



Science, Technology and Procurement

In this issue of Science, Technology and Procurement the news items have been divided in the following sections:

1. **Industry**
2. **Manufacturing**
3. **Policy and Standards**
4. **Systems**
5. **New Technology**
6. **Contracts**

All information has been gathered from open source websites and links to the original information is included with each item.

For the first time we have added a section on Industry related news and a section on Policy and Standards, where there are news items of interest we will look to maintain this distinction between systems related news items.

Following the last publication there has been better success for the Standard Missile-2 (SM-2) and the US continues to test and develop the Multi Mission Launcher capability. The Cased Telescopic cannon system has now commenced its testing and integration phase on the new UK AJAX platform. MLRS continues to evolve as a weapon system with 2 separate announcements on new missiles for the system.

Martin Pope & Dr Michael Sharp, MSIAC Munitions Systems Specialist and PM

INDUSTRY

Orbital ATK Marks Its One-Year Anniversary - Record New Orders and Important Operational Successes Achieved in All Business Groups Over Last 12 Months.

Dulles, Virginia 10 February 2016 – Orbital ATK, Inc. (NYSE: OA), a global leader in aerospace and defense technologies, today marks its first full year of combined operations following the completion of the merger between Orbital Sciences Corporation and Alliant Techsystems, Inc. in February 2015. The merger brought into existence a new \$4.5 billion space, defense and aviation systems manufacturer that employs approximately 12,000 people in 18 states across the U.S.

<http://www.orbitalatk.com/news-room/release.asp?prid=119>

Completion of Purchase of Wallop Defence Systems' Assets

Chemring Group PLC announced on 4 May 2016 that it successfully completed the purchase of Wallop Defence Systems' air countermeasures and pyrotechnic product-related assets from Esterline Technologies, having received all necessary approvals.

For more information on Wallop Defence Systems' air countermeasure or pyrotechnic products please contact us.

<http://www.chemringcm.com/news-events/news/2016/purchase-of-wallop-defence-assets.aspx>



Reliance Forms JV with Rafael, to Focus on Missiles & Aerostats

Mar 29, 2016. Israel's Rafael Advanced Defense Systems and the Indian Reliance Defence company have signed today at Defexpo 2016 a joint venture (JV) that will provide the local content of major defense programs Rafael is already involved with and intends to compete in. The JV, one of the biggest joint ventures between an Indian company with a foreign OEM, addresses current and future programs, with potential value of more than US\$10 billion (Rs 65,000 Crore) over the next ten year.

Among the areas of activity for the new JV are air/air and surface/air missile systems, in which Rafael is among the world's leaders. Rafael is already involved in several Indian air-defense programs, including Barak-1, Barak-8 and Spyder. The company is also offering the Indian Navy the new C-DOME, a navalized version of the Iron Dome system, for shipborne air defense.

http://defense-update.com/20160329_reliance_rafael_jv.html

Iran to Produce Octogen Explosive Materials to Power Weapon Systems



Apr 8, 2016. Iran's Defense Ministry announced this week the country's plans to produce the powerful explosive Octogen to boost the penetration and destructive power of missile payloads. Octogen (HMX) is used exclusively for military purposes to implode fissionable as a component of rocket propellant, and as a high explosive buster charge.

"Concurrently with its efforts to increase the precision-striking power of its weapons systems, the defense ministry has also paid attention to

boosting the destructive and penetration power of different weapons' warheads and has put on its agenda the acquisition of the technical know-how to produce Octogen explosive materials and Octogen-based weapons," Iranian Defense Minister Brigadier General Hossein Dehqan was quoted as saying by FARS News, while addressing a ceremony to inaugurate a plant which produces the new generation of explosive materials (Octogen) in Tehran on Wednesday.

http://www.defenseworld.net/news/15772/Iran_To_Produce_Octogen_Explosive_Materials_To_Power_Weapon_Systems#.V08lkf196Uk

MANUFACTURING

Aerojet Rocketdyne Successfully Tests Complex 3-D Printed Injector in World's Most Reliable Upper Stage Rocket Engine

SACRAMENTO, Calif., March 07, 2016 (GLOBE NEWSWIRE) -- Aerojet Rocketdyne marked another major milestone in its ongoing effort to incorporate additive manufacturing technology into its products by completing a series of successful hot-fire tests of its RL10 upper-stage rocket engine. The RL10 development engine, dubbed XR708, included a core main injector built using additive manufacturing technology, often referred to as 3-D printing. The work was done in conjunction with the U.S. Air Force and NASA's Glenn Research Center as part of the RL10 Additive Manufacturing Study (RAMS) program, which aims to demonstrate the capability of additively manufactured complex parts and qualify them for use in large rocket engines.

<http://www.rocket.com/article/aerojet-rocketdyne-successfully-tests-complex-3-d-printed-injector-worlds-most-reliable>

Aerojet Rocketdyne, ULA Announce Public-Private Partnership With USAF to Develop RD-180 Replacement Engine

SACRAMENTO, Calif., Feb. 29, 2016 (GLOBE NEWSWIRE) -- The U.S. Air Force selected Aerojet Rocketdyne, a subsidiary of Aerojet Rocketdyne Holdings, Inc. (NYSE:AJRD), and United Launch

Alliance (ULA) to share in a public-private partnership to develop jointly the AR1 engine - an American-made rocket propulsion system.

The Air Force decision—coupled with a large internal investment in the AR1 engine—is a major step forward in ensuring that the U.S. has a domestically-built rocket engine to replace the Russian-built RD-180 engines currently used to launch many Pentagon payloads into orbit.

<http://www.rocket.com/article/aerojet-rocketdyne-ula-announce-public-private-partnership-usaf-develop-rd-180-replacement>

Saudi Arabia Opens Ammunition Facility



Apr 5, 2016. Saudi Arabia has opened a new industrial complex for the production of projectiles. The complex includes nine industrial buildings, each allocated for purposes that includes processing, packaging, assembly and filling, destructive testing and non-destructive testing, heat treatments and surface treatments, Saudi press agency reported March 27 this year.

President of the Republic of South Africa Jacob Zuma and Deputy Crown Prince Mohammed bin Salman bin Abdulaziz, the Second Deputy Prime Minister, Minister of

Defense and Chairman of the Board of Directors of the Military Industries Corporation, opened the projectiles factory at the Military Industries Corporation today in Al-Kharj.

It is an industrial complex to produce military projectiles ranging from the shells of medium caliber such as mortar rounds (60 mm, 81 mm 120 mm), artillery shells of (105 mm and 155 mm) caliber and heavy shells such as aircraft bombs of weights of 500 pounds and up to 2,000 pounds. The factory was created with a license and help in construction by the company (Rheinmetall Denel) for ammunition of South Africa at a cost of approximately (\$ 240 million) to produce three hundred artillery shells or six hundred mortar projectiles a day, adding that this plant will be operated by one hundred and thirty engineers and operators.

http://www.defenseworld.net/news/15747/Saudi_Arabia_Opens_Ammunition_Facility#.V08mPPI96Uk

POLICY AND STANDARDS

Setting the Standard for 3-D Printed Rocket Engines

SACRAMENTO, Calif., Jan. 5, 2016 – Aerojet Rocketdyne, a subsidiary of Aerojet Rocketdyne Holdings, Inc. (NYSE: AJRD), received a \$6 million contract from the U.S. Air Force to define the standards that will be used to qualify additively manufactured components for use in liquid-fueled rocket engine applications.

