

**Part I: Japan**

1. **Japan: Future Defence Procurements**
2. **Japan: Defence Industry, Capabilities and Major Companies**
3. **Epicos “Industrial Cooperation and Offset Projects”**
4. **Development of mission critical rugged displays 8xs/10xs for military and tactical vehicles**
5. **High purity mobile Nitrogen generator for cooling homing heads of infra-red head missiles**
6. **News from our A&D Business Network**

**Part II: Epicos Newsroom**

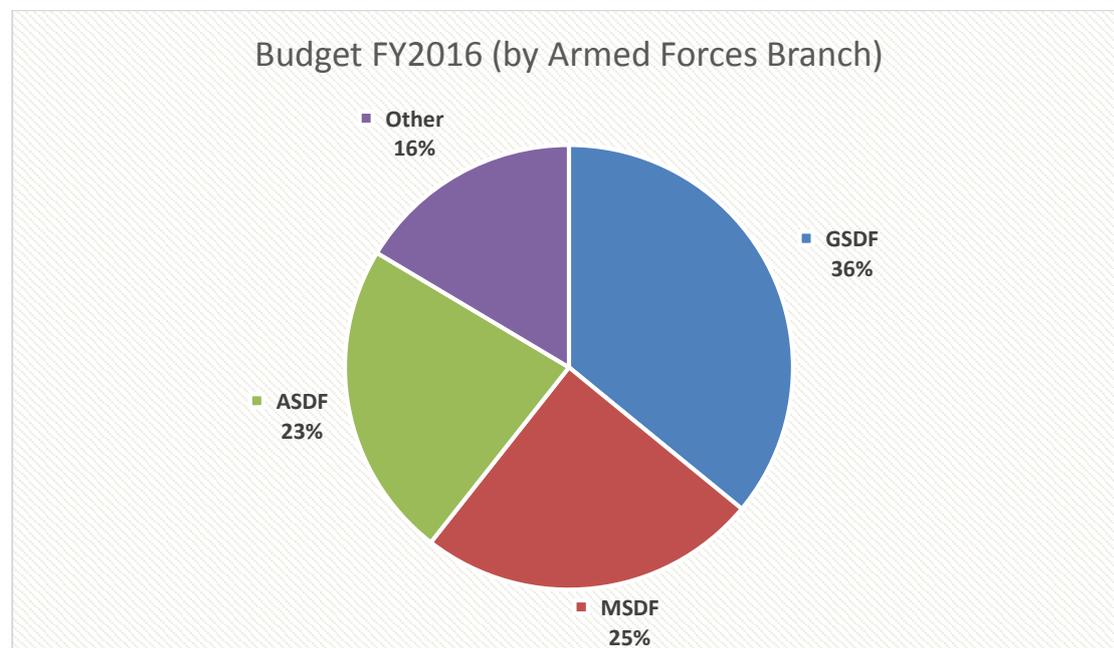
1. **Sikorsky Announces Expanded Support in Asia with Plans for New Customer Support Center**
2. **Department of Veterans Affairs Awards Leidos \$29 Million Transformation Twenty-One Total Technology Next Generation Task Order**
3. **General Atomics Lithium-Ion Fault Tolerant Batteries to Support Unmanned Underwater Surveillance Vehicle**
4. **Orbital ATK's Cygnus Successfully Launched on Seventh Cargo Delivery Mission to International Space Station**
5. **US Marines Continue F-35B Workup in Japan**

## Japan: Future Defence Procurements



Japan's Defence Administration consists of the Ministry of Defence –MoD- (administrative role) and the Self-Defence Force –SDF- (managerial and operational role), while the Japanese Armed Forces include the Ground (GSDF), Maritime (MSDF), and Air Self Defence Forces (ASDF). The regular SDF personnel at the end of 2016, has been predicted to be about 250,000 people. Nowadays, there is an increasingly complex security environment, not only due to the international terrorism escalation, the appearance of 'hybrid warfare' and its difficulty to identify, as well as the increasing number of cyber-attacks, but also due to the expanded interdependence among countries and the rapid advances in technological innovations. Demand for natural resources, energy and food may also operate as destabilizing factors in the international community, which could also affect Japan.

In the Asia-Pacific region, the increased power of various countries, including China, creates a feeling of instability in the area. China has increased asymmetrically its military capabilities in the last few years, in the fear of military activity by others in the region. The fact that there are 'grey zones' in the area that create long-standing disputes between the two countries (Japan and China), escalate tension. Accordingly, the military-focused North Korea and the development, deployment, transfer and proliferation of weapons of mass destruction (WMDs), as well as ballistic missiles, create nervousness worldwide.



