



**PRECISION STRIKE  
ASSOCIATION**

Affiliate, National Defense  
Industrial Association

## VISION STATEMENT

*We aspire to be the premier association dedicated to advancing the art and science of precision engagement concepts and technology.*

*To accomplish this, we will promote the development of systems and procedures in order to locate, fix, track, target, and attack fixed, moving, and relocatable targets.*

*We recognize that battlespace management, the network within which it functions, and the adjunct command and control requirements are crucial to success on the battlefield.*

*PSA has a global perspective and welcomes international participation.*

## 2011 Precision Strike Summer Golf Outing Features George Allen as Lunch Speaker

**A**fter a seven-year hiatus, the Precision Strike Association (PSA) is reinstating its very popular summer golf outing, with a percentage of the proceeds going to the Hope for the Warriors organization.

A new component added for this year's event is a guest luncheon speaker: the Honorable George Allen. The Former Governor and U.S. Senator of Virginia has accepted our invitation to speak on the *National Security Environment, Defense Issues, Industry Concerns, Advanced Technologies, Energy Initiatives, Science and Experimentation, and Sports (Health and Well Being)*.

Allen is extremely knowledgeable in matters of great importance to PSA's constituency—particularly energy, natural resources, science and foreign relations. He will cover a myriad of topics in a short time and will field questions from the audience. Golf Registration includes the lunch and lunch speaker. A special lunch-only registration is available for non-golfers, which includes only the lunch and Allen's address.

The 2011 golf outing will be a 'captains choice' scramble format. Enter as a



The Honorable George Allen

team or choose to have PSA pair you. Provide us with information on your business objectives and we'll make every attempt to pair you with appropriate contacts. In order to even out the teams, a team handicap will be applied based on individual handicaps of the team members.

Don't miss this opportunity to network with industry, government and military leaders in the precision strike community.

The mission of Hope for the Warriors (H4W) is to enhance quality of life for U.S. service members and their families nationwide who have been adversely affected by injuries or death in the line of duty. Hope for the Warriors actively seeks to ensure that the sacrifices of wounded and fallen warriors and their families are never forgotten nor their needs unmet.

Our service members and their families are awe inspiring in the face of their disabilities and hardships. However, it is with the support of a grateful nation that they remain unfaltering in their determination and find hope and purpose beyond recovery.

See **Golf Event Preview**, Cont. on page 14

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## Chairman's Column

Spring has arrived and at the time of this writing we have averted a government

shutdown. However, we are still debating the consequences of raising the debt ceiling and are facing significant budget uncertainty for the yet-to-be-worked-on FY12 budget. If this is the "new normal" we are in for a rough ride ahead.

For those who escaped to Ft Walton Beach, FL for our Precision Strike Annual Review you experienced not only terrific weather but enjoyed yet another incredible creation of our Programs Committee. Many thanks to the Air Armament Center and the Air Force Research Lab for their superb support in making PSAR such a success, with special thanks to MajGen Charles Davis and Dr. John Wilcox. The highlight of PSAR was the 15th presentation of the prestigious William J. Perry Award to the US Special Operations Command's Project Dragon Spear Joint Acquisition Task Force. Congratulations Dragon Spear! The main thrust of this year's Annual Review was to reengage our international partners. We had somehow moved away from this important part of our community and are very pleased with how warmly they embraced us once again. I had assured our audience that we would include our international friends in this year's Technology Symposium, but we will not be able to accommodate that this year. My sincere apologies to all. I am working with our Executive Committee and the Board of Directors to find a way to include our international partners at next year's PSTS and at all of our events. This is important to our community and we will get there.

Summer is rapidly approaching and we have something different planned for this year's event. On June 2, PSA will host a golf tournament aboard Andrews AFB. We have partnered with an incredible organization, Hope for the Warriors, and a portion of the tournament proceeds will be donated to help our wounded warriors and their families. To learn more about this organization visit [www.hopeforthewarriors.org](http://www.hopeforthewarriors.org). We look forward to growing our association's relationship with Hope for the Warriors. As Americans we owe more than just a debt of gratitude to these incredible people. These are our friends, neighbors and extended family that look to fellow veterans and those in our community for support. Support in the form of donations (not just money, but time), patience and employment opportunities. There is no cause more worthy of our attention. Robin Kelleher, President/CEO and Founder of Hope for the Warriors, will kick off the event in the morning. Former Governor and Senator from the Commonwealth of Virginia, George Allen, will address the group at the luncheon following the event. This is the optimum mix of business, pleasure and charity. If you haven't already done so, contact us about opportunities to participate. I look forward to seeing you at Andrews AFB in June.

Andy McHugh  
Chairman of the Board  
Precision Strike Association

## PSAR 2011 Wrapup

The Precision Strike Association (PSA) held its Precision Strike Annual Review (PSAR-11) February 23-24, 2011 at the Emerald Coast Conference Center, Ft. Walton Beach, FL.

This premier event was co-hosted by USAF Major General Charles Davis, Commander, Air Armament Center and Air Force Program Executive Officer for Weapons, and Dr. John Wilcox, Associate Director for Weapons, Air Force Research Laboratory (AFRL), at nearby Eglin AFB.

Organized by Andy McHugh, PSA Chairman of the Board, Ginny Sniegon (PSA Programs Chair) and Erik Ballinger (Event Chair), the very successful two-day event followed the theme *Precision Strike with Coalition Partners*.

This year, PSA returned to its roots and once again brought the international community together for the annual review. The theme offered the precision strike community a unique opportunity to witness a vast and diverse group of coalition partners discussing their precision strike priorities and budgetary constraints.

Dr. Wilcox welcomed the PSAR-11 attendees, saying "We as a Nation, along with our coalition partners, are working to bring better precision strike solutions to the battlefield. The U.S. military, industry and different nations have gathered to discuss how best to do that."

USAF Major General Michael Snodgrass, Assistant Deputy Under Secretary of the Air Force for International Affairs (SAF/IA), delivered the opening keynote address. He shared his vision on coalition policy, cooperation and operations along with challenges regarding security and stability in various regions of the world.

