



Science, Technology and Procurements

This issue of Science, Technology and Procurement is slightly different from previous versions. The news items have been divided in the following sections: Manufacturing, Systems, New Technology and Contracts.

In the System's section, you can find the US Navy confirmed that a Raytheon made Standard Missile-2 (SM-2) test missile exploded after suffering a malfunction after it was fired from the guided-missile destroyer USS The Sullivans during a planned missile exercise off the coast of Virginia.

The New Technology section begins with the news that the Excalibur N5 155mm Projectile was test fired successfully.

The extensive Contracts section is certainly also worth a look with Rheinmetall winning a new order for tank ammunition worth around €20 million. The section ends with the US Army and Navy awarding Lockheed Martin \$66 Million Contract for Joint Air-to-Ground Missile.

MANUFACTURING

Aerojet Rocketdyne Completes Build of 3-D Printed Parts for Orion Spacecraft

SACRAMENTO, Calif., Dec. 1, 2015 (GLOBE NEWSWIRE) -- Aerojet Rocketdyne, has completed 12 additively manufactured production nozzle extensions for use aboard the Orion spacecraft. The nozzle extensions are part of Orion's crew module reaction control system that Aerojet Rocketdyne is building for Lockheed Martin and NASA.

<http://www.rocket.com/article/aerojet-rocketdyne-completes-build-3-d-printed-parts-orion-spacecraft>

SYSTEMS

Aerojet Rocketdyne Completes Delivery of 100th SM-3 Block IB TDACS

SACRAMENTO, Calif., Aug. 26, 2015 (GLOBE NEWSWIRE) -- Aerojet Rocketdyne (NYSE:AJRD) announced today that it has completed the delivery of the 100th Throttling Divert and Attitude Control System (TDACS) for Raytheon's Standard Missile-3 (SM-3) Block IB guided missile system.

Aerojet Rocketdyne also supplies the first-and second-stage booster motors that power the Block IB kinetic warhead which is guided by the TDACS – the only MIL-STD 1901A compliant system deployed in the U.S. Navy fleet today.

The SM-3 Block IB guided missiles are currently deployed on Aegis cruisers and destroyers and are soon to be deployed on land sites as part of the Aegis Ashore component of the Missile Defense Agency's Aegis Ballistic Missile Defense (BMD) System, designed to defend against short-to-medium range ballistic missile threats.

In concert with Raytheon, Aerojet Rocketdyne is developing the third generation of sea- and land-based U.S. missile defense capabilities by providing reliable, low-risk propulsion technologies. Along with the current production of MK 72 and MK 104 rocket motors and the SM-3 Block IB TDACS, the company is developing the TDACS for SM-3 Block IIA, the planned missile variant upgrade to the current SM-3 Blocks IA and IB guided missiles.

<http://www.rocket.com/article/aerojet-rocketdyne-completes-delivery-100th-sm-3-block-ib-tdacs>



Orbital ATK's AARGM Missile Scores Direct Hit

Block 1 Upgrade Capability Demonstrates Advanced Capabilities during Live Fire Testing

Dulles, Virginia 30 November 2015 -- Orbital ATK, Inc. (NYSE: OA), a global leader in aerospace and defense technologies, and the U.S. Navy successfully launched and scored a direct hit against an advanced enemy air defense radar system during a live fire test of the AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) Block 1 Software Upgrade at China Lake Naval Air Warfare Center on Sept. 22, 2015.

The AARGM Block 1 Software Upgrade shot was launched from a U.S. Navy F/A-18F Super Hornet in a complex scenario designed to test the missile's capability against an advanced air defense radar threat. Prior to launch, AARGM successfully detected, identified and located the target using its anti-radiation homing receiver. This information was relayed directly to the pilot who then launched the AARGM in Target of Opportunity mode. The missile's millimeter wave radar located the target and performed terminal guidance resulting in a direct hit on the target.

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AARGM is a supersonic, air-launched tactical missile system, upgrading legacy AGM-88 HARM systems with advanced capability to perform Destruction of Enemy Air Defense and time sensitive strike missions. AARGM provides the most advanced system for pilots with in-cockpit, real-time electronic order of battle situational awareness against today's modern surface-to-air threats. AARGM is able to rapidly engage advanced land- and sea-based radar air-defense threats, as well as non-radar, time-sensitive strike targets.



<https://www.orbitalatk.com/news-room/release.asp?prid=102>

Indo-Israeli Barak 8 Scores Direct Hit on 1st Sea Launch

Israel's Ministry of Defense and Israel Aerospace Industries (IAI) conducted today the first full system flight and intercept test of the Barak 8 missile system developed jointly by Israel and India. Upon the completion of the system verification test series, Barak 8 is expected to achieve initial operational capability next year.

The test was conducted from the Israel Navy SAAR 5 missile corvette INS Lahav, the first Israeli vessel to be equipped with the new air and missile defense system. The scenario began with the launch of a target, representing a reference threat. The MF-STAR on INS LAHAV detected the threat, tracked its course and passed it to the battle management center (BMC) inside the ship. The BMC calculated the optimal interception point, and assigned selected the missile interceptor for the launch. (The Barak-8 system can operate independently, or share assets across several platforms to provide effective area defense for larger battle groups).

http://defense-update.com/20151126_barak8-2.html#.VI8cZnarSUK

40mm Missile Extends Grenade Launcher's Range Beyond 2,000 Meters

Raytheon Company successfully fired two Pike 40 mm precision-guided munitions from a standard tube grenade launcher during flight tests at Mile High Resources in Texas. Both rounds landed within the targeted impact area after flying more than 2,300 yards. (2.1 km). Weighing less than two pounds and measuring just 16.8 inches (42.6 cm) in length, Pike can be fired from a conventional, single-shot

grenade launcher such as the M320 or EGLM (Enhanced Grenade Launching Module). The maximum range of M320 grenade launcher is 437 Yards (350 meters).



Pike uses a digital, semi-active laser seeker to engage both fixed and slow-moving, mid-range targets. The missile's rocket motor ignites eight to 10 feet after launch and is nearly smokeless for reduced launch signature. Photo: Raytheon

http://defense-update.com/20151012_pike.html#.VI8fKXarSUI

SM-2 Missile Explodes Shortly After Launch from a Guided Missile Destroyer

The US Navy confirmed that a Raytheon made Standard Missile-2 (SM-2) test missile exploded after suffering a malfunction as it was fired from the guided-missile destroyer USS The Sullivans (DDG 68) during a planned missile exercise off the coast of Virginia.

A US Navy guided missile destroyer was damaged by a surface-to-air missile that exploded shortly after launch during an exercise off the U.S. Atlantic coast on Saturday USNI Reports.

The US Navy confirmed that a Raytheon made Standard Missile-2 (SM-2) test missile exploded after suffering a malfunction as it was fired from the guided-missile destroyer USS The Sullivans (DDG 68) during a planned missile exercise off the coast of Virginia. There were no injuries and only minor damage to the port side of the ship resulting from missile debris. The ship returned to Naval Station Norfolk for assessment.

The Navy said an investigation into the malfunction has been ordered and is being conducted by the Navy's Program



http://defense-update.com/20150723_sm2_launch_failure.html#.VI8h83arSUK

Navy Restricts Use of 'A Number' of SM-2 Missiles Following USS The Sullivans Launch Failure

The Navy has restricted the use of an unspecified number of SM-2 guided missiles following a launch failure on July 18 that damaged destroyer USS The Sullivans (DDG-68), Naval Sea Systems Command officials told USNI News.

The older missiles have been restricted to "Wartime Use Only" status while an ongoing Navy failure review board determines the cause of the failure of the SM-2 Block IIIA that exploded shortly after launching from The Sullivans, NAVSEA officials said in a July 24 statement.

Once the findings are complete, "the Navy will reassess its position regarding these particular missiles," NAVSEA said.

"The missiles placed on Wartime Use Only status are [on] older missile[s], primarily used in fleet exercises and testing."

<http://news.usni.org/2015/07/27/navy-restricts-use-of-a-number-of-sm-2-missiles-following-uss-the-sullivans-launch-failure>



SM-6 'Dual 1' Defeats Ballistic and Cruise Missiles on a Live Firing Test

The SM-6 was designed from the start to defeat air breathing targets such as cruise missiles, but the recent test was the first to demonstrate the modified variant's capability to defeat ballistic threat missiles in their final seconds of flight.

The US Missile Defense Agency (MDA) and US Navy conducted a successful series of missile intercepts in the Pacific Ocean last week, demonstrating the capability of a newly modified missile interceptor to defeat short range ballistic missiles and cruise missiles with the same weapon. The SM-6 was designed from the start to defeat air breathing targets such as cruise missiles, but the recent test was the first to demonstrate the modified variant's capability to defeat ballistic threat missiles in their final seconds of flight.