Source: [http://www.mod.go.jp/e/publ/w\\_paper/pdf/2015/DOJ2015\\_3-1-3\\_web.pdf](http://www.mod.go.jp/e/publ/w_paper/pdf/2015/DOJ2015_3-1-3_web.pdf)

At the northwest, despite the severe economic problems due to the falling crude oil prices, Russia continues to increase its defence spending, with a particular priority placed on its nuclear force. Within this context, the international community has called Japan to assist

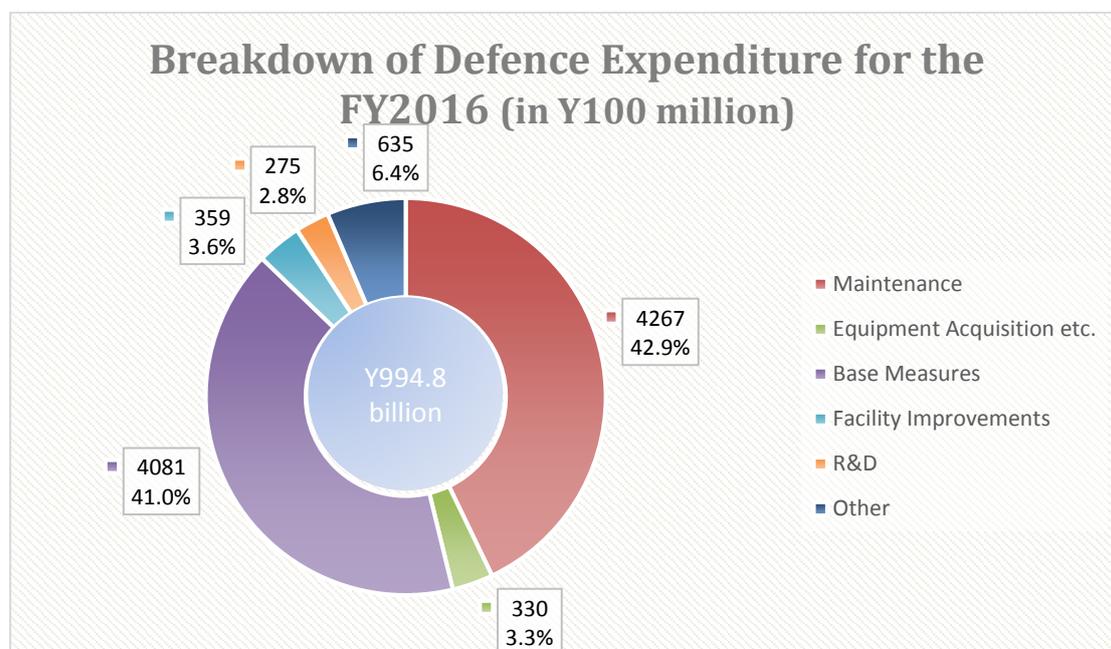
through bilateral and multilateral channels, towards peace keeping, maritime security, humanitarian and disaster relief. In terms of improving the security environment surrounding Japan, and preventing the emergent threats worldwide, Japan has recognized the importance of possessing defence capabilities, both as a member of the Asia-Pacific region and the international community, and has invested its utmost efforts in various related areas.

In light of these events, it is essential for Japan to respond promptly to the current situation and reinforce its defence readiness. Since 2012, defence-related expenditures have increased significantly. However, Japan has managed to maintain a quite 'stable' ratio of 1% of the GDP spending for military expenditure.

According to the Ministry of Finance of Japan, the National Defence Budget for 2016, will be increased by 1.5%. The new budget will be allocated to the different armed forces branches, as indicated in the chart below.