SAF/IA's mission is to conduct sustained security cooperation activities and build partner capability and capacity to promote effective joint and coalition air operational success. Key tools of the trade include joint military exercises that enable operational success and foreign military sales (FMS) that build partner capability. MG Snodgrass noted that FMS increased in all regions of the world between 2004-2009. In the

Middle East region, for example, FMS totaled \$16 billion in 2009 from the \$6 billion five years earlier.

Snodgrass said "forums like this allow us to address our common interests and solve problems." SAF/IA, he said, "provides objective advocacy for both our international partners and our friends in industry."

Next up on the podium was Rear Admiral John E. Roberti, USN, Deputy Director for Strategy and Policy, J-5, The Joint Staff. He addressed the responsibilities and opportunities for coalition partners. As regards the ongoing political turmoil across the Middle East, Roberti said "international order is complex, dynamics and ever changing. Things can happen over night. Building partnerships is critical since they are key in the strategic environment we face today." He also believes that "precision is a key concept in the 2011 National Military Strategy with military force employed in a precise and principled manner."



Rear Admiral John E. Roberti, USN

Representatives from four Combatant Commands (PACOM, CENTCOM, SOUTHCOM and EUCOM) chaired precision strike coalition partner sessions.

First, the US Pacific Command (USPACOM) Precision Strike Panel was chaired by Captain Michael P. Doran, USN, Deputy for the Theater Operations Integration Division (J39), who set the scene for the Asia-Pacific region discussion. He discussed the political state of play in the region before turning the microphone over to Dr. Mikel Miller, Chief Scientist, AFRL Munitions Directorate, who offered an overview of AFRL initiatives with Singapore, Australia and Japan.



Dr. John Wilcox



USAF Major General Michael Snodgrass



USPACOM Precision Strike Panel (L-R) Captain Michael P. Doran, USN, Dr. Mikel Miller, Dr. Jennifer L. Jordan, Dr. Bill Cooper, Dr. Timothy J. Klausutis

Offering details on the ongoing projects involving those foreign countries were: Dr. Jennifer L. Jordan, with

the Energetics Materials Branch, **Dr. Bill Cooper**, with the Damage Mechanisms Branch, and **Dr. Timothy J. Klausutis**, representing the Integrated Sensing & Processing Sciences Branch. Singapore is supporting research in the changes in insensitive high explosives due to loading during hard target impact. Three universities in Japan are providing research on the dynamics of projective penetration into sand. Meanwhile, researchers in Singapore, Japan and Australia are supporting AFRL in development of alternate navigation for munitions in the face of GPS jamming, spoofing and denial.

Lunch followed the USPACOM session, during which the 15<sup>th</sup> William J. Perry Award was bestowed to Project Dragon Spear (see page 7). **USAF Major General Charles Davis**, head of the Air Armament Center, said afterwards that “the Perry Award recipients showed how acquisition can be achieved cheaply and effectively using existing military systems to do things a lot quicker. If we don't take advantage of existing technology in a partnership approach, we're missing the boat.”

He offered status reports on long-range standoff weapons development, the Next Generation Missile (NGM) and the Next Generation Penetrator (NGP). One area of concern is development of fuzes for hardened and deeply buried target (HDBT) defeat. “Current fuze technology is the weak link for all future weapons since the industrial base is crumbling,” Davis said.

Weapons acquisition for special operations forces was then discussed by **James “Hondo” Geurts**, Deputy Director for Acquisition, U.S. Special Operations Command (USSOCOM). He said “unconventional needs demand unconventional approaches.” Geurts cited Project Dragon Spear as a good example of “an innovative and unique acquisition approach that embraced unconventional thinking.”

In the special operations world, he said, “one size does not fit all” and “success requires entrepreneurs at all levels.” Furthermore, culture versus process is the largest enabler for rapid acquisition and Industry, SOCOM and Service teams must leverage each other instead of competing.

Acquisition principles in his world include: deliver capability to the user expeditiously; exploit proven techniques and methods; keep Warfighters involved throughout the process; and take risk and manage it.



USAF Major General Charles Davis



James “Hondo” Geurts

Geurts said “we pursue technologies that are not necessarily the most advanced, but the most useful.” He said USSOCOM needs a family of lightweight, day/night, standoff, low collateral damage, precision guided munitions for discrete kinetic effects. Also high on his requirements list are improved PGM options for unmanned aerial systems of all sizes and better non-lethal means to stop vehicles in their tracks.

**Colonel Ken Echternacht, USAF**, Director, Munitions Directorate, AFRL, then took the PSAR-11 attendees on a stroll through munitions science & technology investment areas. AFRL/MD is leading the discovery, development and integration of affordable precision engagement technologies, including NGM, NGP and small and selectable effects weapons.



Colonel Ken Echternacht, USAF

The first day of PSAR-11 concluded with **The U.S.**

**Central Command (USCENTCOM) Precision Strike Panel** chaired by **Colonel Dave Rice, USA**, Program



USCENTCOM Precision Strike Panel (L-R) Colonel Dave Rice, USA, Dr. Peter R Huessy, Lt Col Matt Johnson, USAF

Manager for Precision Rockets, Missiles & Space Systems, who has traveled extensively in the Middle East. Customers for MLRS/ATACMS include UAE, Jordan, Egypt, Bahrain and Israel. Colonel Rice offered ‘lessons-learned’ in working with the military of those nations.

**Dr. Peter R Huessy**, President, GeoStrategic Analysis, then offered his perspectives on the situation in the Middle East as regards ballistic missile proliferation and the U.S. response and the energy implications of the current political turmoil in the region. He believes automakers must produce more alternative fuel vehicles to break the OPEC oil cartel's stranglehold. His message: adopt open fuel standards to introduce energy choices and remove the cash flow to terrorist sponsoring nations.

**Lt Col Matt Johnson, USAF**, Commander of the 36<sup>th</sup> Intelligence Squadron, Langley AFB, VA, discussed ongoing targeting issues in the CENTCOM AOR. His intel unit produces targeting, geospatial and combat identification materials for Warfighters in the region. Air Force Targeting Center work in support of CENTCOM units includes production of targeting and effects studies and target folders for AFCENT.

