Volume 9 Number 05 – Wednesday, 01 February 2017

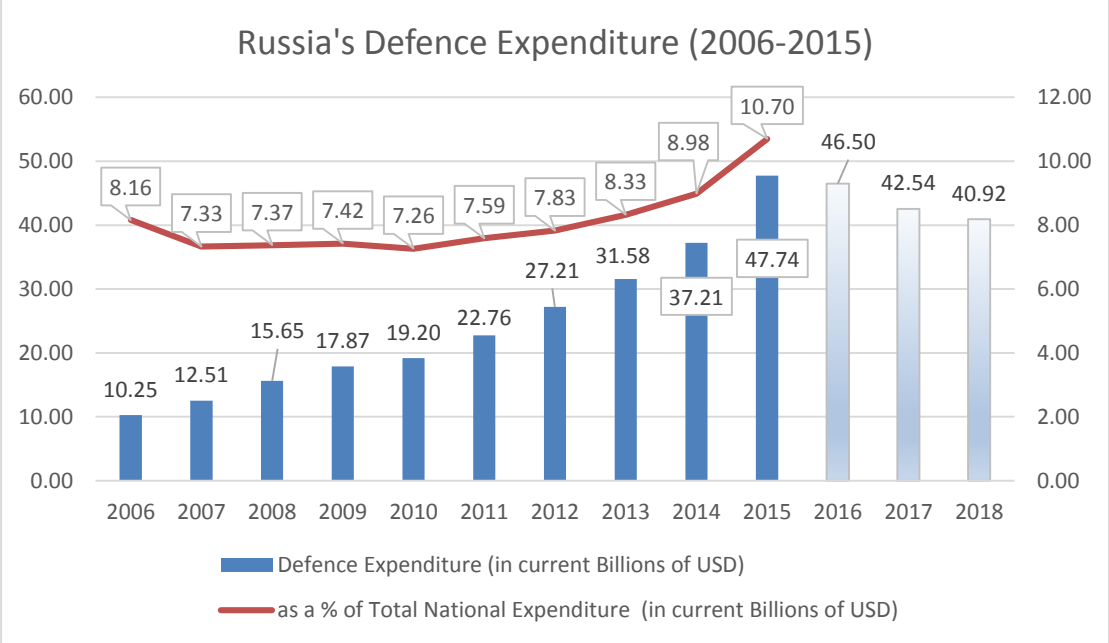
Part I: Russia

Part II: Epicos Newsroom

Russia: Defence Budget and Future Defence Procurements

Ministry of Defence of the Russian Federation

According to the official data published by the Ministry of Finance of the Russian Federation (see following figure), the expenditure of the country on National Defence, in terms of absolute figures, has been constantly rising over the period 2006-2015. More specifically, since 2006, when some 10.25 Billions of current US $ were invested in the associated directions, the country's expenditure has more than quadrupled, to reach some 47.74 Billions of current US $, in 2015. Similarly, the percentage (%) of the overall National Expenditure allocated for National Defence purposes, has also been on the rise over the same period, with minor exceptions (namely years 2007 and 2010). The lowest percentage over the entire period was the 7.26% allocated for 2010 (at the start of the global economic crisis), whereas the highest was the 10.7% allocated for the year 2015.