<http://www.rocket.com/article/setting-standard-3-d-printed-rocket-engines>

SYSTEMS

Orbital ATK Receives \$14 Million Contract for Production of Alternative Warhead for Army Guided Multiple Launch Rocket System

Jan 20, 2016. Lockheed Martin has awarded a \$14 million contract to Orbital ATK to produce its Guided Multiple Launch Rocket System (GMLRS) Alternative Warhead (AW) for the U.S. Army. In tests, the Orbital ATK warheads with Lethality Enhanced Ordnance (LEO) technology achieved the Army's stated requirements for area effects, but left behind no unexploded ordnance, a major accomplishment for this warhead design.

"This type of warhead represents a significant capability for the Army," said Pat Nolan, Vice President and General Manager for Orbital ATK's Missile Products Division of the Defense Systems Group. "We are very excited to be part of the Lockheed Martin GMLRS program fielding this technology and its many applications within the military." In addition to its application in the GMLRS, Orbital ATK's LEO technology has been successfully tested on warheads ranging in size from 0.5 to 250 pounds. These warheads include the Small Organic Precision Munition, M1061 mortar round, 155mm unitary cannon cluster munition replacement and the Small Diameter Bomb.

<http://www.orbitalatk.com/news-room/release.asp?prid=114>

SeaRAM Anti-Ship Missile Knocks Down Supersonic Missiles Targets

May 18, 2016. The US Navy conducted a series of test shots using Raytheon's SeaRAM anti-ship missile defense system. The series of two shots included one in which two supersonic missiles were inbound simultaneously, flying in complex, evasive maneuvers. In both flights, SeaRAM detected, tracked and engaged the threats, and fired Rolling Airframe Missile Block 2 guided missiles which successfully intercepted the targets, Raytheon said in a statement Tuesday.

The tests were conducted taking out several targets in a variety of scenarios that mimic advanced threats to naval ships. "SeaRAM intercepted targets under high-stress conditions," said Rick Nelson, vice president of Raytheon's Naval and Area Mission Defense product line.

Intended to enlarge Phalanx's keep-out range against anti-ship missiles, rotary- and fixed-wing aircraft, unmanned aircraft systems and other evolving threats, SeaRAM anti-ship missile defense systems use advanced Phalanx Block 1B sensors and replace the gun with an 11-round Rolling Airframe Missile guide.

http://www.defenseworld.net/news/16089/SeaRAM_Anti_Ship_Missile_Knocks_Down_Supersonic_MissilesTargets#.V08fXvI96Uk

Akash Missile Successfully Test Fired



Apr 12, 2016. India test fired its indigenously developed surface-to-air Akash missile from the Integrated Test Range (ITR) at Chandipur near Balasore. The missile targeted a Banshee unmanned air vehicle (UAV).

Akash is powered by Ramjet-rocket propulsion system which renders thrust for the missile to intercept the target at supersonic speed without any retardation. It can fly at a supersonic speed ranging from Mach 2.8 to 3.5 and can engage aerial targets upto a range of approximately 25 km,

the official said. The missile, with a strike range of 25 km and capability to carry warhead of 60 kg, was test fired from the launch complex-3 of the ITR, he said. It is a medium-range surface-to-air anti-aircraft defence system developed by DRDO as part of the Integrated Guided Missile Development Programme.

More than three decades after the project was initiated, the missile was formally inducted into the Indian Air Force and the Army last year. Akash has the capability to neutralize aerial targets like

fighter jets, cruise missiles and air-to-surface missiles. The last trial from this base was conducted on January 28.

http://www.defenseworld.net/news/15797/Akash_Missile_Successfully_Test_Fired#.V08kj_I96Uk

Aerojet Rocketdyne Propulsion Supports Advanced PAC 3 Missile Intercept Flight Test for U.S. Army

SACRAMENTO, Calif., March 17, 2016 (GLOBE NEWSWIRE) -- Aerojet Rocketdyne, a subsidiary of Aerojet Rocketdyne Holdings, Inc. (NYSE:AJRD), announced that its propulsion systems powered a Lockheed Martin PAC 3 Missile Segment Enhancement (MSE) missile to successfully intercept an incoming ballistic missile target.

Today's complex U.S. Army-led missile defense test was staged at White Sands Missile Range in New Mexico. One PAC-3 MSE missile was launched and successfully intercepted the incoming target. This mission was the seventh successful guided flight test for the MSE interceptor where a target simulating a tactical ballistic missile was intercepted in the MSE extended battlespace.

<http://www.rocket.com/article/aerojet-rocketdyne-propulsion-supports-advanced-pac-3-missile-intercept-flight-test-us-army>

Chemring Technology Solutions Delivers Twice the Capacity for its Hard-Wired Exploders

Chemring Technology Solutions has upgraded the battery for its Shrike MkIV and MkV hard-wired exploders. The new batteries will extend in-field operations, are more environmentally friendly, and are less likely to suffer from reduced capacity over time.

Shrike is currently used in more than 50 countries as a safe, reliable and cost effective system for the initiation of explosives, pyrotechnics and other electro-explosive devices. The new NiMH rechargeable battery has twice the capacity of the NiCad batteries that were previously used in Shrike and, as they no longer contain heavy metals, the new batteries are less harmful to the environment when disposed of. They are also less prone to 'memory effect', which means they are less likely lose their maximum energy capacity when repeatedly recharged or after being only partially discharged.

<http://www.chemringts.com/news-and-events/news/news-2015/pr-2015-06-16>

Indian DRDO Tests Locally Developed Thermobaric Anti-Tank Round



Jan 11, 2016. India's Defence Research and Development Organisation (DRDO) successfully conducted test firing of new penetration-blast and Thermobaric (TB) Ammunition for 120mm tank guns used on the indigenous Arjun Tank at the Chandipur test range in Odisha, India. The new round that employs a fuel-air explosive (thermobaric) chemical compound is designed to penetrate and defeat ballistic armor or fortification (such as concrete

bunkers) and explode inside the target, devastating it from the inside with the thermobaric enhanced-blast effect. The PCB (Penetration-Cum Blast) round was developed at the DRDO Armament Research and Development Establishment (ARDE) High Energy Materials Research Laboratory (HEMRL) in Pune, which is engaged in the development of fuel-air and thermobaric explosives for application in guided missiles and bombs.

http://defense-update.com/20160111_thermobaric-round.html

New Brimstone Demonstrates Enhanced CAS Responsiveness



May 5, 2016.