The second day of PSAR-11 began with **The U.S. Southern Command (USSOUTHCOM) Precision Strike Panel** chaired by **Michael Droz**, Deputy Director of Operations (J3), who discussed precision targeting from a different viewpoint—how U.S. forces and allies in Central American and South America are working to stem the production and flow of illicit drugs. He said the very large search area requires time-critical precision strikes on fleeting targets, whether ‘go-fast’ boats, mini-submarines or light aircraft flying under the radar. Stated Droz: “We have a war going on in our AOR although it is not a standard war.”

**Navy Admiral Guillermo Barrera**, Defense Attache to the Embassy of Colombia, outlined his nation’s efforts against drug traffickers and leftist terrorist groups while **Army Major General Humberto Oviedo**, Defense Attache



USSOUTHCOM Precision Strike Panel (L-R) Michael Droz, Navy Admiral Guillermo Barrera, Army Major General Humberto Oviedo, Will Curtis

to the Embassy of Chile, presented an overview of Chile’s defense policy and the Chilean Army. **Dr. Will Curtis**, with the Southern Office of Aerospace R&D, Air Force Office of Scientific Research, discussed some of the 46 ongoing projects in the areas of hypersonics and space science with 23 academic institutions in Central American and South America.

**Dr. Peter Huessy** returned to discuss the U.S. defense budget deliberations, the assumptions behind the Obama Administration’s Pentagon budget request for FY 2012 and the spending alternatives. He offered his perspectives on the ongoing military spending debate on Capitol Hill, a dialogue, he said, that “sometimes requires an interpreter.”



Dr. Peter R Huessy

Also returning for the second day of PSAR-11 was **U.S. Army Colonel Dave Rice** who offered some additional thoughts on FMS case execution. He noted that working with the prime contractor’s business development staff is essential to satisfying a foreign customer’s unique requirements. The FMS process is built for comfort, not speed, and he said “patience, persistence and attention to detail” is a given.

Continuing the discussion on shared interests/shared responsibilities was **Rino Pivrotto**, Executive Director, Navy International Program Office, who outlined his organization’s strategy for international cooperation, FMS fundamentals and the conduct of joint programs such as NATO Sea Sparrow. He said “the door to the Navy IPO is always open to industry to discuss cooperation on precision strike naval systems.”

**James B. Lackey**, Deputy Director, Air Warfare, stood in for David Ahern, Deputy Assistant SecDef, Portfolio Systems Acquisition, OUSD(AT&L), to discuss weapons systems acquisition reform as regards precision strike weapons. Focus areas include achieving affordability and system reliability. He said “the weapons world is doing well overall, but there remain challenges. DoD acquisition reform will help us keep focused on competition and affordability.”

**The U.S. European Command (USEUCOM) & NATO Precision Strike Panel** wrapped up PSAR-11. **Colonel George Uribe**, USAF, Chief, Operations & Training Div., HQ USAFE, said precision strike attributes for European nations include interoperability. “They need systems that are designed from the beginning to share information to coalition partners, as clearly the age of unilateral action is passing. We have standards for weapons; we need standards for data as well,” he said. Other attributes are adaptability and robustness. “The



U.S. Army Colonel Dave Rice



Rino Pivrotto



James B. Lackey



USEUCOM & NATO Precision Strike Panel (L-R) Colonel George Uribe, USAF, Colonel (Armament Corps) Nicolas Hue, RAF Group Captain Rob Adlam, Dr. Jennifer Jordan

advantage of technology isn't just the technology itself, but the skillful exploitation of the opportunities it creates," the session chair stated.

RAF Group Captain Rob Adlam, discussed the United Kingdom's recent Strategic Defence and Security Review (SDSR), which aims to bring defense plans, commitments and resources into balance. Priorities include seven new Astute Class submarines, the Queen Elizabeth Class aircraft carrier, modernized Typhoon multi-role aircraft

and the Joint Strike Fighter. Colonel (Armament Corps) Nicolas Hué, Defense Attache to the French Embassy, offered an overview of French priorities to combat engagement while the AFRL's Dr. Jennifer Jordan returned to discuss German research on HDBT solutions. ■



**PSA would like to thank the following corporations for sponsoring PSAR-11**

**ATK**  
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**ITT**  
**Kaman Precision Products**  
**Lockheed Martin**  
**Marotta Controls**  
**MBDA Missile Systems**  
**Northrop Grumman**  
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## Exhibitors for PSAR-11



ATK



ITT



Hamilton Sundstrand



Laser Devices Inc.



Lockheed Martin



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Strafe

# Project Dragon Spear Receives Perry Award

A high point of the 2011 Precision Strike Annual Review was the presentation of the PSA's 15<sup>th</sup> annual William J. Perry Award to the Project Dragon Spear Joint Acquisition Task Force. The prestigious award is presented annually to programs that strengthen the country's national security by applying precision strike capability to Department of Defense systems.

In response to a U.S. Special Operations Command Combat Mission Need Statement, the Project Dragon Spear team rapidly developed, tested and fielded a multi-mission system with Intelligence, Surveillance and Reconnaissance; precision strike; and mobility capability to support OPERATION ENDURING FREEDOM and OPERATION NEW DAWN, meeting USSOCOM's #1 acquisition requirement for precision strike on the battlefield.

The Project Dragon Spear team successfully executed an acquisition solution that exceeded its goals, fielding a critical combat capability using a Precision Strike Package concept that selected the best technologies available from DoD weapons systems while providing spin-off capabilities for other USSOCOM and Service needs. The team used an innovative and unconventional approach to systems integration, slashing costs and time.

The team delivered two fully combat-capable MC-130W aircraft in less than ten months. A mission simulator was developed to support early combat training. A production line was implemented that modified three MC-130Ws simultaneously—enabling delivery of the first eight production MC-130Ws in less than



2011 William J. Perry Award Recipients

15 months. The team redefined precision strike as it applies to side firing cannons.

Their work has been applied to other USSOCOM needs like the AC-130J program and the roll on/roll off stand-off precision guided munitions kit provided to the US Marine Corps. The Dragon Spear aircraft continue to support SOF forces in the CENTCOM AOR with highly effective ISR, strike and mobility capabilities.