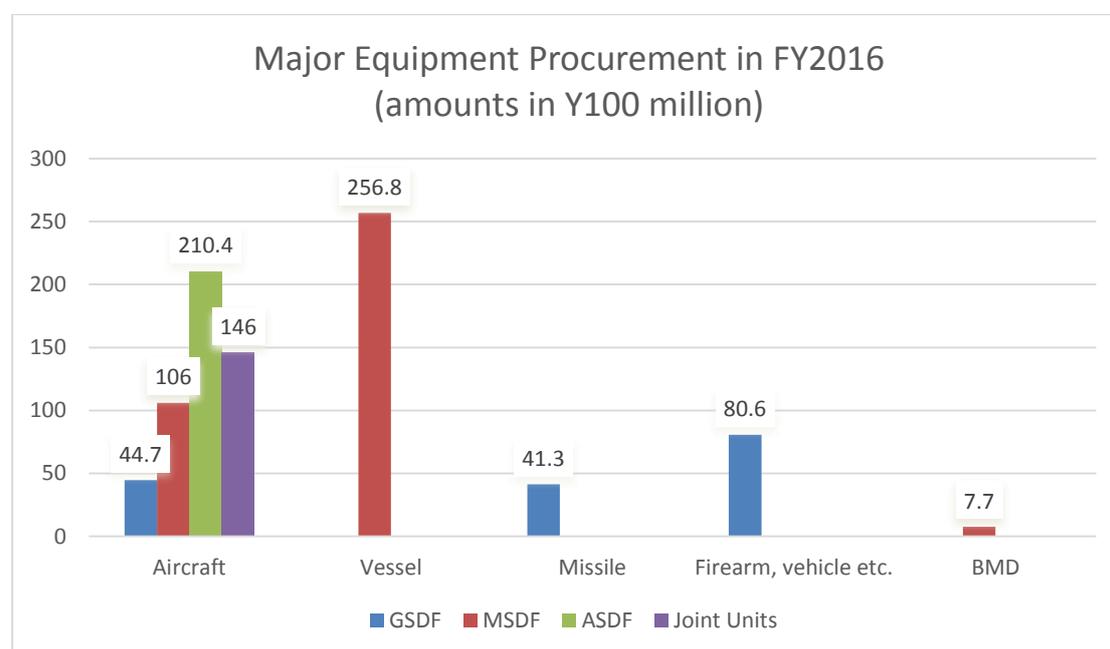
For the fiscal year 2016, Defence-related expenses are predicted to amount to Y4.82 Trillion (US \$44.2 billion) overall. More specifically, the budget includes Personnel & provisions expenses, at about Y2.15 Trillion, Obligatory outlay expenses, at some Y1.72 Trillion, and Future obligations concerning new contracts, at some Y2.08 Trillion. Also, the funds allocated for General Material Expenses have been raised by 0.3% (compared to FY2015), to some Y994.8 billion.

In a different analysis, 43% of the budget is to be allocated to Maintenance, 41% to Base Measures, 3.6% to Facility Improvements and 2.8% to Research & Development (See chart below).



Source: [http://www.mod.go.jp/e/d\\_budget/pdf/280330.pdf](http://www.mod.go.jp/e/d_budget/pdf/280330.pdf)  
[http://www.mod.go.jp/e/publ/w\\_paper/pdf/2015/DOJ2015\\_3-1-3\\_web.pdf](http://www.mod.go.jp/e/publ/w_paper/pdf/2015/DOJ2015_3-1-3_web.pdf)

In terms of defence procurements, Japan has planned to spend Y375.6 Billion (US 3.48 Billion in current dollars) on aircraft, Y256.8 Billion (US \$2.38 Billion) on Naval Vessels, and Y41.3 Billion (US \$382.4 million) on Missiles (See chart below).



Source: [http://www.mod.go.jp/e/d\\_budget/pdf/280330.pdf](http://www.mod.go.jp/e/d_budget/pdf/280330.pdf)

It should be mentioned that the budget for FY2016 includes the continuation of already existing projects, such as the development of the new patrol helicopters, the joint development of new utility helicopters to succeed the existing UH-1J and the further funding to universities and research institutes (Y37.9 Billion) for related programmes. Moreover, new major R&D programs will take place, including the development of a Variable Depth Sonar system (Y8.5 Billion), research on the long-range naval gun ammunition technology for fire support (Y2.2 Billion), research on night-vision sensor technologies (Y1.7 Billion) and environment recognition enhancement technology for remotely-driven vehicles (Y500 million).