This program has introduced a number of technical advances that incorporate the latest dual-mode seeker capability, an Insensitive Munition (IM) rocket motor and warhead, and a new and stronger airframe for increased air carriage robustness.

The Brimstone air-to-surface missile developed by MBDA has undertaken a challenging operational evaluation trials by the Royal Air Force (RAF) that confirm the performance of the weapon's latest technical enhancements. The successful evaluation was achieved during February 2016 at China Lake in the USA as the culmination of a program to advance the operational edge this highly capable missile brings. Brimstone has a record of approximately 500 missile firings with a very high success rate since its entry into service.

The trials demonstrated the missile engagement envelope is significantly increased over the in-service missile, providing a 100% increase in stand-off range (based on MBDA modeling and release ranges of the in-service missile). Through the tests Brimstone demonstrated the significantly increased ability to engage targets at high off-bore sight angles, thus improving its capability to fire from a launch platform performing close air support (CAS) missions. These aircraft and UAVs are often flying pattern ('wheel') over the battlefield, and would be able to launch the Brimstone quickly, without the need to maneuver the platform to align with the target.

Other new features of Brimstone also proven through the recent tests include the performance of the new warhead, against armored and non-armoured targets. This new warhead and propulsion system, conforming to Insensitive Munition (IM) requirements, to bring additional deployment benefits.

http://defense-update.com/20160505_brimstone.html

Australia Cleared to Receive the Latest AMRAAM Missiles



Apr 27, 2016. Australia is likely to become the first international user of Raytheon's AIM-120D, the latest, extended range variant US Advanced Medium Range Air-to-Air Missile (AMRAAM). An Australian request for the new missiles was recently approved by the US State Department, the Defense Security Cooperation Agency (DSCA) notified Congress.

The AIM-120D is the newest air-to-air weapon in the U.S. arsenal that has significant capability improvements over previous AMRAAM versions, including increased range, GPS-aided navigation, two-way data link and improved kinematic performance. Although some of the 36 international AMRAAM operators have requested access to the new variant, Washington so far refused the sale of the missile, considered a

key 'overmatch' over potential opponents. "The AIM-120D represents a significant improvement in air-to-air weapons capabilities and the technologies it brings to the battlefield give U.S. warfighters an unmatched advantage in the air-to-air arena." Explained Ron Krebs, AMRAAM program director for Raytheon Missile Systems.

http://defense-update.com/20160427_aim120d.html

APKWS – High Precision, Deadly Sting.



Mar 20, 2016. Since the weapon has been cleared for export the US NAVY program has received 13 formal letters of request (LORs) from international customers expressing interest in acquiring BAE Systems' APKWS. The APKWS rocket is the only U.S. Department of Defense fully qualified guided 2.75-inch rocket. It uses semi-active laser guidance technology to strike both soft and lightly armored targets in confined areas, providing greater accuracy and mission effectiveness.

The APKWS also addresses the requirement to engage small targets, particularly unarmored and light armored vehicles (soft targets), for which the Hellfire is considered an excessive overmatch effect. At a cost of third or quarter of the Hellfire, the APKWS delivers an optimized, affordable effect. Additionally, some platforms (Apache, A-10) would be able to carry more guided weapons, sustaining longer and more productive missions. It would also retain the Hellfires for use against the targets these weapons were designed for.

http://defense-update.com/20160320_apkws-2.html

US Army Tests Israel's Tamir Interceptor with its new Multi-Mission Launcher



Apr 20, 2016. The test of RAFAEL's Tamir is the first evaluation of a foreign missile associated with the IFPC Increment 2-I and MML.

The Israeli Iron Dome missile system completed a successful test firing in the USA. The US Army completed a successful test of Tamir interceptor missile from the new Multi Mission Launcher (MML) developed under a US Army initiative. During the test the missile scored a hit at the target drone. RAFAEL and Raytheon plan to continue adapting the Iron Dome and Tamir interceptor missile to meet

the requirements of the Indirect Fire Protection Capability (IFPC).

The MML is an air-defense launcher being developed for the Indirect Fire Protection Capability Increment 2-Intercept program, to provide the U.S. Army 360 degree short-range air defense capability against cruise missiles, unmanned aerial systems, rockets, artillery, and mortars.

http://defense-update.com/20160420_tamir_mml.html

AJAX Successfully Completes Major Live Firing Test

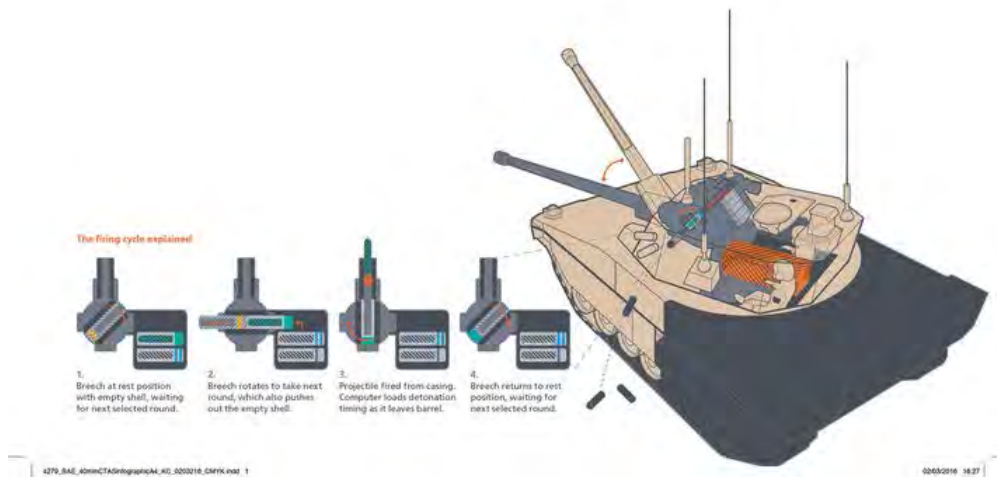


April 13, 2016. Oakdale, South Wales – General Dynamics Land Systems-UK has successfully completed the early live firing test programme for the AJAX platform - the British Army's new Armoured Fighting Vehicle - at a range in mid-Wales.

This early live firing involved testing the main 40mm CTA International stabilised cannon and chain gun whilst the vehicle was static. This is the first time that the weapon system has been

fired while fitted to the AJAX platform. The early testing supports the de-risking of the formal firing programme, which will take place later this year.

AJAX was fitted with instrumentation to record all aspects of the firing, from recoil and blast stresses to fall of shot. The testing was conducted by General Dynamics Land Systems-UK and turret developer, Lockheed Martin UK, with the Ministry of Defence observing.



Developed by specialist engineers from BAE Systems and Nexter Systems, the cannon system uses an innovative design for both the cannon and its ammunition, and is the first completely new cannon system ordered by the MOD since the 1960s. The new cannon fires 40mm Cased Telescoped ammunition, manufactured for the British Army by BAE Systems' munitions factories in Washington, Tyne and Wear and Glascoed in Wales.