This 'Multi-Mission Warfare (MMW) Events' was the first live fire test of the new SM-6 Dual I missile. During two follow-on flights additional 'SM-6 Dual I' missiles were used against targets simulating air launched and surface launched cruise missiles, demonstrating the multi-mission capability of the new SM-6 variant. Part of the U.S. ballistic missile defense, MDA's Sea-Based Terminal (SBT) program will protect against ballistic threats in their terminal phase of flight using SM-6 missiles integrated into the Aegis Weapon System. Called SM-6 Dual 1, it's on track to achieve initial operating capability in 2016.

http://defense-update.com/20150803_sm-6_dual1_test.html#.VI8meHarSUK



Longbow Missile Scores 7:1 Against Fast Attack Boat Swarm

The test scenarios included hitting targets at both maximum and minimum missile ranges. After a stationary target was engaged, subsequent targets, conducting serpentine maneuvers, were engaged. The tests culminated in a three-target "raid" scenario. During this scenario all missiles from a three-shot "ripple fire" response struck their individual targets.

In a recent test series performed by the US Navy, eight Army/Lockheed Martin AGM-114L 'Longbow Hellfire' missiles destroyed seven fast naval craft simulating fast attack craft performing swarm attacks, similar to those practiced by the Iranian navy in the Arabian Sea and the Persian Gulf. The test was part of the engineering development test of the Surface-to-Surface Missile Module (SSMM), for use on littoral combat ships (LCS).



The tests, that took place in June 2015 in the Atlantic Ocean, off the coast of Virginia, evaluated the integration of the vertically-launched AGM-114L Longbow Hellfire missile system for the SSMM solution. In this application the missile receives initial target data from a surface search radar or an airborne radar on a helicopter, before launch. After launch, it activates the onboard millimeter wave seeker to find the target. The system has an initial range of eight kilometers and features fire-and-forget and multi-mode capability. The multi-purpose warhead ensures effectiveness against various types of attacking craft.

http://defense-update.com/20150731_longbow.html

First Storm Shadow Missile Successfully released from Typhoon

A Typhoon Instrumented Production Aircraft (IPA) has successfully completed a release of the MBDA Storm Shadow, conventionally armed, stealthy, long-range stand-off precision missile, Eurofighter GmbH has announced

This continues the series of trials that Eurofighter Partner Company, Alenia Aermacchi, is leading to demonstrate the full integration of the Storm Shadow missile with Typhoon's weapon system.

With support from Eurofighter Partner Company BAE Systems, missile designer and producer MBDA, and specialist trials support from QinetiQ, the trials were conducted in November 2015 at Aberporth MoD firing range, in the UK.



The integration of the missile with the aircraft's weapon system was successfully demonstrated. The trials also verified the interface of the missile with the weapon system for pre-launch checks, demonstrated post-launch safe separation and the subsequent commencement of missile flight.

<http://www.baesystems.com/en/article/first-storm-shadow-missile-successfully-released-from-typhoon>

JSM Missile Completes Release from 20,000-ft of Altitude

Released on Tuesday, November 10, 2015

The Joint Strike Missile (JSM) successfully completed a missile flight test in the United States last week

The missile was launched at 22,000 ft from an Edwards Air Force-based F-16 over the Utah Test and Training Range and performed a number of challenging flight maneuvers. The test proved the maturity of the missile, which is specifically designed to fit inside the F-35A weapons bay, and the missile flight control software.

The JSM is a new missile being developed in partnership with Raytheon for the Norwegian Armed Forces. The missile will complete the qualification program in 2017 and will have unmatched operational capabilities enabling the F-35 to fight well-defended targets across long distances. The missile will be integrated on the F-35A but can also be integrated on other types of aircrafts, meaning its market potential extends beyond the future users of the F-35.

http://www.deagel.com/news/JSM-Missile-Completes-Release-from-20000-ft-of-Altitude_n000014628.aspx

US Army Takes Delivery of First Patriot PAC-3 MSE Missiles

Released on Tuesday, October 6, 2015

DALLAS, Oct. 6, 2015 - The U.S. Army significantly upgraded its missile defense capabilities today as it accepted the first PAC-3 Missile Segment Enhancement (MSE) interceptors built by Lockheed Martin (NYSE: LMT). With improved mobility and range, the new interceptors will defend against evolving threats around the globe.

The PAC-3 MSE missile is a high-velocity interceptor that defends against tactical ballistic missiles, 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 upgraded support systems. With the enhancements, Lockheed Martin nearly doubled the missile's reach and dramatically improved maneuverability against today's faster and more sophisticated ballistic and cruise missiles threats.

http://www.deagel.com/news/US-Army-Takes-Delivery-of-First-Patriot-PAC-3-MSE-Missiles_n000014516.aspx

PAC-3 Missile Intercepts Target in Flight Test

WHITE SANDS MISSILE RANGE, N.M., Nov. 24, 2015 – A Lockheed Martin (NYSE: LMT) PAC-3 Missile successfully intercepted an incoming target on Thursday, Nov. 19, as part of a U.S. Army-led missile defense flight test at White Sands Missile Range, New Mexico. The PAC-3 interceptor successfully detected, tracked and intercepted a Patriot-as-a-Target (PAAT), which is a legacy Patriot missile modified to represent a tactical ballistic missile common in today's operational environment.



The intercept is the second successful PAC-3 test in just under one week. On Thursday, Nov. 12, a PAC-3 also intercepted an airborne target as part of the U.S. Army's Integrated Air & Missile Defense Battle Command System (IBCS) fight test at White Sands.

The PAC-3 Missile is a high-velocity interceptor that defends against incoming threats including tactical ballistic missiles, cruise missiles and aircraft using hit-to-kill technology. PAC-3 currently provides missile defense capabilities for six nations – the U.S., the Netherlands, Germany, Japan, United Arab Emirates and Taiwan; and Lockheed Martin is on contract for PAC-3 with four additional nations – Kuwait, Qatar, South Korea and Saudi Arabia

<http://www.lockheedmartin.com/us/news/press-releases/2015/november/mfc-112415-pac3-missile-intercepts-target-in-flight-test.html>

First SeaRAM Missile Fired from US Navy's Littoral Combat Ship

Released on Thursday, September 17, 2015

TUCSON, Ariz., Sept. 17, 2015 /PRNewswire/ -- For the first time, the U.S. Navy successfully fired a tactical missile from a SeaRAM launcher on an Independence variant littoral combat ship. The missile was launched Aug. 14 during a live-fire exercise at the Naval Air Warfare Center Weapons Division sea range off the coast of California. U.S.S. Coronado (LCS 4) fired a Rolling Airframe Missile from a SeaRAM® anti-ship defense system, both produced by Raytheon Company (NYSE: RTN).

During the test, the SeaRAM detected, tracked and engaged an inbound threat target, and fired a RAM Block 1A that successfully intercepted the target.

http://www.deagel.com/news/First-SeaRAM-Missile-Fired-from-US-Navys-Littoral-Combat-Ship_n000014462.aspx

US Navy Approves Full-rate Production for Raytheon AIM-9X Block II

TUCSON, Ariz., Sept. 3, 2015 /PRNewswire/ -- The U.S. Navy cleared Raytheon Company (NYSE: RTN) to begin full-rate production on the AIM-9X® Sidewinder Block II infrared air-to-air missile. The program completed operational test and evaluation earlier this year and Raytheon is now approved to produce missiles at full factory capacity.

The U.S. Navy and Air Force, along with several international partners who have purchased the AIM-9X Block II, are receiving Sidewinder deliveries, .

"An updated electronics package gives the missile features significant enhancements, like the ability to lock on after launch using a new datalink that supports beyond-visual-range engagements," said Mike Jarrett, Raytheon Air Warfare Systems vice president. "Sidewinder remains the warfighter's weapon of choice for short-range air-to-air missiles."

AIM-9X is a U.S. Navy-led, joint Navy and Air Force program, with program offices in Patuxent River, Md., and Tucson, Ariz. Raytheon has produced AIM-9X missiles for more than 14 years. AIM-9X entered operational service in 2003; international deliveries began in 2005. Block II development began in 2011 and completed operational test and evaluation in early 2015.

The U.S. Navy declared initial operational capability of Block II in March 2015.

Block II will be the baseline effector for the U.S. Army Indirect Fires Protection Capability Increment 2, Block 1 making AIM-9X a true dual use missile, effective in either air-to-air or surface-to-air applications with no modifications required to the missile.

http://www.deagel.com/news/US-Navy-Approves-Full-rate-Production-for-Raytheon-AIM-9X-Block-II_n000014411.aspx

AIM-9X Block II Missile Scores Direct Hit Launched from the Ground

Released on Wednesday, August 26, 2015

TUCSON, Ariz., Aug. 26, 2015 /PRNewswire/ -- The U.S. Army and Raytheon Company (NYSE: RTN) successfully test fired an AIM-9X Block II missile from the Army's ground-based Indirect Fire Protection Capability Increment 2-I (IFPC 2-I) Block 1 Multi-Mission Launcher (MML).

