 60$ 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 backpack-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 anthropomorphic (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;

The SPARS® General Specifications

1. Total Assembly Weight — 25 kg
2. Rescue Payload Weight — $45 \div 120$ kg
3. Descent Elevations — $5 \div 1000$ m
4. Landing Velocity — $5 \div 7$ m/s
5. Landing Angle — $< 30^\circ$
6. Footboard Barrier Elevation — 1.5 m
7. Descent Time — $3 \div 150$ s
8. Ready-to-use Time — $45 \div 60$ s
9. Launch Initialization Time — $15 \div 20$ s
10. Inflating Gas — Air;
11. General Dimensions:
 - a. Assembled — $900 \times 450 \times 300$ mm
 - b. In Descent mode — $6,500 \times 2,700$ mm
(without canopy)

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

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 weighs 25 kg with back-pack dimensions



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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 Patents, 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, Malaysia 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 nec-

essary intellectual 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.

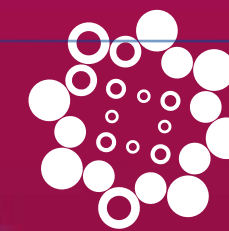
For a strategic industrial Partner sought who would be interested to

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.



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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.

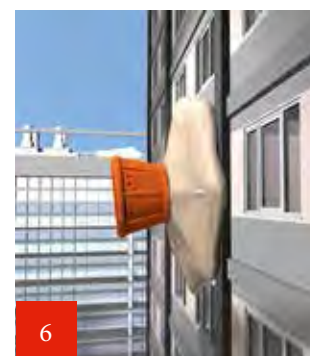
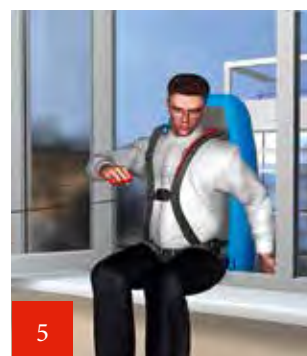
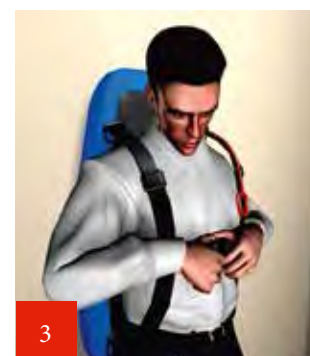
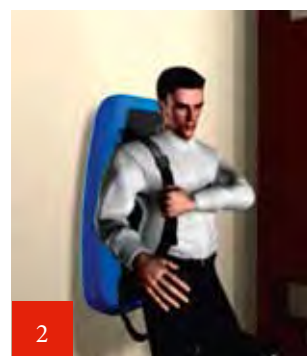
A Partner sought may be expected to undertake part of those activities or provide financing for already SRS Ltd. Company existing outsourcing manufacturing solution in Russia on a mutually beneficial basis.

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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November 2017

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'Russian Aviation & Military Guide' 2017

	Release dates	Additional distribution
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'RA&MG' №03 (10)	March 20th	LIMA 2017 (21-25.03.2017, Malaysia, Langkawi)
'RA&MG' №04 (11)	April 02th	LAAD 2017 (04-07.04.2017, Brazil, Rio de Janeiro)
'RA&MG' №05 (12)	June 18th	Paris Air Show 2017 (19-25.06.2017, France, Paris)
'RA&MG' №06 (13)	June 27th	IMDS-2017 (28.06-02.07.2017, Russia, S-Petersburg)
'RA&MG' №07 (14)	July 15th	MAKS-2017 (18-23.07.2017, Russia, Moscow)
'RA&MG' №08 (15)	August 22th	ARMY-2017 (22-27.08.2017, Russia, Moscow)
'RA&MG' №09 (16)	September 17th	AVIATION EXPO CHINA 2017 (19-22.09.2017, China, Beijing)
'RA&MG' №10 (17)	October 02th	INMEX SMM India 2017 (03-05.10.2017, India, Mumbai)
'RA&MG' №11 (18)	October 14th	BIDEC-2017 (16-18.10.2017, Бахрейн, Манама)
'RA&MG' №12 (19)	October 15th	SEOUL ADEX 2017 (17-22.10.2017, Korea, Seoul)
'RA&MG' №13 (20)	November 04th	Defense & Security 2017 (06-09.11.2017, Thailand, Bangkok)
'RA&MG' №14 (21)	November 10th	Dubai Airshow 2017 (12-16.11.2017, UAE, Dubai)
'RA&MG' №15 (22)	November 20th	MILIPOL 2017 (21-24.11.2017, France, Paris)
'RA&MG' №16 (23)	December 10th	Gulf Defense & Aerospace 2017 (12-14.12.2017, Kuwait, Al Kuwait)

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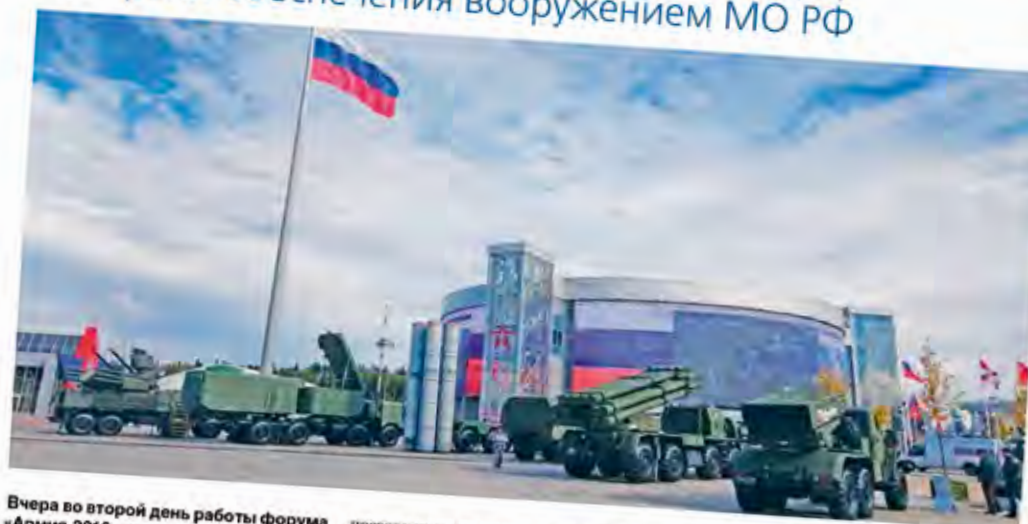
№01, 22 августа 2017 года

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Главный старт дня

Научно-деловая программа «Армии-2017»: все грани обеспечения вооружением МО РФ



Вчера во второй день работы форума «Армия-2016» стартовала насыщенная научно-деловая программа Второго Международного военно-технического форума «Армия-2016». В мероприятиях деловой программы принимают участие руководители и представители ведущих государств и предприятий, представляющих государственные структуры, аналитики, эксперты.

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International military-technical forum 'ARMY-2017'

August 22-27, 2017

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Four issues: 'First day', 'Second day', 'Third day', 'Fourth day'

Reports on the work of the Forum, the most important current business and presentations, the representation of participants, their exposition and programs.

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