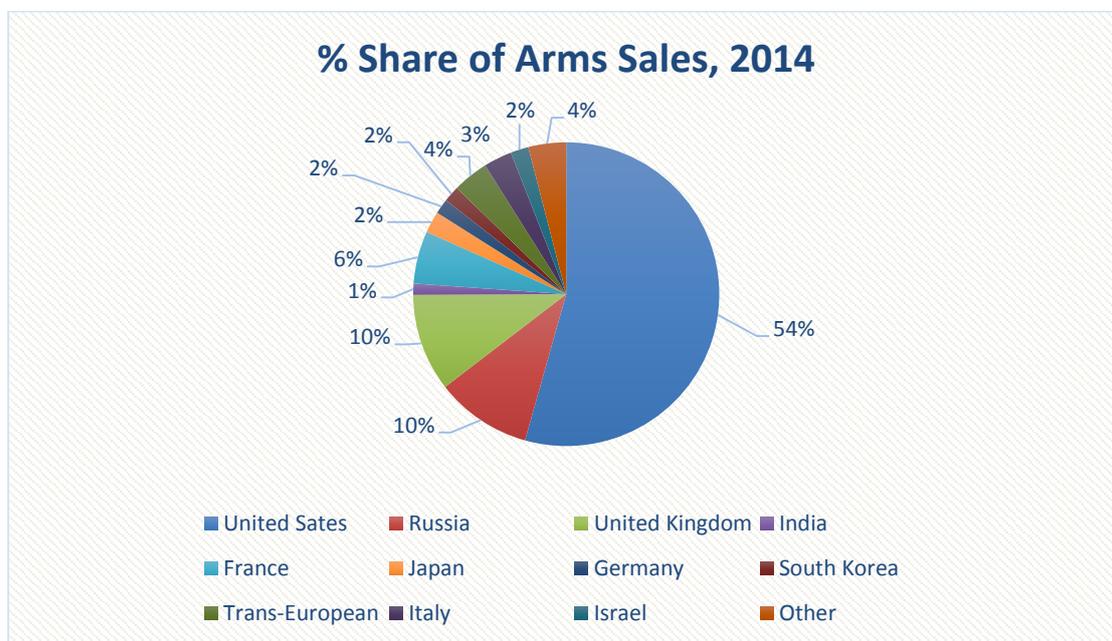
In respect of the current grave financial situation and in order to reduce military expenses, the “Strategy on Defense Production and Technological Bases” was formulated in 2014. The Strategy included various measures for maintaining and strengthening Japan’s defence production and technological basis, indicating the present situation and future direction of each defence equipment field. In addition, the “Innovative Science & Technology Initiative for Security” (established in FY2015), the MoD’s own funding program, is aimed at the exploitation of ‘creative’ research conducted at universities, research institutes etc.

## Japan: Defence Industry, Capabilities and Major Companies



The Aerospace & Defence Industry in Japan is relatively small, when compared with other industries in the country. In 2012, the people employed in the local Aerospace Industry were 35,411. The last few years, the output of the Industry has steadily increased, expected to reach US \$14 billion (current dollars), in 2016. About 50% of its total sales are categorized as defence-related

products. According to Sipri Data (2014), Japan occupied the 7<sup>th</sup> position of the Arms-producing countries worldwide, accounting for \$9.2 billion in arms-sales, followed by Israel and South Korea (ROK).



Source: <http://books.sipri.org/files/FS/SIPRIFS1512.pdf>

Japan does not have a state-owned ordinance factory, therefore most of the defence equipment and associated items manufacture, is covered by private local companies (specialized in the defence industry). Today, Japanese aircraft manufacturers, focus on the development of their own capability, as well as the production and maintenance of a wide range of defence aircraft, such as fighters, transporters, patrol planes, trainers and search & rescue aircraft, which have thus contributed greatly to addressing national defence needs. Competing with overseas manufacturers, they can provide radar systems, digital control systems, actuators, valves and other types of equipment –including Power supply systems, Landing gear systems, simulators, etc. A key achievement for the Japanese A&D Industry, was the development of the XF5-1 engine that could compete on an equal basis, if not surpass, similar engines produced in the US and Europe. Moreover, applying state-of-the-art

technology, local A&D companies participate in various international programs, through civil aircraft development –e.g. participating to such programs of Boeing (B767, B777, B787), Embraer, Bombardier (CRJ 700/900) and Airbus (A380)-, as well as through the manufacture of reputable fuselages, engines and various helicopter components. Finally, Japan operates as a worldwide supplier of advanced aircraft materials, including composites and titanium alloys (used in jet engines' components).

In 2014, five Japanese companies were included in the SIPRI's Top 100 Arms-producing and military services companies' database. Moreover, Mitsubishi Heavy Industries and Kawasaki Heavy Industries –with Arms-sales turnovers of \$3.9 billion and \$2.1 billion respectively- have significantly improved their rankings, showing the potential of this Industry (See table below).

Japan Top arms-producing & military services Companies	Arms sales, 2014 (US \$ Bn.)	Total sales, 2014 (US \$ Bn.)	Arm sales % (approx.), 2014	Total Employment, 2014
Mitsubishi Heavy Industries	3.9	37.7	10	81,850
Kawasaki Heavy Industries	2.1	14.0	15	35,400
IHI	1.2	13.7	9	-
Mitsubishi Electric Corp.	1.0	40.8	3	2,214
NEC	1.0	27.7	4	98,880

Source: <http://books.sipri.org/files/FS/SIPRIFS1512.pdf>

The technological advances incorporated in the locally manufactured defence products, have raised the production cost per unit, as well as the overall maintenance costs of associated equipment. Considering the fact that the ratio of Research & Development expenditure to defence-related expenditure has decreased (despite the global increasing trend) and that new security risks emerge daily, Japan is emphasizing the last few years, on the Transfer of Defence Equipment and Related Technology.