AIM-9X is traditionally fired from aircraft toward aerial targets and this test demonstrated that the latest AIM-9X can be used in both air-to-air combat and now, without modification, in ground-based air defense.

The AIM-9X missile first locked onto an unmanned aerial system (UAS) before launch, and then intercepted and destroyed the UAS, which was flying 1,500 meters above ground level.

http://www.deagel.com/news/AIM-9X-Block-II-Missile-Scores-Direct-Hit-Launched-from-the-Ground_n000014392.aspx

Croatian Navy successfully test-fire a Saab RBS15 anti-ship missile from a naval vessel.

03 November 2015. The Croatian Navy has conducted its second firing this year of an RBS15 anti-ship missile. The test took place at the beginning of October in the waters off Dugi otok in the Adriatic Sea. Earlier this year, in May, Croatia conducted an RBS15 test firing from one of its land-based launchers. The October firing was conducted by a vessel of the Croatian Navy. The firing was part of the wider Exercise Joint Force 15, which was held in the Eugen Kvaternik military training area, Slunj, and on the naval ranges at Dugi otok. The missile was fired from the Kralj-class missile boat *Dmitar Zvonimir*. It was Croatia's first firing of an RBS15 from a warship since 1994. "The target was completely destroyed by the missile in a testament to the maintainability and reliability of the RBS15, and the Croatian customer's expertise and technical know-how. We are very impressed by the exemplary manner in which the current system has been maintained and operated by the Croatian Navy. This level of expertise will surely mean that these missiles will remain in service with the Croatian Navy well into the future. We look forward to further collaboration with the Croatian MoD, on all fronts," says Stefan Öberg, head of Saab business unit Missile Systems.

NEW TECHNOLOGY

Excalibur N5 155mm Projectile Test Fired Successfully

Released on Wednesday, September 30, 2015

TUCSON, Ariz., Sept. 30, 2015 /PRNewswire/ -- Raytheon Company (NYSE: RTN) successfully fired its new Excalibur N5 projectile during a recent live guided flight test at Yuma Proving Ground, Ariz.

A company-funded initiative, Excalibur N5 is a 5-inch/127 mm naval variant of the combat-proven Excalibur precision projectile used by the U.S. Army, the U.S. Marine Corps and several international armies. It is expected to more than triple the maximum effective range of conventional naval gun munitions and deliver the same pinpoint accuracy of the Excalibur 1b, which is in production today.

"Excalibur N5's range, precision and lethality will revolutionize naval gunfire and increase the offensive firepower of our Navy's destroyers and cruisers," said Duane Gooden, vice president of Raytheon's Land Warfare Systems product line. "This demonstration showcases the N5's maturity as a proven low-risk solution, and is ready for the Navy now."

Excalibur N5 can be used to support several critical mission areas including Naval Surface Fire Support, Anti-Surface Warfare (ASuW) and countering Fast Attack Craft (FAC).

http://www.deagel.com/news/Excalibur-N5-155mm-Projectile-Test-Fired-Successfully_n000014493.aspx

Lockheed Martin and Roketsan to Develop SOM-J Mid-Range Cruise Missile for the F-35

Released on Wednesday, September 16, 2015

LONDON, Sept. 16, 2015 - Lockheed Martin (NYSE: LMT) and Turkish company Roketsan signed a contract to cooperatively develop the SOM-J missile for integration into the F-35 internal weapons bay. SOM-J is a new generation air-to-surface standoff cruise missile.

The contract enables the companies to move forward with their Technical Assistance Agreement, making the SOM-J missile available to international customers. SOM-J integration into the F-35 is scheduled for Block 4. Early live flight testing will be conducted on Turkish F-16s.

http://www.deagel.com/news/Lockheed-Martin-and-Roketsan-to-Develop-SOM-J-Mid-Range-Cruise-Missile-for-the-F-35_n000014461.aspx

World Première for NAMMO's New 40MM X 53 High Velocity Airburst Ammunition

Published: 16 September 2015

Nammo is celebrating its latest success in its urban combat solutions offering, following the demonstration of its new 40 mm x 53 HEDP-RF Airburst ammunition.

The demonstration took place during the Aimpoint Live Fire Days at Ravlunda Range in Sweden in front of representatives from special operations forces from 20 countries. During the demonstration a new Manual Programming Unit (MPU) was also used for the first time. Available to 40 mm Automatic Grenade Launcher (AGL) operators worldwide, the MPU enables a quicker response and increased lethality.

Reaction to the display was overwhelmingly positive. The onlookers commented that they were impressed with the display, as well as the performance of the new fully integrated products. Nammo is in the lead to provide new solutions for AGL systems, with its products in this area offering almost 50 percent greater functionality than the nearest competitor.

<https://www.nammo.com/news-and-events/news/world-premiere-for-nammos-new-40-mm-x-53-high-velocity-airburst-ammunition/>

Flying IEDs: The Next Evolution in Warfare?

Over the course of the ongoing wars in Iraq and Afghanistan, roadside Improvised Explosive Devices have become the scourge of the United States military's ordnance disposal units. The IED is a staple weapon of asymmetric warfare tactics, providing an inexpensive, easy to build and difficult to detect weapon capable of inflicting painful losses on a technologically and numerically superior enemy. With the evolution and proliferation of drone technology, ordnance disposal units are now facing a new and worrisome threat, the Flying IED.

This situation was brought to the forefront when a small drone crashed into a tree on the South Lawn of the White House in January. A radar system designed to detect flying objects such as airplanes, missiles and larger military drones failed to pick up the small two foot diameter quadcopter drone as it entered the restricted area around the White House. The drone was operated by a government employee for recreational purposes and was not deemed a threat to the First Family but the event drew the attention of military planners and IED disposal specialists.

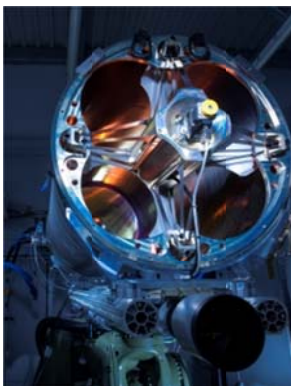


http://defense-update.com/20151003_flying_ieds.html#.VI8dHnarSUK

MBDA Deutschland Successfully Deploys Laser Effector Against a Mini Drone

17/06/2015

In May 2015, MBDA Deutschland deployed a laser effector to acquire, track, and defeat a free-flying mini drone, the first time such technology has been used to this effect. The mini drone was destroyed within seconds of the start of the test which was carried out at MBDA Deutschland's testing area in Schrobenhausen. The drone in question maneuvered in the target area at a range of about 500m with the test proving the laser effector's capability to combat realistic targets with precision, speed and safety.



Commercial mini drones represent a new type of threat that is nearly impossible to counter with conventional effectors. In 2013 a mini drone crashed at a distance of only two meters from German Chancellor Angela Merkel and other dignitaries during an election campaign event being held in Dresden, Germany. In France alone, more than 60 overflights by such craft over strategically significant locations have been reported since October 2014. Highly precise and scalable laser weapon systems could protect major events and critical infrastructures and close a current capability gap.

At the heart of MBDA Deutschland's technological approach is a multi-stage, highly precise tracking procedure and laser effector that bundles numerous laser sources into a single laser beam using the principle of geometric coupling. These processes make it possible to combat small,

highly agile targets reliably with a single laser effector

<http://www.mbd-systems.com/mediagallery/#/news/3511>

Multi-Object Kill Vehicle (MOKV) Begins to Take Shape

Each MOKV interceptor will be equipped with an advanced sensor, as well as divert, attitude-control and communications technologies, to enable each MOKV to home in on an individual target. If successful, by 2030 it could be introduced as a follow-on for the current EKV, enabling a single interceptor to destroy several objects in space.

The U.S. Missile Defense Agency (MDA) and Raytheon have completed the first Program Planning Review on the future Multi-Object Kill Vehicle (MOKV) concept, a key step toward defining critical aspects of its design. This milestone ensures that the development plan is aligned with the MDA's expectations, and on track for an upcoming Concept Review in December.

Each MOKV will steer itself to a target and destroy it. Multiple MOKVs will be loaded on a launch missile such as the Ground-Based Interceptor (GBI). Each interceptor will be equipped with an advanced sensor, as well as divert, attitude-control and communications technologies, to enable each MOKV to home in on an individual target. Based on illustrations released by the company, each interceptor missile will carry a single bus mounting six MOKVs, each utilising its own sensor and diverting thrusters, thus enabling a single interceptor to engage multiple targets – whether real warheads or decoys – with a high probability of success.