The new ammunition is neatly contained in a straight tube instead of the traditional bullet shape and can deliver a more explosive charge – up to four times the power of the 30mm rounds it replaces. The current types of ammunition developed for the cannon include armour piercing and training rounds – while a new airburst round for engaging light vehicles and infantry spread over a large area, and a point detonating round which can penetrate thick concrete – are currently undergoing qualification. CTAI is also working on an anti-aerial airburst round for airborne targets.

The cannon uses a new rotating breech system, with ammunition loaded at a 90-degree angle to the barrel before being rotated into firing position.

<http://www.generaldynamics.com/news/press-releases/2016/04/ajax-successfully-completes-major-live-firing-test>

http://www.defenseworld.net/news/15666/BAE_Systems_Hands_Over_40mm_Cased_Telescoped_Cannon_To_British_Army#.V08nXvI96Uk

NEW TECHNOLOGY

TrackingPoint Introduces Long Distance Precision-Guided Firearm

Apr 20, 2016. TrackingPoint has unveiled its latest Precision-Guided Firearm - the squad-level M1400 338LM bolt-action rifle which engages stationary and moving targets out to 1400 yards. The squad-level M1400 is designed to provide unprecedented battle stand-off capabilities at the squad level.

As a soldier pulls the trigger, the target is automatically acquired and tracked. When trigger pull completes, the target is instantly eliminated. Total Time-To-Kill (TTK) is approximately 2.5 seconds. RapidLok Fire Control is image



stabilized, enabling fighters to lock targets with relative ease. RapidLok has an auto-snap feature that automatically adjusts point-of-impact to target center of mass.

http://www.defenseworld.net/news/15863/TrackingPoint_Introduces_Long_Distance_Precision_Guided_Firearm#.V08iq_I96Uk

Aerojet Rocketdyne Rocket ShopSM Completes Successful Testing of Hybrid Renewable Multi-fuel Power Generator

SACRAMENTO, Calif., Jan. 14, 2016 (GLOBE NEWSWIRE) -- Aerojet Rocketdyne, a subsidiary of Aerojet Rocketdyne Holdings, Inc. (NYSE:AJRD), has successfully completed field testing of a compact Hybrid Renewable Multi-fuel Power Generator (HR-MPG) that uses surplus materiel to generate electricity for warfighters deployed to forward locations.

The HR-MPG is a self-contained 4' x 8' towable trailer that includes everything needed to easily convert common surplus materiel such as cardboard, wood, plastic bottles and food waste into electricity. The system works by burning the material and using the heat generated by the combustion to power a Stirling engine that, in turn, produces electricity. The recent testing demonstrated that the system was capable of generating enough electricity to power an average size home.

<http://www.rocket.com/article/aerojet-rocketdyne-rocket-shop%E2%84%A0-completes-successful-testing-hybrid-renewable-multi-fuel>

Extended Range Modifications Could Double the Range of Current Howitzers

Mar 29, 2016. Picatinny Arsenal engineers have been working to create a longer, newly modified M777A2 howitzer that has the potential to double the range of current M777 artillery systems. Charged with developing technology to extend the range of all 155mm artillery, the Extended Range Cannon Artillery (ERCA) project is funded by science and technology office at the US Army Armament Research, Development and Engineering Center (ARDEC).

The ERCA program evaluates the introduction of a longer barrel, developed for the XM907 Common Cannon Assembly Support system, as well as the XM1113 rocket assisted projectile and XM654 supercharge, an autoloader and new fire control system. The program is funded program by the Army and the Marine Corps. The mobility tube consists of an old 52-caliber tube that was modified to fit into an M777A2 at the weight of the XM907.

http://defense-update.com/20160329_m777er.html

Raytheon to Offer New Long-Range Missile for U.S. Army FIRES Requirement

Mar 16, 2016. Raytheon Company (NYSE: RTN) will offer a new missile design to meet the U.S. Army's Long-Range Precision Fires (LRPF) requirement to replace current army tactical missile system weapons. LRPF is intended to replace current weapon systems, increasing combat power by doubling the launch pod load-out and engaging targets at approximately 500 kilometers in a faster and more affordable way than current weapons. Raytheon will design LRPF to integrate with the M270 MLRS and M142 HIMARS rocket launchers. The new missile's range and speed will provide U.S. Army combat units to engage targets over vast geographic space in a high-threat environment.

"Our LRPF design will provide the U.S. Army with double the combat power of its ground launchers by utilizing a new design that fits two missiles in a single launcher pod -- increasing effectiveness at a fraction of the cost of the current weapon," said Dr. Thomas Bussing, Raytheon vice president of Advanced Missile Systems. "Advances in propulsion will enable LRPF to fly faster over longer distances -- approximately 500 kilometers -- to defeat fixed land targets. This is the definition of overmatch against future threats."

<http://raytheon.mediaroom.com/2016-03-16-Raytheon-to-offer-new-long-range-missile-for-U-S-Army-fires-requirement>

DARPA's Gremlin Pathfinders



Apr 19, 2016. Unmanned aircraft systems (UAS) have become an essential support element, but current platforms are too slow and vulnerable to operate in contested airspace. The US Air Force and DARPA are looking at new concepts of operations that will enable unmanned platforms to support the future air component in all operational environments. One such concept is the use of air-launched UAS program is the Gremlins, a DARPA initiative to develop reusable a air launched Unmanned Aerial Systems (UAS).

In March 2016 the agency awarded technology research contracts to four teams to explore different approaches, innovative technologies and systems enabling aircraft to launch volleys of low-cost, reusable UASs, and safely and reliably retrieve them in mid-air. The program envisions launching groups of UASs from existing large aircraft such as bombers or transport aircraft – as well as from fighters and other small, fixed-wing platforms – while those planes are out of range of adversary defenses.

http://defense-update.com/20160419_gremlin-drones.html

Barak 8 / LRSAM Tested Onboard an Indian Destroyer



Dec 30, 2015. The Indian Navy carried out two successful tests of the LRSAM, the new, long-range surface-to-air missile system, Barak-8. The test took place at dawn (local time), from the Indian P15A destroyer, INS Kolkata. The vessel “successfully test fires long range surface to air missiles from INS Kolkata. Aerial targets destroyed at extended ranges,” the Indian defence ministry stated. “There has been a quantum leap in air defence capability of Indian Navy.” Following the full integration of the system on the Kolkata and Kochi, LRSAMs is being fitted progressively in other capital warships of the Indian Navy, the ministry announced.