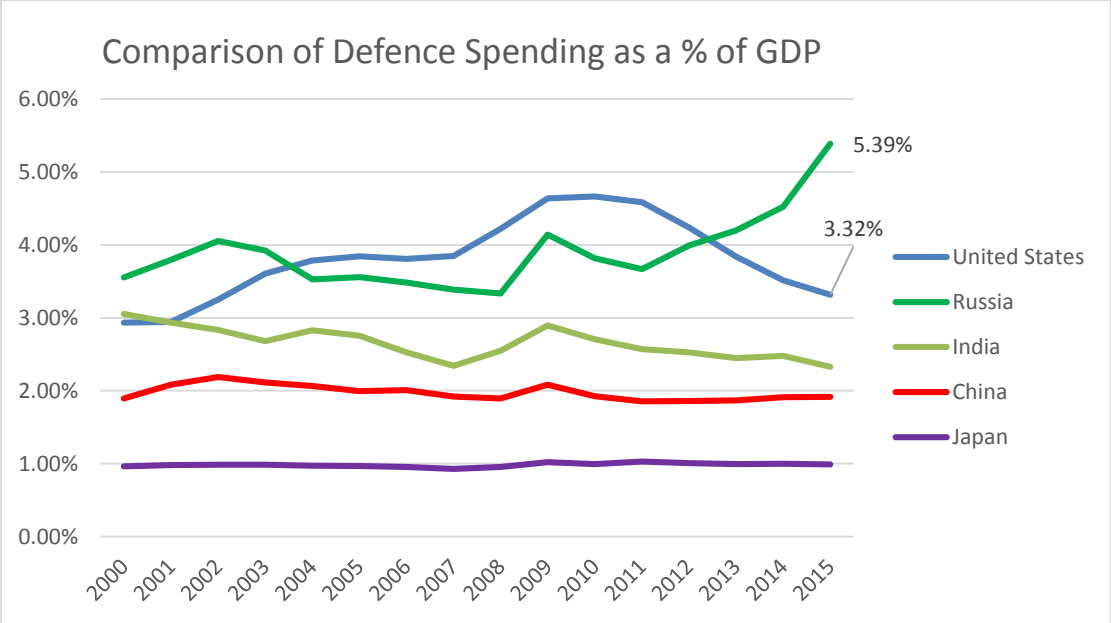


Source: Ministry of Finance of the Russian Federation

Nevertheless, according to plans published by the Ministry of Finance in October of 2016, the funds allocated to Defence purposes, were to be reduced by 12% from the 2016 figure, until 2018, dropping to some 40.92 Billion US $. It must be stressed that for Russia, the official figures released and those of other sources reporting on defence spending (e.g. the Stockholm International Peace Research Institute (SIPRI)), vary considerably, as other sources tend to include further expenditure categories (e.g. Law and Order expenditure, or similar).

Russia's defence spending was the 4th highest worldwide in 2015, only behind those of the United States (US), China and the United Kingdom (UK), and slightly above the corresponding ones of France and India. In addition, while US defence spending (as a % of the GDP) has been falling since 2012 each year, Russia's defence expenditure (again as a %

of the GDP) has risen steadily over the same period (according to SIPRI (Stockholm International Peace Research Institute) data – see following figure). As a result, the gap between the 2 countries' defence expenditure is closing, albeit that it is still very sizable (in 2015, it was estimated that US defence expenditure was still some 10.7 times greater than that of Russia for the same year, in terms of absolute figures). Over the same period, for the purposes of comparison, Chinese and Japanese defence expenditure as a % of GDP have remained more or less unchanged, while India's equivalent expenditure dropped slightly.



Source: SIPRI

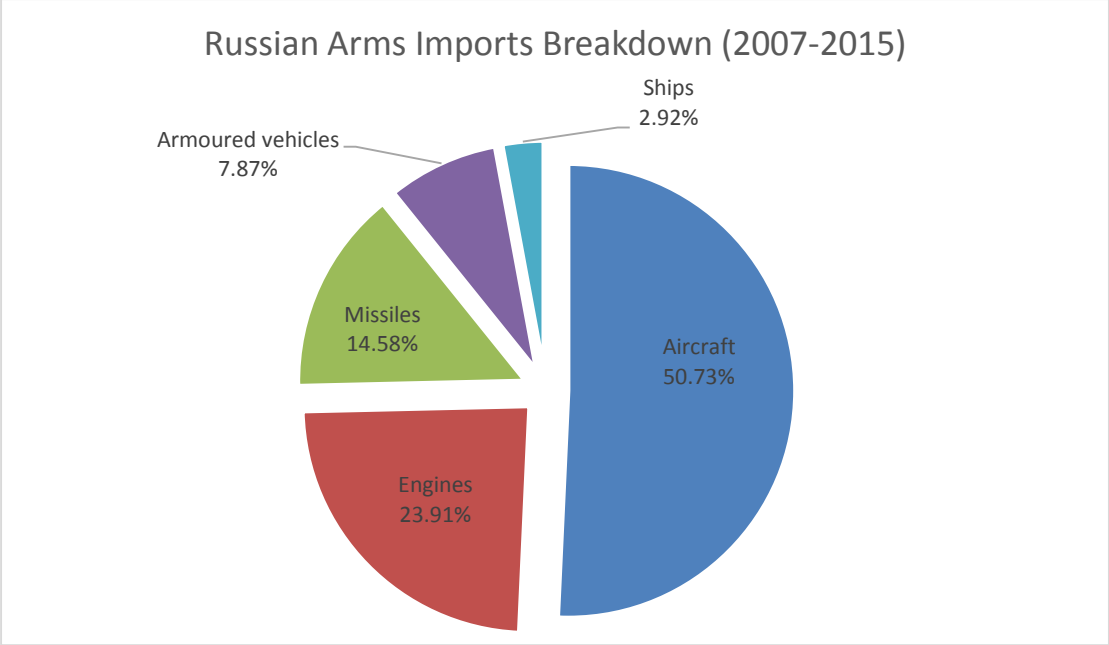
More specifically, according to the Stockholm International Peace Research Institute's (SIPRI), February 2016 Fact Sheet, "Trends In International Arms Transfers, 2015", Russian exports of major arms increased by 28%, between the periods 2006–10 and 2011–15 (see following figure). In fact, Russia continued to be the 2nd largest exporter of major arms for the period 2011-2015 (only trailing the US), having exported related items to some 50 countries, and increasing its share of the associated global transactions, from 22% over the period 2006-2010, to 25% over the period 2011-2015.

It should be noted though that the related exports of the country in 2014 and 2015, were significantly lower than those of the years 2011, 2012 and 2013. The main customers for Russian arms over the period (2011-2015), continued to be much the 'traditional' ones for the country, namely India (absorbing some 39% of all Russian arms exports), China (absorbing a further 11%) and Vietnam (with a further 11%). In terms of regions, Asia and Oceania constituted the destination of the 68% of all Russian arms exports, whereas Africa 11%, the Middle East 8.2% and Europe 6.4%.