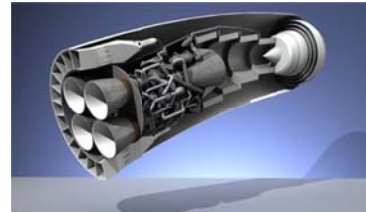
http://defense-update.com/20151122_ekv-mokv.html#.VI8q4HarSUK

BAE Systems and Reaction Engines to Develop a Ground Breaking New Aerospace Engine

BAE Systems plc and Reaction Engines Limited ('Reaction Engines') today announced a strategic investment by BAE Systems and a working collaboration to accelerate Reaction Engines' development of SABRE™ – a new aerospace engine class that combines both jet and rocket technologies with the potential to revolutionise hypersonic flight and the economics of space access.

The transaction is subject to the approval of Reaction Engines' shareholders.

<http://www.baesystems.com/en/bae-systems-and-reaction-engines-to-develop-a-ground-breaking-new-aerospace-engine>



A Propulsion System for Green Propellant Infusion Mission Completed



Aerojet Rocketdyne Ships the Green Propellant Propulsion Subsystem to Ball Aerospace

SACRAMENTO, Calif., Aug. 19, 2015 (GLOBE NEWSWIRE)

-- Aerojet Rocketdyne has completed delivery of a green propellant propulsion subsystem that will be used to test a non-toxic fuel on NASA's future spacecraft, the Green Propellant Infusion Mission (GPIM). The subsystem was delivered to GPIM prime contractor, Ball Aerospace & Technologies Corp., for integration into the Ball-designed Configurable Platform (BCP) 100 spacecraft bus. Scheduled to launch in 2016, the GPIM will provide safer operations and higher performance on future missions.

A green propellant propulsion subsystem was recently delivered to Ball Aerospace for integration into the Green Propellant Infusion Mission spacecraft. The subsystem will be one of three experimental payloads on the spacecraft. *Photo courtesy of Ball Aerospace*

<http://www.rocket.com/article/propulsion-system-green-propellant-infusion-mission-completed>

Orbital ATK and NASA Marshall Space Flight Center Stage Successful Test Series for 'Green' Rocket Propellant Technologies

Marks First U.S. Tests of 22N Thrusters Using ECAPS High Performance Green Propulsion (HPGP®) Technology

Dulles, Virginia, 15 September 2015 -- Orbital ATK, Inc. (NYSE: OA), a global leader in aerospace and defense technologies, announced today the successful completion of the first U.S. test of a 22 Newton (N) thruster using a high-performance green propulsion system powered by a safe, low-toxicity rocket fuel, designated LMP-103S, provided by the Swedish firm, ECAPS. Green rocket fuels pose fewer health risks and are more cost-effective in terms of storage, material handling, transportation and launch-site processing.

The test was part of a series at NASA's Marshall Space Flight Center in Huntsville, Alabama, and included both a 5N thruster and, for the first time in the United States, a 22N thruster, both of which performed well across all test parameters. Thrusters of this size are commonly used for maneuvering satellites while in Earth orbit.

LMP-103S is a low-toxicity, environmentally-benign propellant, providing benefits over conventional hydrazine, which include improved performance, enhanced volumetric efficiency, reduction of propellant handling hazards and safer launch operations. Orbital ATK, ECAPS, NASA Marshall Space Flight Center and NASA Glenn Research Center are testing the green propulsion system to demonstrate the performance and safety features of the system, and collecting data for evaluation of green propulsion options for spacecraft systems.

<https://www.orbitalatk.com/news-room/release.asp?prid=70>

Green Propulsion System

Published: 11 November 2015

Nammo is ready to offer green propulsion subsystem for future European launchers.

Nammo, has successfully completed the long term exposure and compatibility tests of their newly developed aluminum propellant tank for their hydrogen peroxide based propulsion system. With these tests completed, Nammo has now available all necessary components to offer a complete green propulsion subsystem ready for spacecraft integration.

"Currently, most spacecraft thrusters are powered by hydrazine, a toxic and corrosive fuel that is dangerous to handle and store. Nammo's propulsion system is based on a safe, non-toxic and low cost propellant, which also helps lowering overall cost by eliminating expensive infrastructure needed for the handling of highly toxic fuels. This will reduce launch cost by making it safer and easier to launch the spacecraft," Frank Møller, Executive Vice President in Nammo's Missile Products Division explains.

In 2013, Nammo was selected for the development and delivery of the secondary propulsion system onboard the Ariane 5 ME second stage. The mono-propellant propulsion subsystem offered by Nammo is based on hydrogen peroxide as the propellant and was selected as a green propulsion alternative to replace hydrazine. After Ariane 5 ME was cancelled in favor of Ariane 6, the development contract of the system was annulled in preparation of renewed requirements to be released by the Prime Contractor during 2015 for Ariane 6. With the support from ESA, the European Space Agency, Nammo continued with a comprehensive test program of the complete secondary propulsion subsystem to be ready for insertion into Ariane 6 or Vega in the near future. With the finalization of the test program on the positive expulsion storage tanks for hydrogen peroxide, Nammo has now available all necessary components.

<https://www.nammo.com/news-and-events/news/green-propulsion-system/>



The 200N thruster in the vacuum test stand.

Saab presents, the newly-developed Ground Launched Small Diameter Bomb (GLSDB).

22 October 2015 Earlier this year Saab and Boeing tested the Ground Launched Small Diameter Bomb (GLSDB). By integrating the SDB I air-launched weapon with the M26 ground-based rocket motor (from the Multiple Launch Rocket System) Saab and Boeing created a new class of precision attack system. Successful live-fire tests showed that the bomb can withstand a rocket artillery launch with no compromise in its flight performance. Now, visitors to Seoul's ADEX defence and security exhibition were able to evaluate the new weapon system for the first time.

"We are very proud to be at ADEX to present our new GLSDB. It is a ground breaking system that will give armed forces around the world a whole new capability to engage any target. Together with Boeing, we now can offer a game-changing capability for the United States, as well as the global market," says Görgen Johansson, head of Saab Business Area Dynamics.

The GLSDB is a long-range precision attack solution that expands the capabilities of armed forces. Highly effective and accurate over long ranges, the GLSDB has the ability to fly complex trajectories and manoeuvres to strike targets that cannot be reached by conventional direct fire weapons. It meets the evolving needs of armed forces today and tomorrow, when fighting in complex scenarios. GLSDB gives land forces a mobile, organic capability to hit targets that were previously out of their reach by taking advantage of the Small Diameter Bomb's inherent manoeuvrability and accuracy. Under a teaming agreement signed last year, Boeing and Saab will offer GLSDB to current and future rocket artillery users.

Warhead

The GLSDB is equipped with an ultra-low fragmentation, carbon fibre case warhead with 57.6kg Insensitive Munition-certified explosive fill. The warhead case assembly is made of carbon fibre materials and is integrated with conical steel nose.

The weapon uses an integrated electronic safe or arm fuse system (ESAF) with two function settings, impact and delay, to provide deep penetration or accurate proximity height-of-burst.



Spider Anti-Tank Missile System, Serbia

Spider is a fibre-optic guided, man-in-the-loop tactical missile system intended to destroy armoured military vehicles and artillery systems. It is being developed by Serbian defence equipment manufacturer EdePro (Engine Development and Production). The missile system was unveiled during the Partner 2015 International Fair of Armaments and Defence Equipment held in Belgrade, Serbia, in June 2015. The tactical missile system can be integrated on aerial, land and coastal platforms and can be fired at targets beyond the line of sight.

Spider anti-tank missile design and features

The Spider anti-tank missile system is equipped with four deployable wings and four tail fins, and features non-line-of-sight (NLOS) capability. It can be stored in a launch canister. The main subsections of the missile system include homing subsystem, control subsystem, warhead, control system actuators, rocket motor, and fibre-optic bobbin. The missile has a total body length of 1.8m, a diameter of 0.14m and a wing span of 0.84m, and can carry payloads of up to 8kg. It weighs up to 45kg at take-off and approximately 35kg during the flight. It can perform autonomous flight using an autopilot and can be manually controlled by operators from its associated command station. The control system actuators are used to control the missile's fins, thrust vector and aerodynamic forces, and provide high-performance.

Guidance and control of the anti-tank missile

The tactical missile is guided by a nose-mounted imaging infrared seeker, which can be operated in fire, observe and update modes. The seeker provides target detection and tracking, high accuracy, infrared guidance, and real-time intelligence. It also provides the missile with man-in-the-loop capability that improves target detection and reduces the possibility of collateral damage. The missile system uses a fibre-optic data communication link that unwinds from a bobbin, placed in the rear of the missile, to establish secure communication between the missile and the command station. The data link sends real-time information acquired by the missile to the command station and sends back commands to the missile.

Warhead

The front section accommodates a tandem HEAT (high-explosive anti-tank) warhead, allowing the missile to defeat armoured fighting vehicles equipped with 1,000mm RHA (rolled homogeneous armour) steel.