The Barak-8 missile is being developed in joint collaboration by India and Israel. The first two have been successfully conducted in Israel, from a land-based test site and onboard an Israeli corvette. In the current event two missiles were fired. it provided the first opportunity to test the system onboard an Indian vessel, demonstrating the system’s maturity.

http://defense-update.com/20151230_lrsam.html

Multi-Mission Launcher Launch a Stinger Missile on First Test



Mar 29, 2016. The U.S. Army successfully fired a Stinger missile from its newest launch platform last week. The test that took place at Eglin test range on March 23, 2016 was part of a demonstration of the Army’s new Indirect Fire Protection Capability Increment 2-Intercept (IFPC Inc 2-I) platform’s Multi-Mission Launcher (MML). The launcher consists of fifteen tubes, each of which can hold either a single large interceptor or multiple smaller interceptors. The recent test used single tube configured to carry the

Stinger.

The IFPC Inc 2-I system is a mobile ground-based weapon system designed to defeat unmanned aircraft systems, cruise missiles, and rockets, artillery, and mortars.

<http://defensenews-alert.blogspot.be/2016/03/multi-mission-launcher-launch-stinger.html>

SM-6 Demonstrates Warfighting Capability Against Air and Surface Targets



The Standard Missile-6 (SM-6) continues to demonstrate its prowess in operational tests – in a challenging multi-threat intercept test SM-6 missiles successfully engaged five targets, struck a surface target and shattered its previous maximum engagement range record, set in June of 2014. In recent testing SM-6 has shown expanded mission capability in three key areas: Anti-Air Warfare, Sea-Based Terminal and Anti-Surface Warfare.

The test series supported by the Cooperative Engagement Capability (CEC), validated the tactical warfighting capability of SM-6, by demonstrating both maximum down range and a maximum cross range intercepts in over-the-horizon, engage-on-remote missions. The Arleigh-Burke class guided-missile destroyer USS JOHN PAUL JONES (DDG 53),

configured with AEGIS Baseline 9.C1, executed the series of four missions with five SM-6 missiles for Follow-on Operational Test and Evaluation (FOT&E), part of the final testing leading to a likely declaration of Full Operational Capability in 2017.

http://defense-update.com/20160307_sm6.html

France to Upgrade SAMP/T Extended Range Air Defense System

Jan 14, 2016. The French Ministry of Defence has launched a modernization program for the country's SAMP/T ground based air defense system. The Aster Block 1 NT (New Technology) programme will cover the modernization of the Aster 30 interceptor and associated SAMP/T extended range air defense system that will evolve to provide missile defense capabilities. Aster 30 is currently in service with French and Italian forces.



The contract was notified by the French DGA (Direction Générale de l'Armement) to the EUROSAM consortium involving MBDA and Thales on 23rd December 2015. The contract provides for the development of a new version of the Aster 30 Block 1 missile, referred to as Aster B1 NT with first deliveries to the French Air Force being expected in 2023. The Aster Block 1 NT (New Technology) programme will cover the modernization of the Aster 30 interceptor and associated SAMP/T air defense system that will evolve with missile defense capabilities

http://defense-update.com/20160114_aster30.html

Israel's Navy New Anti-Ship Missile



Mar 27, 2016. Israel's Navy conducted a successful test firing of surface-surface missiles from a Saar 5 corvette. The test included the launch of missile RGM-84 Harpoon and a new weapon, assumed to be an indigenous surface-to-surface missile developed for the Israel Navy by Israel Aerospace Industries (IAI).

The blurred images shown on this video depict a missile longer and faster than the Harpoon, possibly driven by ram-air propulsion to achieve supersonic cruise and extended range. IAI has been known to continue the development of surface-to-surface missiles beyond Gabriel 3, the latest variant of the Gabriel family that entered service in the early 1970s.

http://defense-update.com/20160327_israeli_anti_ship_missile.html

Rheinmetall Conducts Sea Trials of a Naval Laser Gun



Feb 19, 2016. Rheinmetall and the German Bundeswehr have successfully tested a high-energy laser effector installed on a German warship operating on the high seas. For the test Rheinmetall mounted a 10-kilowatt high-energy laser (HEL) effector on a MLG 27 light naval gun mounted on the ship. The tests included tracking of potential targets such as unmanned aerial vehicles (UAVs) and very small surface craft. While these engagements were passive and laser was not fired at sea, the HEL effector was tested separately, against stationary targets on land. Demonstrating the feasibility of

integration of Rheinmetall's HEL effector on MLG27 in maritime operations, the test program provided significant insights for future development of marine HEL systems.

While these engagements were passive and laser was not fired at sea, the HEL effector was tested separately, against stationary targets on land.

http://defense-update.com/20160219_naval-laser.html

Enhanced, Switchblade to Use Immune, Digital Datalink



Apr 29, 2016. AeroVironment and Orbital ATK announced the completion of development of a block upgrade for the Switchblade tactical missile system, improving the weapon's datalink with a new, encrypted digital data-link.

The Switchblade tactical missile system, developed and produced by AeroVironment, provides the infantry squad with increased lethality reach and force protection through its rapid deployment, direct fire and collateral damage avoidance capabilities.

http://defense-update.com/20160429_switchblade_block10c.html

Test Launch of India's Supersonic BrahMos Missile a Success

May 27, 2016. The Indian Air Force has successfully test fired an upgraded version of its BrahMos supersonic cruise missile from an airbase in the western sector. New Delhi (Sputnik) — The Indian Air Force has announced that it has tested an advanced version of the BrahMos missile, fitted with an advanced guidance system and endogenously built software algorithm on Friday.

The supersonic cruise missile was launched from a mobile autonomous launcher from the Pokahrn range.

According to defense sources, the flight has met its mission parameters, reassuring its reliability and accuracy.

<http://sputniknews.com/military/20160527/1040358239/india-brahmos-supersonic-missile.html#ixzz4AFQDJvmk>



MHTK Mini-Missile Takes Flight in New Demonstration

April 5, 2016. A Lockheed Martin-built Miniature Hit-to-Kill (MHTK) interceptor was successfully launched from a Multi-Mission Launcher (MML) in an engineering demonstration on April 4 at White Sands Missile Range, New Mexico. The launch demonstrated the agility and aerodynamic capability of the MHTK missile, which is designed to defeat rocket, artillery and mortar (RAM) targets at ranges greatly exceeding those of current and interim systems. Today's launch advances the program, increasing the level of MHTK integration maturity with the MML.

The MHTK interceptor was designed to be small in size while retaining the range, lethality and reliability of other Hit-to-Kill interceptors. MHTK is just over two feet (61 cm) in length and weighs five pounds (2.2 kg) at launch. The compact footprint of the MHTK allows multiple rounds to be packaged in a single MML tube.

http://www.deagel.com/news/MHTK-Mini-Missile-Takes-Flight-in-New-Demonstration_n000015074.aspx

Patriot PAC-3 MSE Missile Intercepts Missile Target in Flight Test

March 17, 2016. A Lockheed Martin (NYSE: LMT) PAC-3 Missile Segment Enhancement (PAC-3 MSE) Missile successfully detected, tracked and intercepted a tactical ballistic missile (TBM) target today at White Sands Missile Range, New Mexico, as part of a U.S. Army-led flight test.