Overall, Russia can be considered as practically self-sufficient as far as defence equipment and materiel, an aspect that is reflected quite strongly in the following diagram, where the data on Russian arms imports Vs. exports are presented (data taken from SIPRI). In fact, during the period 2000 to 2006, Russia did not spend a single Rubble on arms imports.

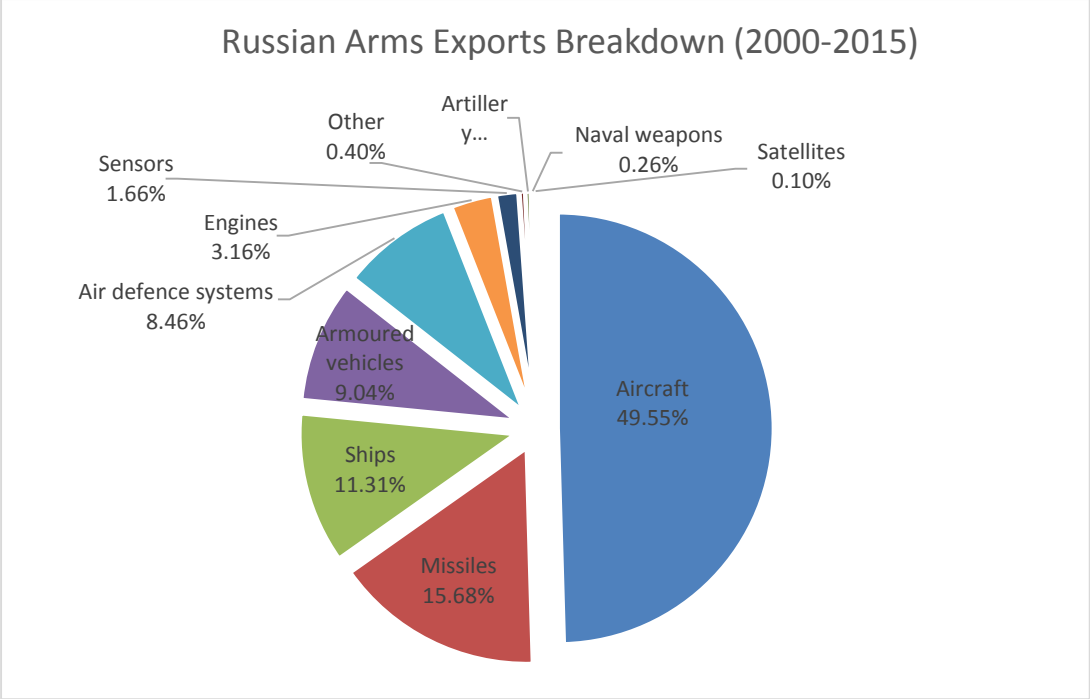
Source: SIPRI Arms Transfers Database

From 2007 onwards, arms imports per calendar year, did not exceed the 210 Million US $ (in constant 1990 US dollars), totalling some 690 Million US $ for the period 2007-2015. The breakdown of the related arms imports to Russia have as follows:



Source: SIPRI Arms Transfers Database

On the other hand, Russian exports were more diversified, ranging from integrated aircraft, naval, land/armoured vehicle platforms and satellites, down to major systems/assemblies, such as sensors, engines and naval weapons (see following figure). Over the period 2000-2015, Russian Arms exports, amounted to a staggering 96.8 Billion US $, of which almost half (49.55% to be precise), resulted from the sale of military aircraft.



Source: SIPRI Arms Transfers Database

The only 'weaknesses' in terms of the competitiveness of local defence production capabilities, seem to be in terms of UAVs, electronics/optronics & C4I technologies. These aim to be overcome by the government, through special procurements/agreements, such as that reached in 2009, where as part of a 400 Million US $ deal signed between the Israeli IAI and Russia's Oboronprom OPK Group, 12 UAVs were to be acquired and associated technology was to be transferred to the Russian company, so as to independently manufacture UAVs/drones.

The country's Armed Forces, consist in some 2 Million in reserves and 798,000 in active duty, of which: 240,000 in the Army, 148,000 in the Navy, 145,000 in the Air Force, 80,000 in the Strategic Deterrent Forces, 34,000 in the Airborne Assault Forces, 1,000 in Special Operations Forces, and 150,000 in Command and Support Forces. In addition, there are a further 489,000 personnel engaged in paramilitary functions (e.g. border control, etc).

In the meanwhile, the government continues enacting its military forces' reform and upgrade programme, which had initially been announced back in late 2008, by the then Minister of Defence, Anatoly Serdyukov. The plan was to spend 20 Trillion RUB (some 700 Billion US $), over the decade 2011-2020, with the intent of modernizing 70% of the Armed Forces assets. Characteristically, in 2015, the country was some halfway through this 10-year modernization program, which placed emphasis on strategic nuclear weapons, fighter aircraft, ships and submarines, air-defence, communications and intelligence capabilities.