Propulsion and performance of Spider missile

Powered by a two-phase solid propellant rocket motor, the Spider anti-tank tactical missile can fly at a cruise speed of 200m/s. Located in the middle section of the missile, the rocket motor consists of booster and sustainer phases. The booster stage's solid propellant booster engine with a rocket boost thrust of 2,400N enables the missile to propel upwards. The sustainer phase acts as the main propulsion system, providing a thrust of 240N during the flight after the booster engine is jettisoned. The guided anti-armour missile can reach an altitude of 500m and is capable of destroying main battle tanks at a range of up to 9km.

CONTRACTS

Rheinmetall wins new order for tank ammunition worth around €20 million

An international customer has awarded Rheinmetall a contract to supply it with practice tank ammunition. Now official, the order is worth around €20 million.

The DM78A1 and DM78A3 subcalibre practice ammunition will be delivered in two lots between 2016 and 2018.

The 120mm x 570 DM78 round is based on an innovative acceleration and replacement technology that enables an especially economical design. In addition, the DM78 is safe to fire in all the same climatic zones as the DM63 KE service round. The DM78's very low pressure level results in negligible erosion, fostering extremely long barrel life. Moreover, the round can be used at any tank firing range that meets the safety standards required for its predecessors, the DM38 family and the DM48.

http://www.rheinmetall-defence.com/en/rheinmetall_defence/public_relations/news/latest_news/details_8704.php

Orbital ATK Wins \$426 Million Award for Munitions Fuze Program

All-Electronic Fuze Will Be Next Generation Fuze for Future Precision Guided Munitions

Dulles, Virginia, 28 October 2015 -- Orbital ATK (NYSE: OA), a global leader in aerospace and defense technologies, announced today that it has received an award totaling \$426 million for first article test and qualification and production of FMU-139D/B fuzes and fuze accessories. The contract, awarded by the U.S. Naval Air Systems Command, includes qualification and first article testing activities. An initial amount of \$24 million from the Navy and U.S. Marine Corps will be obligated at time of award.

Building on the success of its all-electronic FMU-167/B Hard Target Void Sensing Fuze (HTVSF), Orbital ATK's FMU-139D/B will elevate the capability of the military's longstanding, general purpose FMU-139 bomb fuze. The all-electronic FMU-139D/B will deliver game changing capabilities in the areas of reliability, increased fuze functionality, and added capability to defeat hard and deeply buried targets.

<https://www.orbitalatk.com/news-room/release.asp?prid=93>

MBDA to Upgrade UK MoD ASRAAM Air-to-Air Missiles

Released on Wednesday, September 16, 2015

MBDA has received a contract worth over £300M from the United Kingdom's Ministry of Defence (MoD) that ensures the Royal Air Force remains equipped with the highly capable infra-red guided air-to-air missile, ASRAAM. The contract covers the supply of new missiles to refresh the existing inventory of ASRAAM. Value for money is ensured through the re-use of components from other MBDA products such as the Common Anti-air Modular Missile (Camm).



The missiles will be produced at MBDA's new Bolton manufacturing and assembly site that will be commissioned in mid-2016. The engineering activities are being carried out at MBDA sites in Stevenage and Bristol. This programme and associated workload around domestic and export programmes using the core Camm system, will sustain 400 jobs across the MBDA sites and at a number of other UK suppliers. The sustainment of these production facilities also ensures that ASRAAM remains available for overseas customers and future

exports.

http://www.deagel.com/news/MBDA-to-Upgrade-UK-MoD-ASRAAM-Air-to-Air-Missiles_n000014450.aspx

Orbital ATK Receives \$203 Million in Small Caliber Ammunition Orders

Orbital ATK Is Largest Supplier of U.S. Army Small Caliber Ammunition

Dulles, Virginia 14 October 2015 -- Orbital ATK, Inc. (NYSE: OA) announced today that it has received orders totaling \$203 million to produce small caliber ammunition for the U.S. Army. Orders for .30 caliber, .50 caliber, 5.56mm and 7.62mm ammunition were placed over the past few months under Orbital ATK's seven-year supply contract to produce a variety of small caliber ammunition for the U.S. government at the Lake City Army Ammunition Plant (Lake City) in Independence, Missouri.

Orbital ATK has operated Lake City for the U.S. Army since 2000, producing 19 billion rounds of small caliber ammunition. Orbital ATK and the U.S. Army are making facility upgrades and investing in state-of-the-art, high-volume technology to enhance the efficiency and cost-effectiveness of Lake City. <https://www.orbitalatk.com/news-room/release.asp?prid=88>

Major UK Order: TDW to participate in Upgrade to Heavyweight Spearfish Torpedo

05/10/2015

On 29 July, TDW GmbH was awarded a contract from BAE Systems for the qualification and delivery of the insensitive munition (IM) blast warhead due to be used in the upgrade of the Royal Navy's heavyweight Spearfish torpedo. This marks the largest order in the company's history.

Blast warheads can be used to combat both surface and underwater targets effectively. Ships in particular can be combated most effectively using a blast warhead, which generates a shock wave.



Through the initial assessment and development phases, TDW have played a leading role in the design and testing of the new Spearfish warhead. To date the testing performed on the warhead has included IM threat tests (to demonstrate insensitivity) and underwater trials (to demonstrate performance). TDW's experience gained through the Sting Ray warhead programme has helped to ensure that the development of the Spearfish Upgrade warhead could be carried out so effectively.

<http://www.mbda-systems.com/mediagallery/#/news/3527>

Orbital ATK Awarded \$16 Million to Develop Next Generation 120MM Tank Ammo

Single Advanced Multi-Purpose Round Gives Abrams Main Battle Tank the Capability of Four Existing Munitions

Dulles, Virginia 8 October 2015 – Orbital ATK, a global leader in aerospace and defense technologies, announced today that the company was awarded a \$16 million contract with options for the first phase of development for the 120mm Advanced Multi-Purpose (AMP), XM1147 High Explosive Multi-Purpose with Tracer cartridge. This new tank ammunition will provide Abrams Main Battle Tank crews a multi-purpose round that replaces four existing rounds, giving greater mission flexibility and main-gun capability through a single munition for multiple engagement scenarios.

AMP provides bunker and light-armor defeat, obstacle reduction and dismount engagement. Additionally, the round provides tank crews with an added capability to breach reinforced walls, and engage anti-tank crews and dismounts at ranges up to 2,000 meters.

<https://www.orbitalatk.com/news-room/release.asp?prid=83>

Lockheed Martin GMLRS Alternative Warhead Gets First Order

Released on Tuesday, September 15, 2015

DALLAS, Sept. 15, 2015 - Lockheed Martin (NYSE: LMT) received a \$227 million contract from the U.S. Army for Lot 10 production of the Guided Multiple Launch Rocket System (GMLRS) Unitary, and the first order of GMLRS Alternative Warhead production.

Included in the contract is a U.S. government Foreign Military Sale of GMLRS Unitary rockets to Bahrain and the United Arab Emirates.

GMLRS is an all-weather rocket designed for fast deployment that delivers precision strike beyond the reach of most conventional weapons. GMLRS Unitary rockets greatly exceed the required combat reliability rate and have established a reputation for affordability.

The Alternative Warhead is designed to engage the same target set and achieve the same area-effects requirement as the old MLRS submunition warheads, but without the lingering danger of unexploded ordnance. MLRS rockets with submunition warheads ended production approximately seven years ago.

http://www.deagel.com/news/Lockheed-Martin-GMLRS-Alternative-Warhead-Gets-First-Order_n000014448.aspx

Orbital ATK Awarded \$30 Million in Medium Caliber Ammunition Contracts

Contracts Support U.S. and Allied Warfighters With Tactical and Target Practice Ammunition for Air, Land and Sea Platforms

Dulles, Virginia 4 August 2015 – Orbital ATK (NYSE: OA), a global leader in aerospace and defense technologies, announced today that the company recently received domestic and international contracts for tactical and target practice medium- caliber ammunition valued at nearly \$30 million. The ammunition will support American and allied warfighters for use on air-, sea- and land-based weapons platforms.

These orders included a range of 25 and 30 mm tactical and target practice ammunition for multiple U.S. services and allies. The contracts are awarded through the U.S. Army Maneuver Ammunition Systems in its role as the Single Manager for Conventional Ammunition.

Domestic contracts included orders for the 25 mm PGU-25 High Explosive Incendiary round used with AC130 gunships, Harrier attack aircraft, and naval and ground combat weapons systems that use the Orbital ATK M242 Bushmaster® automatic cannon. Additional 25 mm orders included the M793 Target Practice with Tracer cartridge and the 30 mm PGU-15 cartridge.

<https://www.orbitalatk.com/news-room/release.asp?prid=57>

CHEMRING Ordnance Awarded further Option under Anti-Personnel Obstacle Breaching System (APOBS) Contract - 02 September 2011

Chemring Group PLC (“Chemring”) is pleased to announce that its US subsidiary, Chemring Ordnance, Inc. of Perry, Florida, has been awarded a second option under its contract to manufacture

the MK7 MOD 2 Anti-Personnel Obstacle Breaching System (“APOBS”) for the US Army and Marine Corps. The second option is worth \$52.5 million in the first year of the contract, and supplements the first \$22 million option award already received by Chemring Ordnance. The contract has a total estimated value in excess of \$150 million over three years if all option quantities are exercised.