"The PAC-3 Missile is a high-velocity interceptor that uses hit-to-kill technology to defend against incoming threats, including TBMs, cruise missiles and aircraft. Building on the battle-proven PAC-3 Missile, the PAC-3 MSE brings a larger, dual-pulse solid rocket motor, larger control fins and an upgraded support system. These enhancements nearly double the missile's reach, and dramatically improve performance against missile threats.

<http://lockheedmartin.com/us/news/press-releases/2016/march/mfc-031716-pac-3-mse-intercepts-missile-target-in-flight-test.html>

US Navy Proves Standard Missile SM-6 Multiple Targets Engagement Capability

Raytheon's Standard Missile-6, successfully engaged five targets and shattered its previous maximum engagement range record, set in June of 2014. This test series, supported by the Cooperative Engagement Capability, validated the tactical warfighting capability of SM-6, by demonstrating both maximum down range and a maximum cross range intercepts in over-the-horizon, engage-on-remote missions.

SM-6 is a key component of the U.S. Navy's Naval Integrated Fire Control – Counter Air mission, providing U.S. Navy sailors and their vessels extended range protection against fixed and rotary-wing aircraft, unmanned aerial vehicles, cruise and ballistic missiles. The SM-6 deployed for the first time in 2013, and Raytheon has delivered more than 250 missiles.

About the Standard Missile-6

SM-6 delivers a proven over-the-horizon air defense capability by leveraging the time-tested advantages of the Standard Missile's airframe and propulsion. The SM-6 uses both active and semi-active guidance modes and advanced fuzing techniques. It incorporates the advanced signal processing and guidance control capabilities from Raytheon's Advanced Medium-Range Air-to-Air Missile.

<http://raytheon.mediaroom.com/2016-03-07-SM-6-shatters-engagement-distance-record>

JSOW C-1 Gliding Weapon Scores Direct Hit in First Operational Test

JSOW is a family of low-cost, air-to-ground weapons that employ an integrated GPS-inertial navigation system with highly capable guidance algorithms. JSOW C prosecutes fixed land targets and uses an imaging infrared seeker for increased accuracy in the terminal phase. JSOW C-1 adds the two-way data link enhancement, enabling additional target sets with moving maritime target capability.

The U.S. Navy have conducted a successful operational test of the new Joint Standoff Weapon (JSOW) C-1 gliding, precision-guided weapon. Conducted in a challenging flight environment, the test further demonstrated the capabilities of JSOW C-1 against a broad set of land targets. Launched from an F/A-18F Super Hornet at approximately 29,000 feet, the JSOW C-1 flew a flawless, preplanned route before destroying its intended land target with precision accuracy. The challenging battlefield scenario included a well-defended target that used tactical countermeasures.

<http://raytheon.mediaroom.com/2016-02-15-JSOW-C-1-gliding-weapon-scores-direct-hit-in-first-operational-test>

Lockheed Martin Continue LRASM Integration and Test Program

May 26, 2016. Lockheed Martin has been contracted by the U.S. Navy for the continuation of the Long Range Anti-Ship Missile (LRASM) integration and test phase. The integration and test contract funds continuation of LRASM flight testing and integration onto the U.S. Air Force B-1B and the U.S. Navy F/A-18E/F aircraft. LRASM early operational capability for the U.S. Air Force and Navy is expected in 2018 and 2019 respectively.

LRASM was selected as the Increment I solution for the Offensive Anti-surface Warfare (OASuW) program. After a competition in 2009, the Defense Advanced Research Projects Agency selected Lockheed Martin's LRASM to provide a demonstration of OASuW air-launched capability to defeat emerging sea-based threats at significant standoff ranges. The success of that demonstration prompted initiation of an accelerated acquisition program, which is now led by the U.S. Navy.

LRASM is a precision-guided anti-ship standoff missile leveraging Lockheed Martin's successful Joint Air-to-Surface Standoff Missile Extended Range heritage, and is designed to meet the needs of U.S. Navy and Air Force warfighters in an advanced anti-access/area-denial threat environment. Armed with a proven 1,000-pound penetrator and blast-fragmentation warhead, LRASM employs a multi-mode sensor, weapon data link and an enhanced digital anti-jam Global Positioning System to detect and destroy specific targets within a group of ships.

<http://www.lockheedmartin.com/us/news/press-releases/2016/may/mfc-052616-lockheed-martin-receives-321-million-to-continue-LRASM-integration.html>

CONTRACTS

India to Purchase 145 M777 Howitzers for US\$ 750 Million

Apr 18, 2016. India is likely to buy 145 M777 Howitzers for \$750 million to equip its Mountain Strike Corps. The decision to buy ultra-light Howitzers produced by BAE Systems under the 'Make In India' program was discussed at a meeting on April 12 between Indian Defense Minister Manohar Parrikar and his US counterpart Ashton Carter, Tribune reported Sunday.

The artillery gun programme to equip the Mountain Strike Corps is being finalised as India and the US are in agreement on its "make in India" component.

[http://www.defenseworld.net/news/15844/India To Purchase 145 M777 Howitzers For US 750 Million#.V08j2fI96Uk](http://www.defenseworld.net/news/15844/India-To-Purchase-145-M777-Howitzers-For-US-750-Million#.V08j2fI96Uk)

Sagem, OIS-AT to Co-Produce AASM Hammer in India



Apr 19, 2016. Sagem (Safran) has selected OIS Advanced Technology (OIS-AT) as the Indian Manufacturer of its AASM Hammer Bomb Guidance and Glide Kit. Under the agreement, the two companies have entered into Joint Venture collaboration for manufacturing the weapon system in India.

Considered to be the most advanced, precision Bomb Guidance and Range Extension kit, the AASM Hammer

originally designed and manufactured by Sagem for the requirements of the French Air-Force and Navy on-board the Rafale aircraft, is intended to cater to requirements of the Indian Air Force's high precision munition requirements. The AASM Hammer has been extensively proven in combat, and the version that will be manufactured in India will be customized to specifically exceed Indian Air Force requirements.

Chemring Military Products, Alliant Techsystems Awarded \$750 Million Contract From US Army

March 28, 2016. The US Army announced that Chemring Military Products, Perry, FL, and Alliant Techsystems Operations LLC, Independence, MO, were awarded a \$750 million contract. This award is for a five-year, Firm-Fixed-Price Indefinite Delivery Indefinite Quantity (IDIQ) contract for the delivery of various types of Non Standard Ammunition (NSA), ammunition related items, and Non Standard Mortar Weapon Systems (NSMWS). The contract allows for Foreign Military Sales and is based out of the Army Contracting Command at the Rock Island Arsenal in Illinois. The estimated completion date is March 2021 with funding and work location to be determined with each order.

Chemring Military Products, part of the Energetic Systems sector within Chemring Group Plc, is a trading company that provides complete brokering services to the US military and approved foreign customers, including ammunition, weapons, pyrotechnics and platforms.