This program was considered vital for the country, since after decades of neglect, the armed forces' major assets, had become quite outdated. Most of the Navy's large vessels, including its single aircraft carrier (the non-nuclear Kuznetsov), were assets of the Cold War era. Projections foresee that a new fleet of large warships for Russia, would not be available for at least another decade. Nevertheless, immediate focus as far as naval assets, rests with

nuclear submarines and smaller surface vessels. Likewise, although the Russian Air Force is still the 2nd largest worldwide in terms of absolute number of aircraft (with roughly 2,500 in active service), most of these date back to the 1980s (e.g. MiG-29, MiG-31 and Su-27). Further, Russia's Armed Forces, as discussed above, still operate a very limited number of drones/UAVs, although associated research is underway, based also on technologies acquired from Israel (see above).

On the other hand, according to military analysts, the direction in which Russia's arsenal is on par with that of the US, is as far as nuclear warheads. Specifically, Russia has some 1,500 strategic warheads, deployed on ICBMs (Inter-Continental Ballistic Missiles), submarines, and heavy strategic bombers (e.g. the Tu-160).

To address the above, under the on-going modernisation program, Russian Armed Forces are to receive by 2020 (or soon after), amongst other items, the following assets and equipment:

Army

- Ratnik infantry combat systems: designed to enhance the connectivity and combat effectiveness of the soldiers, including modern body armour, helmet with special accessories (e.g. thermal/night-vision monocular, flashlight, etc), navigation, communication and power supply systems, in addition to the advanced AK-12 rifle.
- Tornado-S and Tornado-G mobile, multiple-launch rocket systems.
- 2S34 Khosta (120-mm) self-propelled guns.
- 9K123 Khrizantema-S multi-purpose, self-propelled, guided weapon systems, which are designed to detect and destroy existing and future MBTs (Main Battle Tanks), armoured vehicles, low-flying aerial targets, lightweight surface targets and field fortifications (e.g. steel shelters and bunkers), both day and night, under all weather conditions.
- 9M723 Iskander-M mobile, short-range, tactical ballistic missile systems. These comprise of highly manoeuvrable (during all flight stages), stealth missiles, encompassing both passive and active electronic warfare jamming devices.
- BTR-82 and BTR-82A armoured personnel carriers (improved versions of the BTR-80 and an interim solution until the BTR-90 (Bumerang)/Kurganets-25 APC could be ordered).
- BMD-4M infantry fighting vehicles (while awaiting for the field trials and eventual ordering of the state-of-the-art Kurganets-25 IFV/T-15 Armata IFV).
- Latest versions of the T-72, T-80 and T-90 tanks families, will continue to be integrated into the Army's arsenal. In addition, some 2,300 next generation T-14 Armata MBTs are planned to be acquired, by 2020, although the prototypes of the model were still undergoing final acceptance testing during 2016. This advanced tank, will be the first MBT to feature an uncrewed main turret, will include an explosive reactive armour and an Active Protection System (APS) against projectiles such as RPGs (Rocket-Propelled Grenades) or anti-tank missiles.
- In addition, a large number of 2S35 Koalitsiya-SV (152 mm) self-propelled gun (SPG) are expected to be ordered, when field testing is successfully completed.

Air Force

- The latest versions of the Sukhoi Su-30 (multirole fighter), Su-34 (fighter-bomber) and Su-35 (multirole air superiority fighter) aircraft will continue to be integrated into the nation's Air Force. In addition, the highly manoeuvrable and stealthy 5th generation PAK FA T-50 fighter, is in its final stages of development, with some 250 planned to be gradually inducted into the Russian Air Force, as of 2018, when mass production is expected to start. At the moment, some 12 of these aircraft are expected to join the Russian Air Force by 2020.
- Mil Mi-28N (all-weather, day-night, military tandem, anti-armour attack) and Kamov Ka-52 (all-weather, day-night, next-generation reconnaissance and combat) helicopters shall also continue to be inducted into the Russian Air Force.
- Latest versions of air-to-surface missiles, such as the Kh-29L and the Kh-101 will continue to be procured so to arm related aerial operations.
- In addition, new UCAV (Unmanned Combat Aerial Vehicles) design are understood to be under development, possibly based on the discontinued Skat model of Mikoyan.

Navy

- 2 Ivan Gren-class (Project 11711) landing ships are planned, both of which were in the final stages of development by late 2016.
- 10 Borey class nuclear-powered ballistic missile submarines are planned, with 3 already having been introduced into the Navy's arsenal, by late 2014.
- 12 Yasen (or Severodvinsk) class nuclear-powered multipurpose attack submarines are planned, with 1 already having been officially commissioned into the Navy's arsenal, by late 2013.
- 8 Admiral Gorshkov-class (Project 22350) frigates are planned, the 1st of which was commissioned into active service in November of 2016.
- 6 Admiral Grigorovich-class (Project 11356P/M) frigates are planned, 3 of which have been inducted into the Russian Navy by late 2016.
- 12 Steregushchiy-class (Project 2038.0) corvettes have been planned, 5 of which were already introduced to active service by late 2016.
- 2 Gremyashchiy-class (Project 2038.5) corvettes, which had already been commissioned into service, by late 2016.
- 15 Buyan-class (Project 21630) corvettes, of which 8 were already delivered by late 2015.
- 18 Karakurt-class (Project 22800) corvettes are planned, 4 of which were in some stage of building during late 2016.
- 24 latest version MiG-29Ks were ordered in 2012, in order to strengthen the Admiral Kuznetsov aircraft carrier's projection capabilities.
- Kalibr cruise and Bulava intercontinental ballistic missiles are to equip most of the new major vessels and submarines being inducted into the Russian Navy.
- In addition, new aircraft carriers (Project 23000E or Storm) and Landing Helicopter Docks (Avalanche (Lavina) Project and Priboy-class landing ship) designs are understood to be under development.