The MoD's efforts are targeted to the deployment of efficient defence procurement processes, especially as far as domestic development, international joint development and production, licensed domestic production, the utilization of commercially produced goods and imports, that would directly affect defence production and the local technological base.

Since 1992, Japan has implemented numerous joint projects with the US, and more recently launched –for the first time with a nation other than the US- a joint project with the UK. Additionally, the Japanese-French Agreement concerning the Transfer of Defence Equipment and Technology, has led to the confirmation of a further cooperation between the two countries, in Africa and Middle East, as far as their fight against terrorism. Following the Japan-Australia Transfer of Defence Equipment and Technology Agreement signed in 2014, Japan was a strong contender for the major Australian Future Submarine Program that was eventually awarded to DCNS of France (in April of 2016). Finally, Japan has confirmed

through 2+2 Joint Statements in 2015, the continuation of the cooperation for the mutual sharing of defence capacity, as well as knowledge and technology with the US and Australia. Also, at the beginning of 2016, Japan and the UK agreed upon the further cooperation between them, and particularly in the fields of maritime safety, maritime conservation, as well as cyber security.

In this respect and in order to maintain and strengthen its defence production and technological basis, Japan has focused on promoting measures for a long-term public-private partnership; this would allow the domestic industry to strengthen its international competitiveness, as well as to develop basic concepts regarding more efficient processes for defence equipment acquisitions –e.g. as far as domestic development (including the reduction of business costs and more effective project management), international joint development and production, and imports; improvement of procurement systems (e.g. use of single-tendering and longer-term contracts); and measures relevant to R&D.

## 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](#)

### Development of mission critical rugged displays 8xs/10xs for military and tactical vehicles



A company that designs and produces industrial computers and displays for use in the most demanding environments and also designs industrial displays and produces neural network software and automation solutions is proposing the provision of CEF 8xs/10xs type military displays to be used in an offset project or in an upgrade program.

[For Further Information Contact our ICO Department](#)

Mail at: [a-kintis@epicos.com](mailto:a-kintis@epicos.com)

### High purity mobile Nitrogen generator for cooling homing heads of infra-red head missiles



infra-red head missiles.

A company specializing in the production of PSA Oxygen Generators, Nitrogen Generators and Cylinder Filling Stations, is proposing the design; manufacture and final testing of a mobile Nitrogen generator of High Purity, for cooling homing heads of

[For Further Information Contact our ICO Department](#)

Mail at: [a-kintis@epicos.com](mailto:a-kintis@epicos.com)

---

**News from our A&D Business Network****Triumph Secures Follow-On Contract with Boeing for 787 Dreamliner****Triumph Group, Inc.**

Triumph Group, Inc. was selected by Boeing to supply composite detail and assembly parts for the 787 Dreamliner. Under the contract, Triumph Precision Components – Composites Center of

Excellence site in Milledgeville, Georgia, will produce and deliver composite details and assemblies for the 787 section 47/48 fuselage assembled in Charleston, South Carolina.

“We are extremely pleased our team in Milledgeville has secured this work extension with Boeing for the 787,” said Phil Treadway, president of Triumph Precision Components – Composites operating company. “Winning this follow-on agreement with Boeing for composite parts for the Dreamliner demonstrates our ability to provide customers like Boeing with quality, performance and customer service they expect in a Tier 1 supplier.”

Triumph will deliver shipsets directly to the Boeing South Carolina facility for integration into the aft body sections of the airplane. The Triumph Milledgeville site has been a supplier to Boeing South Carolina since 2009.

Triumph Group, Inc., headquartered in Berwyn, Pennsylvania, designs, engineers, manufactures, repairs and overhauls a broad portfolio of aircraft structures, components, accessories, subassemblies and systems. The company serves a broad, worldwide spectrum of the aviation industry, including original equipment manufacturers of commercial, regional, business and military aircraft and aircraft components, as well as commercial and regional airlines and air cargo carriers.

For Further Information [Click Here](#)

## ST Electronics Announces Partnerships with the Sri Lanka and Singapore Governments on Cyber Security Initiatives



Singapore Technologies Electronics Limited (ST Electronics) today announced key collaborations with local and overseas governments to strengthen their national cyber security capabilities and counter cyber threats, building on ST Electronics' comprehensive capabilities and deep expertise in cyber security.