The award was accepted by James "Hondo" Geurts, Deputy Director for Acquisition, HQ USSOCOM, who said "everybody brought their expertise to the table, showed what can be done as an enterprise. It was a great team effort." The Project Dragon Spear team included personnel from USSOCOM, USAF Special Operations Command, Aeronautical Systems Center, Naval Surface Warfare Centers-Crane & Dahlgren, Warner Robins Air Logistics Center, USSOCOM Detachment 1 and industry.

Named after the former U.S. defense chief and precision strike weapons advocate, others to have received the prestigious Perry Award include: Dr. Perry, the first recipient



(L-R) Lt Col Robert Masaitis, USAF, David Torraca, Lt Col William Blausler, USAF, Capt John Waddell, USAF

(1997); former Vice President Dan Quayle (1998); RADM Walter M. Locke, USN (Ret.) (1999); The Johns Hopkins University, Applied Physics Laboratory (2000); NAVSTAR Global Positioning System Joint Program Office (2001); Rep. James V. Hansen (R-UT) (2002); Terry Little, a well-respected acquisition reform pioneer (2003); USAF/USN/Boeing JDAM Program Team (2004); U.S. Warriors of Operation Enduring Freedom and Operation Iraqi Freedom (2005); The Tactical Tomahawk Team (2006); The Small Diameter Bomb Team (2007); Guided Multiple Launch Rocket & High Mobility Artillery Rocket System Team (2008); and, U.S. Special Operations Command Stand-Off Precision Guided Munitions (SOPGM) Quick Reaction Team (2009); and the Sniper Advanced Targeting Pod Team (2010). ■



James "Hondo" Geurts, Deputy Director for Acquisition, USSOCOM

# With Precision: Operation Odyssey Dawn

Coalition forces on March 19 launched Operation Odyssey Dawn to enforce a no-fly zone over Libya. U.S. military forces used precision guided weapons to take out Libya's integrated air and missile defense system, Defense Department officials said. The opening rounds of the coalition action followed the script of major operations since 1991 with the launch of Raytheon Tomahawk cruise missiles to destroy air defenses and clear a path for manned aircraft.

Cruise missiles from U.S. submarines and frigates began the attack on the anti-aircraft system, with over 160 Tomahawk cruise missiles launched in the initial days of the multi-faceted military operation. British armed forces launched guided Tomahawk Land Attack Missiles (TLAMs) from a Trafalgar Class submarine in the Mediterranean as part of the coordinated coalition plan to enforce United Nations Security Council Resolution 1973.

The U.S. Navy, while partnering with joint forces and coalition forces, made several first-time accomplishments During Operation Odyssey Dawn.

Amidst the forces were three submarines, including the USS Florida (SSGN 728). This strike against Libyan forces marked the first time that an Ohio-class guided-missile submarine launched a TLAM in conflict.

U.S. Navy EA-18G Growlers were used against hostile forces for the first time, in conjunction with U.S. Marine Corps AV-8B Harriers The Growlers conducted electronic warfare support jamming enemy transmissions.

Later in the operation, the USN and the USAF attacked Libyan Coast Guard vessel Vittoria and two smaller craft. Vittoria was engaged and fired upon by a USN P-3C maritime patrol aircraft with AGM-65 Maverick missiles; the first time that these missiles have ever been fired on a hostile vessel by a P-3C. The 12-meter patrol vessel was rendered ineffective.



The guided-missile destroyer USS Barry launches a Tomahawk in support of Operation Odyssey Dawn, one of more than 110 cruise missiles fired from U.S. and British surface warships and submarines that targeted radar and anti-aircraft sites along Libya's coastline.



The guided-missile destroyer USS Stout launches a Tomahawk in support of Operation Odyssey Dawn, one of more than 110 cruise missiles fired from U.S. and British surface warships and submarines that targeted 20 radar and anti-aircraft sites along Libya's coastline.



One of three USAF B-2 Spirit stealth bombers returns to Whiteman AFB, MO, from a mission in support of enforcing the Operation Odyssey Dawn no-fly zone over Libya.

"P-3s have provided 24/7 ISR maritime domain awareness critical to the protection of U.S. and coalition surface assets in the JOA since the initiation of Odyssey Dawn," said Capt. Dan Schebler, commodore, Commander Task Force 67. "This engagement demonstrates the ability of the P-3 to complete the sensor-to-shooter kill chain, in parallel providing a key capability to the Joint Force Maritime Component Commander and the Composite Warfare Commander."

The two smaller Libyan craft were fired upon by a USAF A-10 Thunderbolt II using its 30mm GAU-8 cannon. One was destroyed; the other craft was abandoned.

USAF B-2 Spirit stealth bombers, F-15E Strike Eagles and F-16CJ Fighting Falcons also launched during the early hours of Operation Odyssey Dawn.

Following the initial launch of Tomahawk missiles, three B-2s Spirit from Whiteman AFB, MO, led strikes on a variety of strategic targets over Libya. U.S. fighter aircraft created airspace where no enemy forces could advance on Libyan opposition troops.

"It was a spectacular display of air-manship watching this coalition come together the way it did to execute the first air strikes on behalf of the Libyan people," said USAF Maj. Gen. Margaret H. Woodward, Operation Odyssey Dawn Joint Force Air Component Commander.

RAF Tornado aircraft destroyed three armored vehicles in the early fighting. The Chief of Defence Staff's Strategic Communication Officer Major General John Lorimer said British Tornado GR4 aircraft took part in a coordinated missile strike against units of Colonel Gaddafi's Libyan Military.

The Tornado aircraft launched a number of guided Brimstone missiles, destroying three armored vehicles in Misrata and two further armoured vehicles in Ajdabiya. Brimstone is a high precision, low collateral damage weapon optimized against demanding and mobile targets. ■

## Gates: Prepare for Varied Threats

The U.S. military must be able to contend with a wide range of asymmetric and conventional threats now and in the future, Defense Secretary Robert M. Gates told Air Force Academy cadets on March 4.

In a speech at the U.S. Air Force Academy, Gates emphasized that although he has pushed the services to institutionalize asymmetric and unconventional warfare capabilities, he knows those are not the only kinds of missions for which the military must be prepared.