Air-Defence

- The latest versions of the S-300 and S-400 surface-to-air missile systems shall continue to be integrated into the country's air-defence arsenal.
- In addition, the cutting-edge S-500 air-defence system and the A-235 anti-ballistic missile system are expected to be incorporated into service in the coming years.

Ballistic Missiles

- New Topol-M (RT-2PM2) and Yars (RS-24) intercontinental ballistic missiles shall be incorporated into Russia's Strategic Missile Forces.
- In addition, the currently under final testing, liquid-fuelled, multi-warhead, super-heavy thermonuclear RS-28 Sarmat intercontinental ballistic missile is expected to be deployed with the related forces, post 2020.

In addition, in order to increase the level of cooperation between the Armed Forces and the local defence industry, as well as most importantly to improve the level of quality and to minimise any production/reliability faults in the delivered defence materiel, the government decided to increase the number of employees working in equipment acceptance inspection, to some 25,000. As a result, representatives of the Armed Forces, monitor the quality of associated production at the various defence industry installations, an aspect that has been found to significantly reduce the number of faults found in related products, before these are put into service. Further, in 2015, by presidential decree, chief designers were appointed to take charge of strategically important military programmes. In total, there are expected to be no more than 20 such designers, with an elevated status and level of responsibility.

Russia: Defence Industry, Capabilities and International Cooperative Schemes

The Russian Defence Industry, is practically self-sufficient it terms of covering the domestic Armed Forces' needs. It produces a wide array of weapon systems, such as advanced fighter aircraft, nuclear-powered submarines, state-of-the-art armoured vehicles, highly capable air-defence systems and even long-range ballistic missiles. In fact, Russia is 2nd only to the US in terms of the variety and diversity of the arms it produces.

In certain directions, the Russian Defence industry is technologically more advanced, or at least on par, with its US and Western European counterparts (e.g. air-defence systems, 5th generation fighter aircraft, Main Battle Tanks, nuclear-powered submarines, intercontinental ballistic missiles, etc). In some other directions, further investments and research are required so as to reach the level of advancement of US, Western European and Israeli companies (e.g. C4I, UAVs, electronics/optronics).

Nevertheless, the Russian Defence Industry, in order to minimise the impact experienced as a result of dramatic changes to the country's Defence Budget, attributable to the high fluctuations in oil prices, in recent years has managed -with considerable success-, to open up to new export markets, further to the traditional ones such as India and China. Specifically, notable export deals have been achieved in recent years by the Russian Arms Industry, to North Africa (e.g. Algeria, Egypt and Morocco), Latin America (e.g. Peru, Colombia, Brazil and Argentina) and additional Far East countries (e.g. Vietnam, Indonesia, etc), regions where typically the combination of a sufficiently high technological level, with a reasonable tag price, can outweigh any technological advantage of US or Western European competitors.

Traditionally, the Russian Defence Industry comprises of major state-owned holding companies, smaller state-controlled entities and -in recent years- some private companies which have also begun to get involved in the production and marketing of arms.

It should be further pointed-out that Rosoboronexport, part of the Russian Technologies State Corporation, is the sole Russian state intermediary agency responsible for import/export of the full range of defence and dual-use end products, technologies and services. Rosoboronexport was set up by a Presidential Decree in November of 2000, as a federal state enterprise, tasked to implement the national policy in the area of military-technical cooperation between Russia and foreign countries. Since July of 2011, Rosoboronexport has been operating as an open joint stock company.

In addition, quite notably both Boeing and Airbus source a number of parts for their latest aircraft models from Russia and have invested in related cooperations and sourcing agreements in the country. Specifically, the latter has established the Airbus Engineering

Centre in Moscow (ECAR), employing some 200 engineers, which are involved in all Airbus programmes. Outfitted with state-of-the-art equipment, ECAR performs extensive work in disciplines such as fuselage structure, stress, system installation and design. Airbus continues to actively explore opportunities with the Russian aviation industry, and has completed more than 120 research and technology projects as of early 2014, with the participation of over 1,000 Russian engineers and scientists.

As far as the former (i.e. Boeing), the company's cooperation with Russia dates back to the 1970s, when Boeing was a part of the historic US-Soviet space mission "Apollo-Soyuz", when spacecraft from both countries docked in orbit. Further, in 1993, Boeing opened the Boeing Technical Research Centre (BTRC) in Moscow. Boeing cooperates with leading Russian research institutes to develop new materials for the aerospace industry. More than 600 Russian scientists and IT specialists work on Boeing contracts in flight science, titanium materials and technologies, flight safety training and IT. In addition, a Boeing Design Centre (BDC) has been established in Moscow and constitutes the largest such facility for computer-aided design of aerospace structures, outside the United States. The BDC consists of nearly 250 Boeing direct employees, managing a team of 1,200 contract engineers from Russian aerospace companies, such as Ilyushin, Sukhoi Aviation and the Khrunichev State Research and Production Space Centre. The BDC has participated in hundreds of projects in support of various models/configurations of the 737, 747, 767, 777 and 787 Dreamliner aircraft, as well as several hundred medium-sized and several thousand small-scale engineering projects.