### Strengthening Sri Lanka's Digital Infrastructure

ST Electronics has won a contract with the Information and Communication Technology Agency of Sri Lanka (ICTA) to provide consultancy services for the implementation of Sri Lanka's first National Cyber Security Operations Centre (SOC), and realise its vision of creating a Digitally Empowered and Secure Nation.

"This marks a major milestone for our cyber security global business as we continue to expand our footprint overseas," said Mr Ravinder Singh, President of ST Electronics. "Having built four major Cyber SOCs for customers including government and commercial organisations, we are well-equipped with the deep domain knowledge and extensive experience to protect critical information infrastructures. We are well versed in managing the technical intricacies and operational challenges of SOCs, and are committed to support Sri Lanka in its effort to realise a safe and secure digital infrastructure."

In addition to the design and implementation strategy for the National SOC, ST Electronics will also provide training and conduct awareness programmes to strengthen the cyber readiness of Sri Lanka's digital team and other key partners such as the Sri Lanka Computer Computer Emergency Readiness Team | Coordination Centre (CERT|CC)

"As a nation aiming at digitising the economy in order to provide dividends to all citizens in a digitally inclusive society, developing secure and reliable digital infrastructure has been identified as one of the key elements articulated by the government. Implementation of the National SOC is one such initiative implemented by the ICTA. As a strategic approach, a project consultancy firm has been hired; and we are confident that ST Electronics would contribute the maximum with its extensive domain knowledge and expertise to make this a reality," said Mr Muhunthan Canagey, Managing Director / Chief Executive Officer of ICTA.

### Reskilling and Upskilling of Cyber Defenders

As enterprises and government organisations are increasingly faced with fast-evolving cyber threats, ST Electronics has intensified efforts to deepen and widen the professional capabilities required to secure and protect digital assets.

In March, ST Electronics had signed a Memorandum of Understanding with the Headquarters Signals and Command Systems, which includes the Singapore Armed Forces (SAF) training institute for cyber defence, and Nanyang Polytechnic to strengthen the SAF's training for cyber defence. The tripartite partnership will focus on the following six areas:

- (i) Provision of specialised courses, which are internationally accredited, and in line with industry benchmarks;
- (ii) Co-development of customised cyber defence curriculum;
- (iii) Industrial attachments;
- (iv) Collaborative research and development;
- (v) Development of a professional network; and
- (vi) Facilitate information sharing.

Customised cyber security training to develop and hone the competencies of new entrants and seasoned professionals are offered through the ST Electronics Cyber Security Centre.

Backed by more than 30 years of experience in helping government and businesses secure their information infrastructure, ST Electronics is ideally positioned to empower businesses with next generation cyber security solutions that secure and strengthen their cyber environment.

For Further Information [Click Here](#)



## Sikorsky Announces Expanded Support in Asia with Plans for New Customer Support Center

Sikorsky, a Lockheed Martin Company today announced plans to expand its S-92® and S-76™ helicopter support services in the Asia-Pacific region. Thai Aviation Services is scheduled to become the first Sikorsky Customer Support Center in Thailand by the end of 2017. The announcement was made at the inaugural 2017 Rotorcraft Asia show.

“This decision further exemplifies Sikorsky’s commitment to the Asia-Pacific region and to our continued focus on customer support excellence,” said Christophe Nurit, Sikorsky’s regional sales executive, Asia. “As the preferred service center in Thailand, Thai Aviation Services will provide a critical role in offering the highest level of support for Sikorsky helicopters in a strategically important region.”

“Thai Aviation Services has a long-standing partnership with Sikorsky over the past 25 years. We look forward to expanding this partnership through the designation as a Customer Support Center and putting our extensive experience operating Sikorsky aircraft to use for the benefit of supporting all Sikorsky aircraft operating in the Asia Pacific region,” said Craig Havas, Thai Aviation Services Deputy Managing Director – Operations, and S-92 Chief Pilot.

Customer Support Centers enable quick access to Sikorsky logistics and spare parts inventory for operators while providing advanced service capabilities. This support center will represent Sikorsky’s seventh in the Asia-Pacific region and add to the growing network of 20 Sikorsky support centers world-wide.

In addition to authorized support centers, Sikorsky’s customer support organization maintains four forward stocking locations in S-92 and S-76 fleet-concentrated regions and fields more than 100 customer service representatives, all connected through Sikorsky’s state-of-the-art Customer Care Center in Trumbull, Connecticut.