“But my message to the services is being distorted by some and misunderstood by others,” Gates said. “At the Navy League last year, I suggested that the Navy should think anew about the role of aircraft carriers and the size of amphibious modernization programs. The speech was characterized by some as my doubting the value of carriers and amphibious assault capabilities altogether.

“At West Point,” he continued, “I questioned the wisdom of sending large land armies into major conflicts in Asia, Africa and the Middle East, and suggested the Army should think about the number and role of heavy armored formations for the future. That’s been interpreted as my questioning the need for the Army at all — or at least one at its present size — the value of heavy armor, generally, and even the wisdom of our involvement in Afghanistan.”

He added that his advocacy for unmanned aerial vehicles may be construed as an attack on bombers and fighters. “But my actions and my budgets over the last four years belie these mistaken interpretations,” said Gates, noting that the Defense Department is modernizing the tactical air and bomber fleet.

“For the Navy,” he added, “I have approved continuing the carrier program, but also more attack submarines, a new ballistic missile submarine, and more guided missile destroyers. For the Army, we will invest billions modernizing armored vehicles, tactical communications and other ground combat systems. And the Marine Corps’ existing amphibious assault capabilities will be upgraded and new systems funded for the ship-to-shore mission.”

Gates pointed out that during his tenure he approved the largest increases in the size of the Army and Marine Corps in decades, stopped Air Force and Navy draw downs, and supported and presided over the surges in Iraq and Afghanistan.

“All that said, I have also been trying to get across to all of the military services that they will have many and varied missions in the 21st century,” he said. “As a result,

they must think harder about the entire range of these missions and how to achieve the right balance of capabilities in an era of tight budgets.”



Defense Secretary Robert M. Gates talks to AFA cadets March 4, 2011, in Arnold Hall at the Air Force Academy in Colorado Springs, CO.

The United States requires all of the services’ capabilities, the secretary said. “But the way we use them in the 21st century will almost certainly not

be the way they were used in the 20th century,” he added. “Above all, the services must not return to the last century’s mindset after Iraq and Afghanistan, but rather prepare and plan for a very different world than we all left in 2001.”

Moving forward, all of the services need to think aggressively about how to truly take advantage of being part of a joint force for a variety of missions, Gates said. “We must always guard against the old bureaucratic politics and parochial tendencies — especially after the Iraq and Afghanistan campaigns wind down and budgets become tight.”

“It’s easier to be joint and talk joint when there’s money to go around and a war to be won,” Gates added. “It’s much harder to do when tough choices have to be made within and between the military services — between what is ideal from a particular service perspective, and what will get the job done taking into account broader priorities and considerations.”

Gates thanked the cadets for choosing the military path in a time of war, knowing they would be at war. “My prayer is that you serve with honor and return home safely.” ■

## LRASM Launched

The Defense Advanced Research Projects Agency's (DARPA) Long Range Anti-Ship Missile (LRASM) program will demonstrate two variants of a next generation standoff anti-ship missile with additional range and lethality. Lockheed Martin received two contracts totaling \$218 million for the Demonstration Phase.

The program encompasses the rapid development and demonstration of two distinct variants of the LRASM missile: LRASM-A is a stealthy air-launched variation and LRASM-B is a high-speed ship-launched missile.

The joint DARPA-US Navy LRASM program was initiated in 2009 to deliver a new generation of highly capable anti-ship weapons. Current anti-ship weapons possess limited range and lethality. As at-sea warfare advances, a new generation of standoff anti-ship weapons systems are needed.

During Phase 1 of the program, preliminary designs of the LRASM-A and LRASM-B variants were completed by Lockheed Martin and reviewed by an independent government assessment team.

Lockheed Martin's LRASM-A team received a \$60.3 million contract to execute two air-launched demonstrations, leveraging its Joint Air-to-Surface Standoff Missile — Extended Range (JASSM-ER) experience and demonstrating Navy and Air Force tactical aircraft employment. LRASM-A adopts the JASSM-ER airframe and adds additional sensors and systems to achieve a stealthy and survivable subsonic cruise missile.

Lockheed Martin's LRASM-B team received a \$157.7 million contract to complete four Vertical Launch System (VLS) demonstrations, proving applicability to Navy surface combatants. Both LRASM-A and LRASM-B designs plan to support air-launch and VLS-launch configurations. LRASM-B leverages prior ramjet development activities and a suite of supporting sensors and avionics to achieve a supersonic cruise missile with balanced speed and stealth for robust performance.

Phase 2 (the demonstration phase) continues the development and demonstration of both missiles and culminate in flight demonstrations of tactically relevant prototypes of both missiles and a common sensor system from BAE Systems, Information and Electronic Systems Integration, based in Nashua, NH.

A series of developmental test activities will demonstrate the performance of key subsystems, including propulsion and mission execution software. Detailed

designs, analytical assessments and developmental test results will culminate in critical design reviews (CDR), ensuring each design is ready to continue on to flight demonstration. Following approval of CDR, the program will complete system fabrication and integration to support the flight test series.

LRASM-A will execute two air-launched demonstrations leveraging its JASSM-ER heritage and demonstrating applicability to Navy and Air Force tactical aircraft employment, while LRASM-B will complete four Vertical Launch System (VLS) demonstrations proving applicability to Navy surface combatant employment. Both LRASM-A and LRASM-B designs plan to support air-launch and VLS-launch configurations.

Lockheed Martin Missiles and Fire Control Strike Weapons, based in Orlando, FL, will demonstrate the LRASM-A prototype weapon system while Lockheed Martin Missile and Fire Control Tactical Missiles, based in Grand Prairie, TX, will demonstrate the LRASM-B prototype weapon system.

The project comes amidst Pentagon concerns over China's development of anti-ship ballistic missiles capable of holding USN aircraft carriers and other warships at risk.

Defense Secretary Robert Gates said a virtual U.S. monopoly on precision-guided weapons was eroding, "especially with long-range, accurate anti-ship cruise and ballistic missiles that can potentially strike from over the horizon. This is a particular concern with aircraft carriers and other large, multibillion-dollar blue-water surface combatants."