Some further noteworthy investments in Russia of prominent foreign A&D Primes/OEMs in Joint Ventures with local entities, include:

- **HeliVert** (http://www.helivert.aero/en/): a Russian Helicopters and AgustaWestland (now Leonardo-Finmeccanica) Joint Venture, established to set up and run a final assembly line in Russia for the AW139 intermediate medium twin helicopter. The final assembly line is aimed at primarily satisfying market requirements in Russia and CIS countries.
- **PowerJet** (http://www.powerjet.aero/): a Joint Venture between SAFRAN/SNECMA and NPO Saturn JSC, in charge of all SaM146 program management tasks, encompassing design, production, marketing, sales and support. It delivers a complete SaM146 propulsion system, comprising the engine, nacelle and equipment for the Sukhoi Superjet 100 (SSJ100).
- **VolgAero:** a Joint Venture between NPO Saturn JSC and the Safran Group, established so as to produce SaM 146 engine parts (blades, etc), used on the regional aircraft SSJ100-95).
- **Poluevo Invest** (http://www.npo-saturn.ru/index_b3.php?sat=20&slang=1): a Joint Venture between SAFRAN/SNECMA and NPO Saturn JSC, charged with creating and operating Open-Air Test Benches (OATB) for the certification of aircraft engines.
- **Smartec**: this design office was founded in 2001 as a Joint Venture between SNECMA, the majority partner with 70%, and the Russian engine-maker NPO Saturn JSC, with 30%. The company is specialized in the design of different types of propulsion systems and power generators, including aircraft engines, automotive transmissions and other rotating machinery.

- **NPO Hamilton Standard – Nauka** (http://hs-nauka.ru/index_en.html)**:** a joint venture between Hamilton Sundstrand (now UTC Aerospace Systems) and OAO NPO Nauka, established in 1995 in Moscow and specializing in development and production of heat exchangers for commercial aircraft air-conditioning systems. The heat exchangers manufactured by the company are successfully integrated in aircraft of the world's leading manufacturers, such as Boeing, Airbus, Embraer, Bombardier and Tupolev.

Epicos "Industrial Cooperation and Offset Projects"

Epicos "Industrial Cooperation and Offset Projects" provides a unique set of online tools enabling the structure, identification and implementation of comprehensive Offsets programs, through a searchable database. By introducing different offset projects and ideas proposed by local A&D industry it ensures the optimum cost for Prime Contractors and reassures that the priorities of local industry are fully met…

For Further Information Press Here

Titanium-based Powder Injection Molding Parts for Aircraft/Jet Engine Applications

A company with extensive experience in the development of advanced products and materials applications using Powder Injection Molding (PIM) (complex shape metallic, cermets and ceramic parts), is proposing the development of a titanium alloy forming process based on PIM, for applications that meet the most demanding standards of the aerospace sector. This process development will ultimately lead to the production of complex shape airframe and jet engine parts, while the capability for manufacturing other critical parts (e.g. surgical implants), will also be established.

For Further Information Contact our ICO Department
Mail at: a-kintis@epicos.com

Design and set up of aircraft jet engine overhaul and test facilities

A company with extensive experience in Engineering Projects for the aerospace sector, is proposing, in the frame of an offset program, cooperation with depot level maintenance centers for the design and set up of aircraft jet engine maintenance and test facilities.

For Further Information Contact our ICO Department
Mail at: a-kintis@epicos.com

News from our A&D Business Network

BAE Systems to Modernize USS Roosevelt Under $51 Million Navy Contract

The U.S. Navy has awarded BAE Systems a $51.3 million contract for the maintenance and modernization of the USS Roosevelt (DDG 80), an Arleigh Burke-class guided missile destroyer. The full value could reach $68.4 million if all options are exercised. Under the competitively awarded, depot maintenance availability contract, BAE Systems first will dry dock the ship at the company's shipyard and then complete the work at Naval Station Mayport, both located in Jacksonville, Florida. The work is expected to begin in April and be completed in April 2018.

"The Roosevelt availability is a large, complex repair job that is vital for the future readiness and combat effectiveness of the ship," said David Thomas, vice president and general manager of BAE Systems Jacksonville Ship Repair. "Our team is eager to get to work on the Roosevelt and get the ship ready for service in the fleet for many years to come."

The USS Roosevelt is the 30th ship in the Arleigh Burke class and was commissioned in October 2000.

BAE Systems is a leading provider of ship repair, maintenance, modernization, conversion, and overhaul services for the Navy, other government agencies, and select commercial customers. The company operates five full-service shipyards in Alabama, California, Florida, Hawaii, and Virginia, and offers a highly skilled, experienced workforce, dry docks and marine railways, deep water access, and significant pier space and ship support services.