Sikorsky and Thai Aviation Services have done business together for more than 25 years. Thai Aviation Services operates only Sikorsky helicopters and recently renewed its existing fleet of commercial helicopters with five S-76D™ medium lift and two S-92 heavy lift aircraft. These aircraft enable the Bangkok-based operator to continue its track record of providing safe, reliable helicopter transportation to oil and gas customers in the Gulf of Thailand.

For Further Information [Click Here](#)

**Source:** Epicos, Sikorsky

## Department of Veterans Affairs Awards Leidos \$29 Million Transformation Twenty-One Total Technology Next Generation Task Order

Leidos, a global science and technology company, was awarded a task order by the U.S. Department of Veterans Affairs (VA) under the Transformation Twenty-One Total Technology Next Generation (T4NG) contract vehicle. The task order was awarded to Systems Made Simple, a Leidos Innovations Corporation company. The single-award firm fixed-price task order has a one-year base period of performance, two one-year options, and a total contract value of \$29 million if all options are exercised. Work will be performed in Salt Lake City, UT.

The T4NG program provides information technology (IT) services including technical, systems engineering and other solutions encompassing the entire range of IT requirements needed by the VA and other government agencies to modernize the VA's IT infrastructure. The Repositories Program is pivotal in meeting government initiatives for sharing patient data and facilitating interoperability of health record data between the VA, Department of Defense and other external agencies.

Leidos has demonstrated expertise in providing a flexible architecture and talented professionals to adjust to the VA's expanding Repositories Program, and has an intimate understanding of the imperative need to facilitate inter-agency health data interoperability. Under the task order, Leidos will support repositories products including Administrative Data Repository, Health Data Repository, VA/DoD Identity Repository and Veterans Information Solution by providing development, expansion, enhancement, maintenance and implementation planning of existing and new functionality.

"We look forward to continuing to provide innovative information technology solutions to the VA and continuing to support their efforts to share health data inside the agency, with the DoD, and other external partners," said Leidos Health Group President, Jon Scholl. "This program is vitally important to enabling the VA to provide the best care to our nation's Veterans, and we're proud to support our customer's most important mission."

For Further Information [Click Here](#)

**Source:** Epicos, Leidos

## General Atomics Lithium-Ion Fault Tolerant Batteries to Support Unmanned Underwater Surveillance Vehicle

General Atomics Electromagnetic Systems (GA-EMS) announced today that it has been awarded a contract to provide its Lithium-ion Fault Tolerant (LiFT) battery system for the Semi-Autonomous Hydrographic Reconnaissance Vehicle (SAHRV), a small, portable underwater vehicle (UUV). GA-EMS is part of a team working with the Department of Defense to design, fabricate, deliver, and conduct at-sea testing of the LiFT battery system for use on the SAHRV platform. The SAHRV UUV is intended for shallow water surveillance to scan, detect and identify mines and other obstacles.

“Our modular, flexible LiFT battery systems are designed for integration into a wide range of platforms, and have been successfully tested for use on a manned submersible,” stated Scott Forney, president of GA-EMS. “The goal of this new contract is to provide a safe, fault-tolerant, high energy density system that achieves the safety certification approvals required for an unlimited ship carry-on capability and to provide the energy needed to maximize mission assurance whenever and wherever the SAHRV is deployed.”

GA-EMS’ LiFT battery system is designed for use on manned and unmanned underwater vehicles and platforms. LiFT’s single cell fault tolerance prevents uncontrolled cascading cell failure. This ensures the safety of on-board personnel and keeps systems operational through faults to enable mission completion. LiFT has been approved for use and classified by DNV-GL (Det Norske Veritas Germanischer Lloyd).

For Further Information [Click Here](#)

**Source:** Epicos, General Atomics

## Orbital ATK’s Cygnus Successfully Launched on Seventh Cargo Delivery Mission to International Space Station

Orbital ATK, a global leader in aerospace and defense technologies, successfully launched its Cygnus™ spacecraft to the International Space Station aboard a United Launch Alliance (ULA) Atlas V launch vehicle with approximately 7,600 pounds (3,450 kilograms) of cargo as well as 38 cubesats, many built by university students, which will be deployed directly from either the space station or the spacecraft in the coming months. The Atlas V rocket lifted off at 11:11 a.m. (EDT) today from Cape Canaveral Air Force Station, Florida. The launch marks the company’s seventh operational cargo resupply mission (OA-7) for NASA under its Commercial Resupply Services-1 (CRS-1) contract. The spacecraft, named the S.S. John Glenn in honor of the late astronaut, will also become the third Cygnus to conduct scientific experiments following its departure from the station.