The APOBS is a self-contained, one-shot, expendable linear demolition charge, which can be transported and deployed by a two person team. It is designed to safely clear a footpath through anti-personnel mines and multi-strand wire obstacles.

<http://www.chemring.co.uk/media/press-releases/2011/2011-09-02.aspx>

Rheinmetall books multimillion-euro order for tank ammunition

An international customer has contracted with Rheinmetall to supply it with state-of-the-art tank ammunition. The order is worth around €39 million. The DM63A1 kinetic energy rounds will be delivered in two lots from 2016 to 2018.

Based on tungsten technology, the DM63A1 is the most advanced kinetic energy round for 120mm smoothbore tank guns on the market today. Containing no explosives, the projectile’s effectiveness relies entirely on the kinetic energy of the Rheinmetall advanced heavy tungsten penetrator technology. Manufacture of the penetrators and final assembly will take place at Rheinmetall’s plant in Unterlüß in Lower Saxony, while the temperature-independent propellant powder will be sourced from Rheinmetall Nitrochemie, with plants at Aschau in Bavaria and Wimmis, Switzerland. The order makes a welcome and important contribution to capacity utilization at all three sites.

Thanks to its new propulsion unit, the DM63A1 kinetic energy round – unlike all other types of tank ammunition available to date – can enhance the combat performance of platforms armed with a 120mm smoothbore gun, including those of the Leopard 2 main battle tank, with no need for prior technical modification. The ammunition’s temperature-independent propellant solution is a unique feature found nowhere else.

<http://www.rheinmetall->

[defence.com/en/rheinmetall_defence/public_relations/news/latest_news/details_8128.php](http://www.rheinmetall-defence.com/en/rheinmetall_defence/public_relations/news/latest_news/details_8128.php)

Additional Surface-to-Air Missile for Sweden

09-11-2015 | Diehl Defence

The Swedish Armed Forces are receiving additional IRIS-T SLS surface-to-air missiles. Starting October 30, 2015, the Swedish Procurement Agency FMV issued an option for the delivery of the guided missiles. This decision is an important contribution in the efforts to secure orders and sales



<http://www.diehl.com/en/nc/diehl-defence/press/additional-surface-to-air-missiles-for-sweden.html>

Lockheed Martin Awarded FMS Contract to Supply JASSM Missiles to Poland

Released on Monday, September 14, 2015

ORLANDO, Fla., Sept. 14, 2015 - Lockheed Martin (NYSE: LMT) has received a Foreign Military Sales contract from the U.S. Air Force to provide the Joint Air-to-Surface Standoff Missile (JASSM®) to the Polish Air Force for its F-16 fleet.

Lockheed Martin is providing hardware and software, documentation, program management and missiles in support of the Polish Shield initiative. Poland is the third international customer for JASSM. Armed with a penetrating blast-fragmentation warhead, JASSM is a stealthy, precision-guided cruise missile. JASSM employs an infrared seeker and enhanced digital anti-jam Global Positioning System, and is integrated on the U.S. Air Force’s B-1, B-2, B-52, F-16 and F-15E. Internationally, JASSM is carried on the F/A-18A/B and the F-18C/D aircraft.

http://www.deagel.com/news/Lockheed-Martin-Awarded-FMS-Contract-to-Supply-JASSM-Missiles-to-Poland_n000014439.aspx

NAMMO Awarded M141 BDM Delivery Order

Published: 14 October 2015

Nammo Talley, Inc. awarded delivery order for production of M141 Bunker Defeat Munition (BDM). On September 23, Nammo was awarded Delivery Order 19 to the indefinite delivery / indefinite quantity (ID/IQ) contract to produce the M141 Bunker Defeat Munition. Work will be completed in Mesa, Arizona and Salt Lake City, Utah with delivery in December 2016. Maximum value of the multi-year contract is \$567 million USD but actual value will depend on the total quantity of rounds supplied. M141 BDM is a direct fire, man-portable infantry assault weapon comprised of a disposable launcher and an 83mm high explosive dual purpose round.

<https://www.nammo.com/news-and-events/news/nammo-awarded-m141-bdm-delivery-order/>

U.S. Army Acquires APKWS™ Laser-Guided Rockets for Immediate Deployment

13 October 2015

Laser-guided APKWS rocket expected to be deployed on AH-64 Apache helicopters.

The U.S. Army has procured an initial quantity of BAE Systems' Advanced Precision Kill Weapon System (APKWSTM) laser-guided rockets for use in ongoing operations in Iraq and Afghanistan. This deployment marks the first time U.S. Army personnel will be able to benefit from the laser-guided rocket, which has proven highly successful for the U.S. Navy and Marine Corps.

The Army is acquiring its initial supply of APKWS rockets out of the current Navy inventory while also working with BAE Systems and the Navy to secure additional rockets to meet ongoing demands. It is expected that the Army will immediately deploy the APKWS rocket, which is a mid-body guidance kit that transforms a standard unguided munition into a precision laser-guided rocket, on its AH-64 Apache while additional platform priorities are determined.

<http://www.baesystems.com/en/article/u-s--army-acquires-apkws--laser-guided-rockets-for-immediate-deployment>

General Dynamics Awarded Contracts Totaling \$126 Million for Hydra-70 Rocket Program

General Dynamics Ordnance and Tactical Systems, a business unit of General Dynamics (NYSE: GD), was recently awarded two contract modifications by the U.S. Army Contracting Command in Redstone Arsenal, Ala., for production of the 2.75"/70mm Hydra-70 air-to-ground rocket system for U.S. military services and Foreign Military Sales customers. Both options exercised are part of a supplies contract originally awarded to General Dynamics in 2014.

Hydra-70 is a family of unguided rockets offering several warhead configurations that enable an aircrew to match the rocket to the specific mission. The contract includes M151 high explosive rockets, M274 smoke signal practice rockets, M229 high explosive rockets, MK66 MOD 4 motors (Air Force and Navy) and WTU-1/B practice warheads. Rockets can be fired from a variety of rotary and fixed-wing platforms, including the U.S. Army Apache and U.S. Marine Corps Cobra attack helicopters, the U.S. Air Force F-16 Fighting Falcon and combat aircraft of many nations worldwide.

<http://www.generaldynamics.com/news/press-releases/2015/07/general-dynamics-awarded-contracts-totaling-126-million-hydra-70-rocket>

Defense Contract under the Army Awarded to General Dynamics Ordnance and Tactical Systems

13 November 2015

General Dynamics Ordnance & Tactical Systems, St. Petersburg, Florida, was awarded a \$24,683,252 modification (P00012) to contract W31P4Q-13-C-0231 for 29,004 units for the demilitarization and disposal of Multiple Launch Rocket System M26 (H104) rocket pod containers, rockets, and components. Work will be performed in Carthage, Missouri, with an estimated completion date of Dec. 31, 2018. Fiscal 2016 other procurement funds in the amount of \$24,683,252 were obligated at the time of the award. Army Contracting Command, Picatinny Arsenal, New Jersey, is the contracting activity.

Defense Contract under the Army Awarded to General Dynamics Ordnance and Tactical Systems, Incorporated

10 June 2015

General Dynamics Ordnance and Tactical Systems Inc., St. Petersburg, Florida, was awarded a \$225,599,037 firm-fixed-price, five-year, indefinite-delivery/indefinite-quantity contract for the demilitarization recycling, reuse, and disposal of various conventional munitions. Funding and work location will be determined with each order, with an estimated completion date of June 30, 2020. Bids were solicited via the Internet with two received.

BAE Systems Awarded \$50 Million Munitions Contract for MK 90 Propellant



20 August 2015

The MK 90 propellant grain is manufactured by BAE Systems at the Radford Army Ammunition Plant in southwestern Virginia, where BAE Systems has been serving as the managing operator since 2012.

The U.S. Army has awarded BAE Systems a \$50 million contract for the continued production of MK 90 propellant grains.

The MK 90 propellant grain is the propulsion component of the Hydra 70 family of rockets used by the U.S. military and several allied nations to support

overseas operations.

The MK 90 propellant grain is manufactured at the Radford Army Ammunition Plant in southwestern Virginia, where BAE Systems has been serving as the managing operator since 2012. The facility is a leading producer of military-grade propellants and is currently the primary supplier of solventless propellants. The production process for the MK 90 grain involves more than 300 people in five manufacturing areas at the plant.

<http://www.baesystems.com/en/article/bae-systems-awarded-50-million-munitions-contract-for-mk-90-propellant-grain>

Orbital ATK Awarded MJU-73/B Aircraft Countermeasures Contract

Dual Color Countermeasures Made by Orbital ATK Increase Aircraft Survivability

Dulles, Virginia 13 October 2015 – Orbital ATK, Inc., a global leader in aerospace and defense technologies, announced today the United States Air Force has awarded the company an initial production contract for the MJU-73/B, a new spectrally matched aircraft countermeasure.