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2417258

General Atomics Awarded CVN 80 Sole Source Procurement Contract

General Atomics (GA) announced today it has been awarded the sole source production contract modification for the Electromagnetic Aircraft Launch System (EMALS) for Gerald R. Ford-class aircraft carrier Enterprise (CVN 80). EMALS for CVN 80 is part of the definitized sole source production contract awarded to GA for the John F. Kennedy (CVN 79) currently under construction, to provide significant cost savings to the Navy over the next decade and beyond.

“We are extremely proud to be selected as the sole source provider of this first-of-kind aircraft launch technology for all three of the Navy’s Ford-class carriers, including CVN 78, CVN 79, and now CVN 80,” stated Scott Forney, president of GA Electromagnetic Systems (GA-EMS). “This contract allows the Navy to combine procurement of materials associated with EMALS for CVN 79 and CVN 80 to optimize cost savings and production scheduling. We look forward to working closely with the Navy over the next 10 plus years to provide all the capabilities and support necessary to successfully deploy EMALS on each carrier as they prepare to join the fleet.”

GA-EMS will provide all production, manufacturing, engineering, design and program management, logistics support, and information assurance. GA-EMS will also subcontract to suppliers across the U.S. for necessary component manufacturing support. EMALS dead load testing on-board CVN 78 has been successfully completed.

About General Atomics Electromagnetic Systems

General Atomics Electromagnetic Systems (GA-EMS) Group is a global leader in the research, design, and manufacture of first-of-a-kind electromagnetic and electric power generation systems. GA-EMS' history of research, development and technology innovation has led to an expanding portfolio of specialized products and integrated system solutions supporting aviation, missile defense, power and energy, and processing and monitoring applications for critical defense, industrial, and commercial customers worldwide.

For Further Information Click Here

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Epicos NewsRoom

Boeing Awarded $2.1B for Third KC-46A Tanker Production Lot

The U.S. Air Force today awarded Boeing $2.1 billion for 15 KC-46A tanker aircraft, spare engines and wing air refueling pod kits.

This order is the third low-rate initial production lot for Boeing. The first two came in August 2016 and included seven and 12 planes, respectively, as well as spare parts.

Boeing plans to build 179 of the 767-based refueling aircraft for the Air Force to replace its legacy tanker fleet. Tanker deliveries will begin later this year.

“This award is great news for the joint Boeing-Air Force team and reinforces the need for this highly efficient and capable tanker aircraft,” said Mike Gibbons, Boeing KC-46A tanker vice president and program manager. “Our Boeing industry team is hard at work building and testing KC-46 aircraft, and we look forward to first delivery.”

"Placing an order for another 15 aircraft is another important milestone for the KC-46 program," said Col. John Newberry, Air Force KC-46 System program manager. "I know the warfighter is excited about bringing this next generation capability into the inventory."

Boeing received an initial contract in 2011 to design and develop the Air Force’s next-generation tanker aircraft. As part of that contract, Boeing built four test aircraft – two configured as 767-2Cs and two as KC-46A tankers. Those test aircraft, along with the first production plane, have completed nearly 1,500 flight hours to date.

The KC-46A is a multirole tanker that can refuel all allied and coalition military aircraft compatible with international aerial refueling procedures and can carry passengers, cargo and patients.

Boeing is assembling KC-46 aircraft at its Everett, Wash., facility.

For Further Information Click Here

LiteHUD Head-up Display selected for Scorpion Jet

LiteHUD is a small and compact Head-Up Display, offering space and weight advantages paired with the latest optical waveguide technology.

BAE Systems has been selected to provide its LiteHUD® head-up display for Textron AirLand's multi-mission Scorpion jet. The initial order will support the Scorpion's robust flight test program.

"This award marks the second new platform order for LiteHUD, further validating it as the future of head-up display technology," said Andy Humphries, director of Advanced Displays at BAE Systems. "With its revolutionary optics and high-resolution display, LiteHUD will provide Scorpion pilots with the 'head-up, eyes-out' capability they need, no matter the mission."

Designed using BAE Systems' patented optical waveguide technology, LiteHUD is 60 percent smaller by volume and up to 50 percent lighter than conventional head-up displays. The system is engineered to enhance situational awareness, in both day and night conditions, which significantly improves flight safety and reduces pilot fatigue. Its modular design, which includes a built-in color camera, enables seamless integration with both existing and future cockpits.

In two years of flight operations, according to Textron AirLand, the Scorpion jet has deployed to 10 countries and amassed more than 800 flight hours through military training exercises. Built for versatility, the Scorpion excels in many roles, including intelligence, surveillance and reconnaissance, close air support, armed reconnaissance, maritime and border patrol, and jet training missions.

BAE Systems has been a leader in head-up display development and production for more than 50 years, a position gained through continuous investment in technology and innovation. The company has produced more than 15,000 head-up displays that have been in service on more than 50 different aircraft types in more than 50 countries around the world. BAE Systems' displays perform on some of the most advanced and demanding military aircraft, which will now include the Scorpion fast jet.

For Further Information Click Here

Meads International Provides Updated Offer for Polish Wisła Program

MEADS International (MI) presented an updated offer for Poland's medium-range air defense (Wisła) program this week to the Ministry of National Defense. The presentation follows a year of active discussion with the Polish government regarding the security and industrial benefits of the Medium Extended Air Defense System (MEADS). Advanced capabilities, partnership and a proven technology transfer methodology remain key characteristics of the MEADS industrial offer.