"Both of our LRASM solutions will deliver extraordinary range, willful penetration of ship self defense systems and precise lethality in denied combat environments," said Lockheed Martin Missiles and Fire Control's Rick Edwards. "The maturity of these weapons and technologies allows near term transition to Navy magazines at an affordable price. These are low risk, practical options with the Navy initiating studies of anti-surface warfare capability."

Glenn Kuller, director of tactical missiles advanced programs, said "these LRASM contracts will demonstrate two mature tactical missiles for new generation anti-surface warfare weapons capability; one low and stealthy, the other high and fast with moderate stealth." ■

## News Briefs

### APKWS for FW Aircraft

On Feb. 10, the U.S. Navy awarded a \$20 million contract to BAE Systems marking the start of a two-year Joint Capability Technology Demonstration (JCTD) program to implement the Advanced Precision Kill Weapon System II (APKWS II) on the Marine Corps' AV-8B and the Air Force's A-10 gunship.

The contract calls for analysis and prediction of APKWS performance when launched from the fixed-wing platforms as well as any minor design improvements to support the expanded flight envelope of the higher performance aircraft and reduce the recurring product unit cost.

The program will culminate in aircraft flight test firings of 16 performance shots, 14 military utility assessment shots, and the delivery of 50 units for further evaluation of enhanced mission capability.

The need for precision laser-guided munitions with low collateral damage is an important capability currently not available to legacy fixed-wing aircraft. If the APKWS II can be successfully demonstrated on these aircraft, it will increase safety by allowing greater standoff range during employment as well as provide the ability to support operations in urban terrain.

APKWS II currently is on track to reach Initial Operating Capability in 2011 to deliver capability to the AH-1W and UH-1Y platforms with Fleet Marine Forces currently supporting operations in Afghanistan. ■

### Defensive Weapon for Osprey

BAE Systems will provide a defensive weapon system for the V-22 Osprey tiltrotor aircraft. The system is based on the company's Remote



V-22 Osprey

Guardian System, (RGS), a remotely operated defensive weapon system that provides 360 degrees of suppressive weapons fire.

The RGS will be belly-mounted on the V-22 and able to deliver accurate, sustained fire throughout the aircraft's flight envelope. It features a compact, retractable design that saves valuable aircraft cabin space and is compatible with the full complement of the V-22's avionics suite.

Under a \$14 million contract, BAE Systems will produce and support RGS defensive weapon systems to be delivered by the end of 2012. The contract also includes a \$12 million exercisable option for additional systems and support. ■

### Coastal Defense with MAWS

ATK has unveiled its Modular Advanced Weapon System (MAWS), a flexible, remote weapon that integrate ATK's field-proven medium-caliber Chain Gun and ammunition into watercraft and ground platforms. Armament options include the M230LF cannon, a link-fed variant of the highly reliable M230 cannon carried on the AH-64 Apache helicopter.

Developed in partnership with the U.S. Navy, MAWS offers a total weapon solution with an integrated stabilization system, ballistic computation, and state-of-the-art sighting system that provides superior targeting for shipboard and ground engagements.

The man-machine interface in the MAWS – the Remote Operator's Console (ROC) – has a touch panel display, function and safety switches,

and either dual grips or a military standard video game-type joystick controller allowing intuitive under armor operation and maximum situational awareness that improves soldier safety and ensures lethality overmatch from existing and future threat platforms. ■

### \$50M Contract for Precision Mortars

ATK has received a \$50 million follow-on contract for production of the Mortar Guidance Kit (MGK) under the U.S. Army's Accelerated Precision Mortar Initiative (APMI) program. The contract is in response to an Army urgent Operational Needs Statement (ONS) and will mean more precision mortars going to U.S. forces in Afghanistan. ATK was previously awarded a contract in June 2010 to field an initial quantity of rounds under the Army's ONS. Combining GPS guidance and directional control surfaces into a package that replaces standard fuzes, the MGK transforms existing 120mm mortar bodies into precision guided munitions. ■

### Collaborative Nav System Under Development

Northrop Grumman, in partnership with the University of Minnesota, has been selected to develop a collaborative navigation system under the USAF Research Laboratory's (AFRL) Collaborative Robust Integrated Sensor Positioning Program.

Collaborative navigation will allow aircraft to leverage information from their onboard sensors in addition to shared data from other aircraft to achieve highly accurate navigation performance in all flight conditions, even in areas where global positioning system (GPS) information is unavailable.

During the initial award period, Northrop Grumman and the University of Minnesota will develop algorithms that will enable the collaborative navigation system to operate across multiple aircraft platforms. By sharing relative positioning information, video, geo-registered imagery, and other navigation data using the net-centric communication

capabilities on the platforms, the collaborative navigation system will improve overall navigational accuracy.

AFRL's Collaborative Robust Integrated Sensor Positioning program seeks to develop navigation technologies to improve situational awareness of the warfighter in all operating conditions. Future phases of the program will include the

development of a real-time prototype collaborative navigation system and a flight test demonstration. ■

### **A New Shadow is Cast**

Lockheed Martin recently rolled out the first aircraft in a new fleet of MC-130J Combat Shadow IIs for the U.S. Air Force's Special Operations Command (AFSOC).

The MC-130J Combat Shadow II will fly clandestine, or low visibility, single or multi-ship low-level air refueling missions for special operations helicopters, and infiltration, exfiltration, and resupply of special operations forces by airdrop or air-land. The MC-130J will primarily fly missions at night to reduce probability of visual acquisition and intercept by airborne threats.

Lockheed Martin is contracted to build 15 MC 130Js to begin replacing the current aging fleet. The USAF is authorized to acquire up to 20 MC-130Js against an approved requirement for 37.

The new aircraft is based on a KC-130J tanker baseline and will have the Enhanced Service Life Wing, Enhanced Cargo Handling System, a Universal Aerial Refueling Receptacle Slipway Installation (boom refueling receptacle), more powerful electrical generators, an electro-optical/infrared sensor, a combat systems operator station on the flight deck and provisions for the large aircraft infrared counter-measures system.