<http://www.chemringmp.com/media/announcements/2016/03-28-2016.aspx>

Raytheon, IMI to Provide 120mm Guided Bombs for Marine Corps Mortars



Precision Extended Range Mortar (PERM) gives a combat commander the ability to destroy enemy targets at longer ranges using fewer rounds.

Raytheon Missile systems will provide precision guided mortar bombs to the US Marine Corps, under a contract worth \$98 million awarded this week by the Pentagon. The contract with the U.S. Marine Corps has a maximum 60-month effective period, with five 12-month ordering periods. Raytheon's PERM team has

partnered with Israeli Military Industries to provide the weapon systems. As such, 39% of the work will be performed in Israel by IMI and its subcontractors.

The Marine Corps plans to field 3,113 rounds beginning in 2018.

PERM gives a combat commander the ability to destroy enemy targets at longer ranges using fewer rounds. A typical mortar round travels about seven to eight kilometers. The PERM rounds can reach distances up to 16 kilometers. The basic version selected by the corps is GPS guided with accuracy of 10 meters (industry officials place it within 2 meters). PERM also increases the lethality of the 120mm mortar by as much as 250 percent. In the future Raytheon plans to add semi-active laser guidance to its PERM rounds, enabling mortar teams to hit moving targets designated by forward or airborne target acquisition teams.

http://defense-update.com/20151210_perm.html

Saab Awarded Contract for Development and Production of New Lightweight Torpedo

May 20, 2016. Defence and security company Saab has received an order from the Swedish Defence Material Administration (FMV) for the development and production of New Lightweight Torpedo system. The total order value amounts to approximately SEK1.53 billion and deliveries will take place during the period 2016-2024. The order comes under the terms of the Letter of Intent (LoI) between Saab and FMV that was announced on June 9, 2014. The LoI supports the Swedish Armed Forces' underwater capabilities for the period 2015-2024. This order connects to the previous orders from FMV announced in July 2014 and February 2015 for New Lightweight Torpedo.

Saab has over the years established a unique experience and expertise in developing underwater systems, for shallow waters and the types of environments that exists in the Baltic Sea, including adapted propulsion, communications and target seekers. Saab is a longstanding supplier to FMV and has provided underwater solutions for weapon systems, sensors, autonomous and remotely operated underwater vehicles and mine hunting.

http://www.deagel.com/news/Saab-Awarded-Contract-for-Development-and-Production-of-New-Lightweight-Torpedo_n000015202.aspx

Saab Receives Order for Underwater Systems

Dec 22, 2015. Defence and security company Saab has received an order from the Swedish Defence Material Administration (FMV) for the upgrade and enhancement of the heavyweight torpedo system, Torpedo 62. The deliveries will take place during the period 2016-2017. With this order the Torpedo 62 system will be upgraded with new and enhanced functionalities. The contract also includes an option for additional orders.

The Torpedo 62 is an advanced heavy weight torpedo for combating surface targets. The Torpedo 62 is equipped with an advanced propulsion system capable of high speed and long endurance together with a state of the art homing system. Saab has established a unique expertise to developed underwater systems for shallow waters and for the specific environment found in the Baltic Sea, including customised propulsion systems, communication systems and target seekers. Some of these are world leading systems within its segment.

<http://saabgroup.com/Media/news-press/news/2015-12/saab-receives-order-for-underwater-systems/>

UK MoD Awards Development Contract for Spear 3 Standoff Missile

May 18, 2016. The Ministry of Defence has awarded a £411 million contract to develop a new missile for the UK's future F-35B supersonic stealth aircraft. Spear 3 is from the same family of weapons as Brimstone, currently being used by the RAF to combat Daesh in Syria and Iraq, but it packs a bigger punch and has a significantly increased range. Spear 3 uses an innovative turbojet engine rather than a tradition rocket motor, giving it a range of more than 60 miles. It was successfully test fired from an MOD Typhoon in March at a range in West Wales.



The contract, with MBDA, will enable four years of critical design and development work which will tailor the weapon for use within the internal weapons bay of F-35B, the world's most advanced combat aircraft. The £411 million contract award follows an initial £150 million assessment phase and, if successful, it is expected that Spear 3 will enter service in the mid-2020s.

<http://www.mbdasystems.com/press-releases/mbdas-spear-missile-secures-uk-development-contract/>

Rheinmetall to Provide 10,000 Armour-Piercing Ammo for German Puma IFVs

May 4, 2016. Rheinmetall has won a series of contracts for production and delivery of 10,000 rounds of 30mm X 173 calibre armor-piercing ammunition worth over for €12 million to Germany. Besides production and delivery ammunition, the Germany's Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (BAAINBw) has contracted Rheinmetall to modify a system gun rest, and to supply it with special tools and spare parts, the company said in a statement Wednesday.



The accompanying array of ammunition includes programmable rounds, enabling the Puma to successfully engage a wide spectrum of targets. Now being fielded by the Bundeswehr, the Puma IFV provides Germany's mechanized infantry forces with a new principal weapons system, one that represents a whole new dimension in international armoured vehicle design.

<http://www.defenseworld.net/news/15970/Rheinmetall-To-Provide-10-000-Armor-piercing-Ammo-For-German-Puma-IFVs#.V08hcfI96Uk>

US Navy Awards Contract for LRASM-A Missile Development

May 13, 2016. Lockheed Martin Missiles and Fire Control, Orlando, Florida, is being awarded a \$321,847,403 cost-plus-incentive-fee contract for research and development in support of the Long Range Anti-Ship Missile (LRASM) integration and test phase.

The integration and test phase completes all remaining hardware and software detailed design; systemically retiring any open risks; building and testing missile test articles to verify compliance with capability requirements; and preparing for production and/or deployment. This phase also completes full system integration; incorporates an affordable and executable LRASM manufacturing process into the existing Joint Air-to-Surface Standoff Missile.

http://www.deagel.com/news/US-Navy-Awards-Contract-for-LRASM-A-Missile-Development_n000015176.aspx

US Navy Orders Archerfish Undersea Mine Neutraliser

April 15, 2016. BAE Systems has been awarded a £15.5 million contract by the U.S. Department of Defense (DoD) to manufacture and deliver Archerfish mine neutralisers, continuing its support to the U.S. Navy's minesweeping operation.

Archerfish is a remotely-controlled underwater vehicle equipped with an explosive warhead to destroy sea mines. Capable of overcoming the threat of modern mines, Archerfish has formed a key part of the U.S. Navy's Airborne Mine Neutralization System (AMNS) programme since 2007. In addition to Archerfish mine neutralisers, manufactured at BAE Systems' Broad Oak facility in Portsmouth, United Kingdom, the contract also includes the supply of fibre-optic spools.

http://www.deagel.com/news/US-Navy-Orders-Archerfish-Undersea-Mine-Neutraliser_n000015097.aspx

Russian Army Receives Vikhr-1 Guided Missiles from Kalashnikov Concern



May 4, 2016.