“Today’s successful launch reflects the remarkable efforts of our Orbital ATK team which has now delivered its fourth Cygnus to the space station in little over a year from two different launch locations,” said Frank Culbertson, President of Orbital ATK’s Space Systems Group. “We are also pleased that Cygnus will once again display its versatility as an in-orbit science platform for conducting experiments and payload operations for key customers. Finally, congratulations to NASA, ULA and Orbital ATK for their shared teamwork in commemorating a champion of human spaceflight through the S.S. John Glenn. We are proud to dedicate this mission to John and his family.”

Following a 21-minute ascent, the S.S. John Glenn was successfully deployed into its intended orbit. Orbital ATK’s engineering team confirmed that reliable communications have been established and that the vehicle’s solar arrays are fully deployed, providing the necessary electrical power to operate the spacecraft.

Cygnus will be grappled the morning of April 22 and remain attached to the space station for approximately three months before departing with roughly 3,300 pounds (1,500 kilograms) of disposable cargo for a safe, destructive reentry into Earth’s atmosphere over the Pacific Ocean. Cygnus’ large-volume and pressurized disposal cargo capability, a critical service to NASA, is unique among America’s commercial cargo providers.

For this mission, Cygnus is carrying a variety of essential items including food, clothing, crew supplies, spare parts, laboratory equipment and scientific experiments. Among the cargo that will be delivered are four powered, mid-deck lockers. Resembling freezers, these lockers receive power from Cygnus in order to maintain a constant internal temperature after they are loaded into the pressurized cargo module. Each locker will carry critical science experiments for the crew.

Once Cygnus departs the space station, the spacecraft will execute three secondary OA-7 missions. Cygnus will carry the Saffire-III payload experiment to study the behavior of a large fire in microgravity onboard the spacecraft. Data from this experiment will be downloaded via telemetry to researchers on the ground. In addition, a NanoRacks deployer will release four cubesats used for weather monitoring and global ship tracking. The final experiment will use three Reentry Data Collection Flight Recorders to provide crucial data about the extreme conditions a spacecraft encounters when reentering the Earth’s atmosphere. This specific experiment will also test the performance of different heat shield materials that may be used on future U.S. space missions.

The Cygnus system consists of a common service module and pressurized cargo module. The service module was built and tested at Orbital ATK’s manufacturing facility in Dulles, Virginia. The enhanced Cygnus also uses Orbital ATK’s UltraFlex™ solar arrays, which are the latest in lightweight, space-qualified, electrical power technology. Orbital ATK manufactured the arrays and composite structures at its Goleta and San Diego, California, facilities, and the propellant tanks for the Cygnus spacecraft at its Commerce, California, site.

Orbital ATK's composite structures and retro motors also supported today's launch of the ULA Atlas V rocket. The company manufactured a 10-foot diameter composite heat shield for the launch vehicle, using advanced fiber placement manufacturing techniques at its Iuka, Mississippi facility. The Elkton, Maryland facility contributed eight Orbital ATK retro motors, providing thrust for separation of the spent first stage.

Pending NASA's specific cargo needs, Orbital ATK is prepared to launch two additional CRS missions scheduled this year that will launch aboard the company's Antares rockets from NASA Wallops Flight Facility in Virginia. Beginning in 2019, Orbital ATK will conduct a minimum of six initial cargo missions under NASA's CRS-2 contract.

For Further Information [Click Here](#)

**Source:** Epicos, Orbital ATK

### US Marines Continue F-35B Workup in Japan

The first Lockheed Martin F-35 Lightning II Joint Strike Fighter squadron to deploy overseas is continuing the type's expeditionary workup, conducting training exercises to operate the aircraft in real-world scenarios while operating from austere locations.

In separate news releases, the U.S. Marine Corps announced that the Green Knights of Marine Fighter Attack Squadron (VMFA) 121 have carried out hot reloads and aviation-delivered ground refueling, or ADGR, training with its F-35Bs at Marine Corps Air Station Iwakuni, Japan, on April 6 and 11 respectively.

A hot reload is the process of loading ordnance onto an aircraft while the pilot remains in the cockpit with the engine running.

The ADGR exercise saw a Marine KC-130J Hercules tanker transfer fuel directly to the F-35B while both aircraft were on the ground.

According to the Marines, this signified the first time the forward-deployed squadron loaded ordnance onto a running F-35B at Iwakuni in order to prepare for real-world scenarios, while the squadron's first ADGR established flow rates of fuel in gallons per minute to determine how fast the process could be carried out.

For Further Information [Click Here](#)

**Source:** Epicos, F-35 Lightning