In-line production of this configuration reduces cost and risk, and meets the required 2012 Initial Operational Capability. ■

### **New Precision Mortar Round**

U.S. soldiers in Afghanistan will receive a first-of-its kind, GPS-guided 120mm mortar munition that can

## **PRECISION STRIKE ASSOCIATION CALL FOR PAPERS - PSTS-11**

The Precision Strike Association will sponsor the 21<sup>st</sup> annual Precision Strike Technology Symposium (PSTS-11) October 26-27, 2011 at the Johns Hopkins University Applied Physics Laboratory-Kossiakoff Conference Center in Laurel, MD.

### **REQUIREMENTS**

Individuals desiring to submit a paper for consideration should ensure that the abstract is pertinent to the desired symposium topics and that it is no longer than 500 words. Abstracts are due no later than June 10, 2011.

Presentations may be to the SECRET/U.S. Only Classification level, but all abstracts must be UNCLASSIFIED. Innovative concepts and ideas are particularly welcomed, and multimedia presentations are strongly encouraged. Papers should be suitable for a 30-minute presentation. Abstracts should include the intended classification of the presentation and must include the point of contact, complete address, e-mail, telephone and fax number. Specific format requirements will be provided to those individuals whose abstracts are selected.

### **DESIRED TOPICS**

- Technologies to counter Camouflage, Deception and Denial
- Special Operations capabilities to provide enhanced Kill Chain effects
- Counter anti-Access/Area Denial technologies to include cyber and space
- Reducing the Kill Chain reaction time and technologies that address Time Sensitive Targets
- "Game changing" precision strike technologies
- Offensive ASuW technologies (anti-surface combatant weapons)
- Precision Electronic Attack technologies
- UAS/RPV precision strike technologies

### **The following schedule applies:**

**Deadline for Abstracts:** June 10, 2011

**Acceptance Notification sent by E-mail:** Week of June 27, 2011

**Symposium Dates:** October 26-27, 2011

Please file your abstract at the following weblink and complete ALL required Information: <http://application.ndia.org/abstracts/IPST>. Additional information on this symposium will be available at [www.precisionstrike.org](http://www.precisionstrike.org)



Accelerated Precision Mortar Initiative

pinpoint targets at ranges up to 6,300 meters, service officials said.

The program, called Accelerated Precision Mortar Initiative, or APMI, emerged out of a request from the field commander in Afghanistan; the precision rounds were recently test fired at Yuma Proving Ground, AZ. The APMI cartridge has a requirement of 10 meters CEP, or Circular Error Probable but the program is exceeding this requirement.

The APMI XM395, cartridge uses a standard M934 high-explosive 120mm projectile body. In the nose, a GPS receiver and computer controlled aerodynamic directional fins keep the round on its programmed trajectory. Folding fins in the tail provide stability.

APMI also has a multi-functional fuse, which allows the round to be programmed to explode in the air, once it hits a hard surface or after it penetrates inside a target. In order for the autonomous flight and fuse control to function properly, operators must input mission and GPS data from a fire control computer into the round using a setting device.

“The testing involved a significant amount of firing and safety requirements. The overall reliability of the round is meeting its requirement of greater than 90 percent. The testing, which has been going on since last fall, has gone extremely well,” said Bruce Kay, systems coordinator, for mortar systems. “This provides the commander with immediate response precision indirect- fire capability.”

The U.S. Army plans to deliver 5,480 APMI rounds. ■

### Eagle Eye

The USAF recently took a step forward in the F-15E Strike Eagle’s continuous technological evolution. Officials from the 46<sup>th</sup> Test Wing launched the fourth generation fighter for the first time with a new and improved radar system.

The APG-82 uses active electronically scanned array (AESA) radar technology. The standard radar, APG-70, is a mechanically scanned array (MSA). The new radar lacks the motors and hydraulics of the old system and includes a new avionics and cooling system.

The F-15E radar operates as air-to-air and air-to-ground radar. “One AESA-equipped F-15E can detect and track multiple targets simultaneously and gain the same battle picture and prosecute the same number of attacks that currently require several mechanically scanned radar assets,” said Brad Jones, the Boeing director for U.S. Air Force development programs. “Adding AESA multiplies the effectiveness of the F-15E.”

The advantage AESA radar has over an MSA is its near-instantaneous ability to redirect its focus from air-to-air to air-to-ground mode.

The four-year-old project borrowed from existing technology to create the new system. The array system was taken from the F-15C Eagle and the avionics were borrowed from F/A-18s.

Capt. Chris Dupin, a 40<sup>th</sup> FTS member and the weapons system officer for the first flight, said he noticed improved capabilities during the initial flight. “The kill chain for anything is the ability to detect, identify, target and engage a threat,” Dupin said. “If we can detect an air target earlier or farther away, that leaves

more time and space to complete the rest of the kill chain. Completing the kill chain faster and earlier means we’re better able to gain or maintain airspace superiority.” ■

### Kaman Wins \$23.8M JPF Order

Kaman’s Aerospace segment has been awarded a contract modification in the amount of \$23.8 million for the procurement of Joint Programmable Fuzes (JPF). The award is the first under Option 8 of Kaman’s JPF contract with the USAF. Delivery of these fuzes is anticipated to occur in 2012 and 2013.

“This award raises total JPF orders in the last twelve months to \$150 million and secures our backlog of \$151.7 million into 2013,” commented Greg Steiner, president of Kaman Aerospace Group.

Kaman is the sole provider of the JPF, an electro-mechanical bomb safing and arming device, to the USAF and eighteen other nations. The JPF

## CALENDAR OF EVENTS

### Precision Strike Summer Golf Outing

**Date:** June 2, 2011

**Location:** Andrews AFB, MD – South Course

*(To Benefit PSA & Hope for the Warriors)*

### Precision Strike Technology Symposium

**Date:** October 26-27, 2011

**Theme:** Kill Chain Challenges and Opportunities to Counter US Global Threats

**Location:** Johns Hopkins University Applied Physics Laboratory—Kossiakoff Center, Laurel MD

*This symposium will be held at the SECRET/US Only Classification Level*

*Sponsorships and exhibit opportunities available for all events—for more information email [info@precisionstrike.org](mailto:info@precisionstrike.org) or visit our website: [www.precisionstrike.org](http://www.precisionstrike.org)*

allows the settings of a weapon to be programmed in flight and is the current bomb fuze of choice of the USAF.