“Leveraging Orbital ATK’s expertise in solid rocket propulsion has enabled us to develop highly reliable and advanced countermeasures such as the MJU-73/B,” said Charlie Precourt, Vice President and General Manager of Orbital ATK’s Propulsion Systems Division. “These sophisticated pyrotechnic devices protect the warfighter by mimicking the ‘heat’ signature of an aircraft to lure infrared missiles away.”

Orbital ATK’s latest innovation in aircraft survivability, or the increase in an aircraft’s odds of not being hit by a missile, will be an integral component of a suite of protective measures used by USAF Special Operations aircraft. The MJU-73/B was specifically chosen for its significant technological enhancements and outstanding performance against an array of infrared missile threats.

<https://www.orbitalatk.com/news-room/release.asp?prid=87>

Orbital ATK Awarded \$105 Million in Contracts for Medium and Large Caliber Ammunition

Contracts Cover Ammunition Production for Domestic and Allied Customers As Well As Next Generation Tank Round

Dulles, Virginia 12 October 2015 – Orbital ATK, a global leader in aerospace and defense technologies, announced today that the company has received domestic and international contracts for medium- and large-caliber ammunition valued at \$105 million. These new orders span a range of

20, 25 and 30mm tactical and target practice ammunition for multiple U.S. and allied services for use with air, sea and land weapons platforms, as well as 120mm tactical and training ammunition for the Abrams Main Battle Tank. The contracts were awarded to Orbital ATK through the U.S. Army Project Manager Maneuver Ammunition Systems in its role as the Single Manager for Conventional Ammunition.

Orders for large caliber ammunition include a contract for the full-rate production of its next generation 120mm Kinetic Energy anti-tank cartridge, M829A4 which recently received type classification and has passed its initial lot acceptance testing. Full rate production is expected to begin in early 2016. This new Kinetic Energy tank ammunition highlights the core competencies of Orbital ATK and provides the U.S. Army's Abrams Main Battle Tank with combat overmatch against threat systems with Explosive Reactive Armor and other types of advanced complex base armor.

In addition, Orbital ATK received an order for the 120mm M1002 Multi-Purpose Anti-Tank target practice cartridge, which provides tank crews with realistic training ammunition to maintain Abrams tank combat crew efficiency.

<https://www.orbitalatk.com/news-room/release.asp?prid=85>

First Delivery Order for SMAW

Published: 12 October 2015

NAMMO receives first delivery order for SMAW ammunition contract.

The US Army Single Manager for Conventional Ammunition (SMCA) based at Picatinny Arsenal New Jersey, announced the first award on the USMC Shoulder launched Multipurpose Assault Weapon (SMAW) Ammunition Contract worth over MUSD 42.7.

Nammo was awarded Delivery Order 1 by the SMCA to provide SMAW Common Practice Rocket (CPR) ammunition to the US Marine Corps. This is the first delivery order against the 5 year contract which has potential for deliveries of three types of 83mm SMAW Ammunition.

This 5 year ID/IQ contract was previously awarded to Nammo on September 12, 2015 and will be managed for the USMC by the US Army SMCA.

<https://www.nammo.com/news-and-events/news/first-delivery-order-for-smaw/>



FMS: France Requests 200 AGM-114K1A Hellfire Missiles

Released on Wednesday, November 4, 2015

WASHINGTON, Nov 4, 2015 - The State Department has made a determination approving a possible Foreign Military Sale to the Government of France for Hellfire Missiles and associated equipment, parts and logistical support for an estimated cost of \$30 million. The Defense Security Cooperation Agency delivered the required certification notifying Congress of this possible sale on November 3, 2015.

The Government of France has requested a possible sale of two-hundred (200) AGM-114K1A Hellfire Missiles; Hellfire Missile conversion kits; blast fragmentation sleeves and installation kits; containers; and transportation. The estimated cost of MDE is \$25 million. The total estimated cost is \$30 million.

This proposed sale will contribute to the foreign policy and national security of the United States by improving the capability of a NATO ally. France is a major political and economic power in Europe and a key democratic partner of the United States in ensuring peace and stability around the world. It is vital to the U.S. national interest to assist France to develop and maintain a strong and ready self-defense capability.

The additional missiles will meet France's operational requirements for a precision guided tactical missile for its Tigre Attack Helicopter. The purchase will directly support French forces actively engaged in operations in Mali and Northern Africa, providing them the capability to successfully engage targets with minimal collateral damage. France will have no difficulty absorbing these missiles into its armed forces.

http://www.deagel.com/news/FMS-France-Requests-200-AGM-114K1A-Hellfire-Missiles_n000014601.aspx

Australia Orders BOL Countermeasures Dispensers for its F/A-18A/B Jets

Released on Monday, October 19, 2015

Defence and security company Saab has received an order from Australia for a number of additional BOL countermeasure dispensers to be used on F/A-18A/B Hornet aircraft. Deliveries will take place during 2016.

BOL is a high-capacity countermeasure dispenser for chaff and flares, which provides pilots with a sustained defensive capability to successfully accomplish their missions. Australia acquired BOL in 2008 for the F/A-18A/B Hornets of the Royal Australian Air Force (RAAF). This new order for an undisclosed number of BOL systems will increase the RAAF's operational capability.

Australia's Hornets can carry up to four BOLs, each BOL with 160 chaff/infra-red decoy packages. A full load of four pods provides long duration self-protection through pre-emptive dispensing. This is a major feature and advantage of the BOL system, as it prevents lock-on from enemy fighters and a range of missiles.

http://www.deagel.com/news/Australia-Orders-BOL-Countermeasures-Dispensers-for-its-FA-18AB-Jets_n000014554.aspx

U.S. Army and U.S. Navy Award Lockheed Martin \$66 Million Contract for Joint Air-to-Ground Missile

ORLANDO, Fla., Sept. 4, 2015 – The U.S. Army and U.S. Navy awarded Lockheed Martin (NYSE: LMT) a \$66.3 million contract for the Engineering and Manufacturing Development (EMD) phase of the Joint Air-to-Ground Missile (JAGM) program.

“Since contract award in August, we conducted a fifth flight test that further demonstrated the high degree of design maturity and readiness for operational testing that will support future JAGM production,” said U.S. Army Project Manager Col. James Romero. “The Aug. 25 test was the first JAGM test using the Active Fire and Forget, Lock-On After Launch engagement mode against a stationary armored target. Throughout all five tests, we have demonstrated that both sensors - onboard radar and semi-active laser - effectively operate together to provide an enhanced capability against stationary and moving targets for precision point or fire-and-forget targeting.”

The 24-month EMD phase will include JAGM production, test qualification and integration on the AH-64 Apache and AH-1Z Cobra attack helicopters. The EMD phase also establishes an initial low-rate manufacturing capability in support of two follow-on low-rate initial production options.

JAGM is the next generation air-to-ground missile for use on joint rotary-wing and unmanned aircraft systems for the Army, Navy and Marine Corps. JAGM's multi-mode seeker provides the warfighter with precision strike and fire-and-forget capabilities against moving targets in all weather conditions. JAGM will be manufactured on existing production lines.

<http://www.lockheedmartin.com/us/news/press-releases/2015/september/mfc-us-army-us-navy-award-lockheed-martin-66-million-contract-jagm-missile.html>

- **Defense contract under the Army awarded to Raytheon Company Missile Systems on 10/29/2015.** Raytheon Co. Missile Systems, Tucson, Arizona, was awarded a \$50,353,389 modification (P00039) to contract W31P4Q-12-C-0265 for tube-launched, optically tracked, wire-guided missiles. Work will be performed in Tucson, Arizona, with an estimated completion date of Oct. 31, 2017.
- **Defense contract under the Army awarded to Chemring Ordnance on 9/30/2015.** Chemring Ordnance, Perry, Florida, was awarded a \$22,584,132 firm-fixed-price, multi-year contract for M201A1, M208, and M201A1 MOD3 fuses for M18/M83 smoke grenades. Bids were solicited via the Internet with two received, with an estimated completion date of Dec. 31, 2019.
- **Defense contract under the Army awarded to Defense Munitions International on 9/25/2015.** Defense Munitions International, St. Petersburg, Florida, was awarded an \$84,710,000 firm-fixed-price, indefinite-delivery/indefinite-quantity foreign military sales contract (Iraq) for 120mm armor piercing rounds. Bids were solicited via the Internet with one received.
- **Defense contract under the Army awarded to L-3 Fuzing and Ordnance Systems on 9/25/2015.** L-3 Fuzing and Ordnance Systems, Cincinnati, Ohio, was awarded a \$7,600,000 firm-fixed-price, multi-year foreign military sales contract (Canada, Australia) to produce and deliver M762A1/M767A1 safe and arm assemblies for the Precision Guidance Kit (PGK) program, with an estimated completion date of Sept. 25, 2019.
- **Defense contract under the Army awarded to Lockheed Martin Corporation on 9/15/2015.** Lockheed Martin Corp., Orlando, Florida, was awarded a \$375,804,316 undefinitized firm-fixed-

price foreign military sales contract (Egypt, Pakistan, Tunisia, Indonesia, Iraq) for Hellfire II missiles in containers. Work will be performed in Orlando, Florida, with an estimated completion date of Sept. 30, 2017. One bid was solicited with one received.