"We're extremely pleased to have been given the opportunity to present a detailed offer to the Ministry of National Defense," said Tom Oles, vice president for MEADS at Lockheed Martin Missiles and Fire Control. "MEADS respresents the most affordable and the quickest path to the capabilities Poland requires, and if MEADS is selected for Wisła, Polish Industry will benefit from technology implementation and future sales of MEADS in partnership with global leaders in defense."

Through its Technology Transfer Plan, MI will help Polish Industry become a world-class air and missile defense system integrator. MI has demonstrated a robust model for technology sharing and commitment to transatlantic cooperation. MEADS technology includes active electronically scanned array (AESA) radar, digital systems, 360-degree defense and an open-architecture nonproprietary network.

In June 2015, the German Ministry of Defense selected MEADS as the basis for its new air and missile defense system Taktisches Luftverteidigungssystem (TLVS). In February 2016, members of the MI consortium accepted the Polish Ministry's invitation to revive discussions on MEADS. In September 2016, MI signed a Letter of Intent for ongoing cooperation with PGZ, Poland's leading defense company.

Developed by Germany, Italy and the United States to replace Patriot, the 360-degree MEADS system addresses deficiencies in currently fielded systems. It defeats challenging new air and missile threats from any direction, arrives and moves with deployed troops, and is interoperable with other NATO forces.

MEADS International, a multinational joint venture headquartered in Orlando, Fla., is the prime contractor for the MEADS system. Major subcontractors and joint venture partners are MBDA in Italy and Germany, and Lockheed Martin in the United States.

For Further Information Click Here

Raytheon, USAF developing new signal processor for AMRAAM

Raytheon Company and the U.S. Air Force are developing a new signal processor for the Advanced Medium Range Air-to-Air Missile under the Form Fit Function Refresh program, or F3R. The refresh will help ensure AMRAAM production well into the 2020s.

The new program comes as the government and industry team completes production of the 20,000th AMRAAM. With 10 combat victories and more than 4,200 successful test firings, AMRAAM remains the most proven and most technologically advanced air-to-air weapon ever produced.

"AMRAAM is and always has been the best missile of its kind," said Dr. Taylor W. Lawrence, president of Raytheon's Missile Systems business. "With the Air Force, we have evolved it beyond expectation, and we will continue to innovate to stay far ahead of the threats our armed services face."

AMRAAM's ability to track targets in electronic warfare environments makes it the leader in the air-to-air arena. Procured by 37 nations, AMRAAM has flown on more aircraft worldwide than any other air-to-air missile.

About AMRAAM
- AMRAAM is currently flying on the F-16, F-15, F/A-18, F-22, Typhoon, Gripen, Tornado and Harrier.

- The AIM-120C5 and AIM-120C7 variants were fully integrated on the F-35 in 2015, in support of U.S. Marine Corps' initial operational capability for F-35B, and AMRAAM is the only air-to-air missile qualified on the F-35.

- Fielded in 2015, the AIM-120D variant is the newest air-to-air weapon in the U.S. arsenal and has significant capability improvements, including increased range, GPS-aided navigation, two-way data link and improved weapons effectiveness.

- With more than 4,200 test firings, no other air-to-air missile in the world has been as thoroughly tested or improved as AMRAAM.

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Russian Helicopters produce first Ka-52 Alligator in 2017

A Russian Helicopters subsidiary – Progress Arsenyev Aviation Company, which is part of State Corporation Rostec, has produced this year's first Ka-52 Alligator - a reconnaissance and combat helicopter.

The helicopter built at Progress has already successfully and fully completed all ground and flight tests required by the technical terms and conditions of the government contract. Several more rotorcraft bodies of the new helicopters are at their final assembly point at Arsenyev. In February, another batch of Ka-52 helicopters will be transferred to their operators.

The first batch of Alligators scheduled for delivery in 2017 per government contract terms was transferred to the Russian Ministry of Defense ahead of schedule in December of last year. In 2017, production of these helicopters will be more than doubled as some will be headed overseas. The first experimental unit for a foreign customer has already been assembled and is successfully passing all tests as planned.
"We took all necessary organizational and technological steps at Progress to expand production in view of the forthcoming volume increase. Today, the plant is ready to produce world-class Ka-52 helicopters in a timely manner, for the Ministry of Defense, as well as for foreign customers," - said Russian Helicopters Deputy CEO for Sales Vladislav Savelyev.

The reconnaissance and combat Ka-52 Alligator rotorcraft has been produced for the needs of the Russian Federation's Ministry of Defense since 2010. The helicopter is designed to destroy tanks, armored and non-armored military equipment, ground targets, and enemy troops and helicopters both on the front line and in tactical reserves, in all weather conditions and at any time of the day.

The helicopter is equipped with the latest avionics and powerful weapon systems, which can be configured for a variety of combat missions. The Alligator's coaxial rotors and increased pitch power control allow to effectively maneuver and perform complex aerobatics. In addition, the Ka-52 Alligator is equipped with electronic and active counter measures and signature control devices that reduce, scatter and distort the engine heat wake.

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