The JPF is used with a number of weapons including general purpose bombs, and guided bombs that use JDAM or Paveway kits, on U.S. aircraft such as F-15, F-16, F-22, A-10, B-1, B-2, B-52 and the MQ-9 UAV as well as on international aircraft such as Mirage 3 and Gripen.

### BAE Systems to Build Gun Systems for USN LCS

BAE Systems will provide the primary gun systems on ten USN Littoral Combat Ships (LCS) to be built by the Lockheed Martin-led team. BAE Systems will equip the warships with 57mm Mk 110 gun systems.

BAE Systems will also provide a digital fire control system that allows the Mk 110 to accurately fire automatic salvos of the highly lethal 57mm Mk 295 ammunition at a firing rate of 220 rounds per minute and a range of up to nine miles.

The six-mode programmable 57mm Mk 295, pre-fragmented and proximity-fused (3P) ammunition allows the system to perform against either an aerial, surface or ground

threat without requiring multiple round types. Sailors can switch from warning to live fire to engage a target in seconds, and the servo-controlled electro hydraulic gun laying subsystems provide robust endurance and extreme pointing accuracy, even in high sea-state conditions.

Work on the contract will take place at BAE Systems' facilities in Louisville, KY; Minneapolis, MN; and in Karlskoga, Sweden. Production of the gun systems is expected to run through calendar year 2017. ■

### \$5.6M Order from USSOCOM

FLIR Systems has received a \$5.6 million order for its Talon forward-looking infrared system from U.S. Special Operations Command (USSOCOM). This stabilized, light-

weight, multi-sensor system will support the Long Range Ground Mobility Visual Augmentation Systems (LR-GMVAS) program and ground vehicles. Following the completion of this order, FLIR will have more than 260 ground vehicles outfitted under this program. Work will be performed at FLIR's facility in North Billerica, MA. ■

### \$140M Contract for HIMARS

Lockheed Martin has received a \$139.6 million contract to provide 44 combat-proven High Mobility Artillery Rocket Systems (HIMARS) to the U.S. Army. This order will increase the Army's HIMARS launcher fleet to 375, with deliveries continuing through January 2013. ■

### Golf Event Preview,

Continued from page 1

Information on both organizations can be found at:

<http://www.precisionstrike.org/>

<http://www.hopeforthewarriors.org/>

See this page for further details on the 2011 Precision Strike Summer Golf Outing. This event also presents several sponsorship opportunities for industry. Go to <http://www.precisionstrike.org/> for information on the Corporate Golf and Sponsorship Packages and the Cost for Individuals. ■

## Precision Strike Summer Golf Outing (PSS-11)

Featuring Luncheon Speaker:  
The Honorable George Allen  
Former Governor and U.S. Senator of Virginia

**When:** Thursday June 2, 2011

**Where:** Andrews AFB, Maryland (South Course)

### Schedule of Events:

0830 Arrival, Registration, Range and Continental Breakfast

0915 Opening remarks: Robin Kelleher, President, Hope for the Warriors

0930 Shotgun Start for Golf \* (Captain's Choice Scramble Format)

1430 Buffet Lunch for Golfers and Lunch Attendees

1500 Lunch Speaker: The Honorable George Allen (confirmed)

1530 Golf Awards

\*Golf is limited to the first 144 entries received. — Maximum lunch participants 200 (including golfers).

**Deadline for registration is May 12, 2011.**

For more information and to download registration and sponsorship forms, please visit our website: [www.precisionstrike.org](http://www.precisionstrike.org) or contact Dawn Campbell by email at [dcampbell@precisionstrike.org](mailto:dcampbell@precisionstrike.org) or 703-247-2590.

*PSTS-11 Program Highlights*

# PRECISION STRIKE TECHNOLOGY SYMPOSIUM (PSTS-11)

26-27 OCTOBER 2011

**SECRET/U.S. Only**

The Johns Hopkins University Applied Physics Lab  
Kossiakoff Center — Laurel, MD

## Kill Chain Challenges and Opportunities to Counter U.S. Global Threats

### Two Hot-Topic Sessions

*Intelligence—Cyber/Kinetic/Directed Energy/DRFM*

*Weapons Systems Technologies for Precision Strike*

### Four Keynote Addresses

*National Security Global Challenges*

*Kill Chain Challenges for Asia-Pacific Stability*

*Kill Chain Challenges to Counter Naval Threats & Future of the Air-Sea Battle  
Afghan & Iraq Lessons Learned & Recommended Solutions for Precision Engagement*

### Numerous Riveting Technical Topics

- Combatant Commanders Needs
- Special Ops Precision Strike Challenges & Needs—Planning for the Unplanned
- Targeting Issues in the CENTCOM AOR
- Future of Precision Weapons
- Important Topics selected from Abstracts
- Horizontal Integration of the Weapon Kill Chain
- How ISR Compliments Precision Weapons—Unmanned Systems Roadmap
- Integrating Kinetic (Strike) & Cyber Effects to achieve desired Warfare Outcome
- Integrating Data Link Requirements Across the Kill Chain
- Kill Chain & T&E—How well are Weapons meeting Effective/Suitable Ratings
- Red Team’s Role in Requirements Development & S&T Transition
- Army’s Missile Systems Issues
- Hard Target Munition
- Wrapup—Warfare Integration & Precision Engagement

### Special Award Ceremony

*Richard H. Johnson Technical Achievement Award Ceremony*

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# Membership Application – Precision Strike Association

I hereby apply for membership in the Precision Strike Association. My understanding is this entitles me to invitations to appropriate Association activities, the quarterly newsletter and other benefits.

## Corporate Membership

- Gold Sponsor \$750 annual dues (annual sales in excess of \$10M): includes 20 individual memberships  
*Include \$10 for each individual membership requiring mailing outside of North America.*
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- One Year \$40    Two Years \$75   *Include \$10 for each individual membership requiring mailing outside of North America.*
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