Defense contract under the Army awarded to Northrop Grumman Space and Mission Systems Corporation on 9/4/2015. Northrop Grumman Space and Mission Systems Corp., Herndon, Virginia, was awarded a \$20,400,000 modification (P00040) to contract W31P4Q-11-D-0019 for continued tactical support for the Counter Rocket, Artillery, Mortar Program Office.

- **Defense contract under the Army awarded to Raytheon, Lockheed Martin Javelin Joint Venture on 8/31/2015.** Raytheon, Lockheed Martin Javelin JV, Tucson, Arizona, was awarded a \$41,566,755 modification (P00029) to foreign military sales contract W31P4Q-13-C-0129 (Jordan, Estonia) for Javelin Block 1 tactical rounds (quantity 354), tripods (quantity 36), and golden units (quantity 1). Work will be performed in Tucson, Arizona, with an estimated completion date of Aug. 31, 2023. Fiscal 2015 other procurement funds in the amount of \$41,566,755 were obligated at the time of the award.
- **Defense contract under the Navy awarded to Raytheon Missile Systems on 11/2/2015.** Raytheon Missile Systems, Tucson, Arizona, is being awarded a \$24,039,067 modification to previously awarded contract N00024-13-C-5402 for fiscal 2016 Navy Standard Missile depot and intermediate level maintenance, all-up-round recertifications, and special maintenance tasks, provisioned items ordered, and Foreign Military Sales SM-2 repairs and maintenance. Work will be performed in Tucson, Arizona (89.8 percent); Albuquerque, New Mexico (4.9 percent); Camden, Arkansas (1.8 percent); Bohemia, New York (1.7 percent); Stafford Spring, Connecticut (0.6 percent); Irvine, California (0.3 percent); Union, New Jersey (0.3 percent); Philadelphia, Pennsylvania (0.3 percent); Lawrence, Massachusetts (0.2 percent); and Phoenix, Arizona (0.1 percent), and is expected to be complete by December 2016. Fiscal 2016 operations and maintenance (Navy) funding in the amount of \$12,677,120; and foreign military sales funding in the amount of \$778,780, will be obligated at time of award.
- **Defense contract under the Air Force awarded to Raytheon Company, Raytheon Missile Systems on 10/29/2015.** Raytheon Co., Raytheon Missile Systems, Tucson, Arizona, has been awarded an \$11,200,000 undefinitized contract action for 225 Enhanced Paveway II /Guided Bomb Unit-49 kits. Contractor will provide 225 each Enhanced Paveway II munitions, also referred to as GBU-49 kits. Work will be performed at Tucson, Arizona, and is expected to be complete by Aug. 30, 2016. This contract is 100 percent foreign military sales to Canada. This award is the result of a sole-source acquisition.
- **Defense contract under the Navy awarded to Raytheon Missile Systems on 10/20/2015.** Raytheon Missile Systems, Tucson, Arizona, is being awarded a \$14,594,880 firm-fixed-price modification to previously awarded contract N00024-15-C-5408 for fiscal 2016 Standard Missile-2 (SM-2) spares and containers and fiscal 2016 SM-2 dual thrust rocket motor regrains. Work will be performed in Camden, Arkansas, and is expected to complete by September 2017.
- **Defense contract under the Air Force awarded to Raytheon Missile Systems on 9/30/2015.** Raytheon Missile Systems, Tucson, Arizona, has been awarded a \$50,000,000 cost-plus-fixed-fee, cost-plus-incentive-fee, firm-fixed-price, fixed-price-incentive-firm, indefinite-delivery/indefinite-quantity contract for support to the Advanced Medium Range Air-to-Air Missile AIM-120D system improvement program. Contractor will provide candidate studies/analyses and risk reduction efforts, laboratory and modeling and simulation improvements, and delivery of performance capability assessments as needed in support of the AMRAAM AIM-120D SIP. Work will be performed at Tucson, Arizona, and is expected to be complete by Sept. 30, 2022. This award is the result of a sole-source acquisition. The first task order in the amount of \$16,746,846 will be awarded simultaneously. Fiscal 2015 research, development, test and evaluation funds in the amount of \$710,005 are being obligated at the time of award.
- **Defense contract under the Navy awarded to Raytheon Missile Systems on 9/25/2015.** Raytheon Missile Systems, Tucson, Arizona, is being awarded a \$264,805,607 cost-plus-fixed-fee contract for an AIM-9X system improvement program to provide additional capability and resolve obsolescence issues for the Navy, Air Force, and the governments of Korea, Singapore, Malaysia, Belgium, Netherlands and Turkey under the Foreign Military Sales program. The effort includes engineering services required to incorporate new AIM-9X missile components and associated software updates into the Lot 17 and Lot 19 production programs. This effort will also provide development, integration, and flight test support for AIM-9X Block II hardware and software. Work will be performed in Tucson, Arizona (95.5 percent); Andover, Massachusetts (2.3 percent); Baltimore, Maryland (1.5 percent); and other various continental U.S. locations (0.7 percent), and is expected to be completed in September 2020. Fiscal 2015 research,

development, test and evaluation (Navy and Air Force), and foreign military sales funds, in the amount of \$46,424,785 will be obligated at time of award, none of which will expire at the end of the current fiscal year.

- **Defense contract under the Navy awarded to Raytheon Missile Systems on 9/25/2015.** Raytheon Missile Systems, Tucson, Arizona, is being awarded a \$227,047,688 modification to a previously awarded fixed-price-incentive-firm contract (N00019-15-C-0092) for procurement of 447 AIM-9X Block II all up round tactical full-rate production Lot 15 missiles for the Navy (102), Air Force (243), and the governments of Japan (9), Korea (76), Romania (12), and Israel (5). In addition, this modification provides for the procurement of 129 Block II captive air training missiles for the Navy (54), Air Force (60), Army (2), and the governments of Korea (2), Romania (6), and Israel (5); 7 special air training missiles for the Army; 174 all up round containers for the Navy (44), Air Force (85), Army (10), and the governments of Japan (3), Korea (19), Romania (7), and Israel (6); 4 captive test missiles for the Army (2), Navy (1) and Air Force (1); one test asset for the Navy; spares for the Navy, Air Force; and 12 lots of spares for Australia (1), Finland (1), Singapore (1), Korea (1), Switzerland (1), Morocco (1), Belgium (1), Saudi Arabia (1), Oman (2), the Netherlands (1), and Romania (1).
- **Defense contract under the Army awarded to Lockheed Martin Missiles and Fire Control on 7/23/2015.** Lockheed Martin Missiles and Fire Control, Grand Prairie, Texas was awarded a \$1,563,679,881 modification (P00020) to foreign military sales contract W31P4Q-14-C-0034 (Korea, Qatar, Taiwan, United Arab Emirates, Saudi Arabia) for Patriot missiles and associated equipment and spares.
- **Defense contract under the Air Force awarded to Lockheed Martin Missile and Fire Control on 10/13/2015.** Lockheed Martin Missile and Fire Control, Orlando, Florida, has been awarded a \$305,457,460 firm-fixed-price and fixed-price incentive (firm target) contract for the Joint Air-to-Surface Standoff Missile production. Contractor will provide Joint Air-to-Surface Standoff Missile production, system upgrades, integration, sustainment, management, and logistical support. Work will be performed at Troy, Alabama, and is expected to be complete by June 30, 2018.
- **24 November 2015 Carl-Gustaf man-portable weapon system.** Defence and security company Saab has received an ammunition order from the Austrian Armed Forces for the Carl-Gustaf man-portable weapon system. Deliveries will take place during 2016-2017. The contract includes production and deliveries of ammunition for the Carl-Gustaf system.
- **12 October 2015 US Special Operations Command (USSOCOM) order ammunition for MAAWS.** Defense and security company Saab has received an ammunition order from US Special Operations Command (USSOCOM) for the Carl-Gustaf man-portable weapon system, known in the US as MAAWS. The order comes under the terms of Saab's framework contract announced with USSOCOM in August 2014 for the 84-mm recoilless rifle system. Deliveries are expected to take place during 2015 and 2016. "This order demonstrates the continued confidence of our customer in the capabilities and versatility of the Carl-Gustaf. The system gives soldiers a battle-winning edge through its high accuracy, supreme effectiveness and great versatility," says Torbjörn Saxmo, head of business unit Ground Combat, Saab.