Moscow (Sputnik) — The Russian Armed Forces have received Vikhr-1 guided missiles worth about 13 billion rubles (\$191 million) under the state defense procurement plan, Russian arms manufacturer Kalashnikov Concern said in a press release on Tuesday.

"Kalashnikov has successfully completed the delivery of Vikhr-1 guided missiles to the Russian Defense Ministry within the framework of the state defense procurement plan. The total cost of the state contract is about 13 billion rubles," the press release reads.

<http://sputniknews.com/military/20160405/1037500142/russian-army-vikhr-kalashnikov.html>

SAAB Receives Order from EDA for Carl-Gustaf Ammunition

Jan 25, 2016. Defence and security company Saab has signed a contract with the European Defence Agency (EDA) for the production and delivery of Carl-Gustaf ammunition. Deliveries will take place during 2017.

The order comes under the terms of Saab's framework agreement signed between Saab and EDA in 2014, allowing for the co-ordinated purchase of Carl-Gustaf ammunition by the agency member states Estonia, Latvia, Lithuania, the Czech Republic and Poland. The agreement is in effect for five years, with a possible extension of two further years. The framework provides for potential orders of approximately SEK 460 million.

<http://saabgroup.com/Media/news-press/news/2016-01/saab-receives-order-from-eda-for-carl-gustaf-ammunition/>

Rheinmetall Wins Major Artillery Ammunition Order

Jan 22, 2016. An international customer has awarded Rheinmetall an important contract for artillery ammunition. Worth around €130 million, the order encompasses the Group's full spectrum of projectile variants as well as the accompanying propelling charges. Rheinmetall Denel Munition of South Africa will produce and supply the complete array of 155mm ammunition. Delivery of the products will take place during a period up to the end of 2019.

http://www.rheinmetall-defence.com/en/rheinmetall_defence/public_relations/news/latest_news/details_9152.php

Raytheon Awarded \$143 Million Contract for Rolling Airframe Missile Block 2



Jan 11, 2016. The U.S. Navy awarded Raytheon Company (NYSE: RTN) a \$66.6 million firm-fixed-price contract for fiscal year 2016 for Rolling Airframe Missile (RAM) Block 2 guided missile round pack requirements. RAM is a cooperative program between the U.S. and German governments with industry support from Raytheon and RAMSYS of Germany. The contract calls for production work to be shared between both companies.

RAM is a supersonic, quick reaction, fire-and-forget missile providing defense against anti-ship cruise missiles, helicopter and airborne threats, and hostile surface craft. The missile's autonomous dual-mode, passive radio frequency and infrared guidance design provide a high-firepower capability for engaging multiple threats simultaneously. RAM is installed, or planned for installation, aboard more than 165 ships as an integral self-defense weapon for the navies of Egypt, Germany, Greece, Japan, the Republic of Korea, Turkey, the United Arab Emirates and the United States.

The RAM Block 2 upgrade includes a four-axis independent control actuator system and an increase in rocket motor capability, increasing the missile's effective range and delivering a significant increase in maneuverability. The improved missile also incorporates an upgraded passive radio frequency seeker, a digital autopilot and engineering changes in selected infrared seeker components.

<http://raytheon.mediaroom.com/2016-01-11-Raytheon-awarded-143-million-contract-for-Rolling-Airframe-Missile-Block-2>

Saab to Deliver RBS 70 Bolide Missiles to NATO



Jan 19, 2016. Saab will supply RBS 70 Bolide missiles to NATO during 2016-17 under a contract received recently from the NATO Support and Procurement Agency (NSPA)

The Bolide missile is an advanced version of Mk2 used in RBS 70 air defence system with a new sustainer rocket motor, which increases missile speed and manoeuvrability. The Bolide missile has the maximum velocity of Mach 2. Its combined shaped-charge and pre-fragmented warhead can defeat armoured aerial targets including attack helicopters and close air support (CAS) aircraft as well as land-based targets such as armoured

personnel carriers (APCs).

When integrated with a Bolide fourth-generation all-target VSHORAD missile, the highly modular RBS 70 system provides complete air defence against all threats ranging from fixed and rotary wing aircraft to small targets such as cruise missiles and unmanned aerial vehicles (UAVs). More than 1,600 RBS 70 systems have been acquired by 19 nations across five continents to date.

<http://www.airforce-technology.com/news/newssaab-to-deliver-rbs-70-bolide-missiles-to-nato-4787645>

Lockheed Martin Receives \$528 Million THAAD Missile-Defense Contract

Jan. 4, 2016. The Missile Defense Agency awarded Lockheed Martin (NYSE:LMT) a \$528 million contract in December 2015 for production and delivery of interceptors for the Terminal High Altitude Area Defense (THAAD) system. THAAD is a key element of the Ballistic Missile Defense System (BMDS) used to protect America's military, allied forces, citizen population centers and critical infrastructure from short- to medium-range ballistic missile attacks.

THAAD interceptors employ Lockheed Martin's proven "hit-to-kill" technology to destroy missile threats inside and outside the atmosphere. The system is rapidly deployable, mobile, and also interoperable with all other BMDS elements, including Patriot/PAC-3, Aegis, forward-based sensors and the Command, Control, Battle Management and Communications system. These unique capabilities make THAAD an important addition to air and missile defense architectures around the world.

<http://www.lockheedmartin.com/us/news/press-releases/2016/january/mfc-010416-lockheed-martin-receives-528-million-THAAD-contract.html>

US Approves 80 SM-2 Missiles to Australia



Jun 1, 2016. The US Defense Security Cooperation Agency (DSCA) has approved sale of 80 SM-2 missiles for \$302 million to Australia. The contract includes vertical launch canisters for the SM-2 Block IIIB missiles, contractor engineering, technical and logistics support services.

Australia plans to use the missiles for anti-air warfare test firings during Combat Systems Ship Qualification Trials for the Royal Australian Navy's three new Air Warfare Destroyers now under construction. The SM-

2 Block IIIB missiles, combined with the destroyers' Aegis combat systems, will provide enhanced area defense capabilities over critical Southeast Asian air and sea lines of communication.

http://www.defenseworld.net/news/16213/US_Approves_80_SM_2_Missiles_For_302_Million_To_Australia#.V08ZLPI96Uk

Lockheed Martin Wins \$331 million Rocket Pods Contract For Israel, Finland, Jordan and Singapore

May 20, 2016. Lockheed Martin has won a foreign military sales contract worth \$331 million to supply Guided Multiple Launch Rocket System (GMLRS) rocket pods to Israel, Finland, Jordan and Singapore.

Under the US Army awarded contract, Lockheed Martin Missiles and Fire Control has to supply 290 Guided Multiple Launch Rocket System (GMLRS) alternative warhead rocket pods, 34 unitary rocket pods and 529 reduced range practice rocket pods, the US Department of Defense announced Thursday.

http://www.defenseworld.net/news/16117/Lockheed_Martin_Wins_331_million_Rocket_Pods_Contract_For_Israel_Finland_Jordan_and_Singapore#.V08e0_I96UJ