



**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.

PSTS-13 SPOTLIGHTS *Precision Strike in the New Strategic Environment at Home & Abroad*

Abroad and at home, the U.S. joint military posture will be placing enhanced emphasis on air, naval, and missile defense forces while still retaining capable ground forces for new missions. To help sustain U.S. global leadership in an era of change, the Secretary of Defense is devoting more attention and resources to handle emerging challenges in the Asia-Pacific region. Simultaneously, DoD will pay close attention to new threats and dangers emerging from North Africa including terrorism and Iran's nuclear ambitions.

The Precision Strike Technology Symposium (PSTS-13)—scheduled for 22-24 October 2013 at the JHU/APL Kossiakoff Center—will spotlight its presence and commitments to these regions of the world. PSTS-13 will be conducted at the SECRET/US Only Classification Level. This timely and penetrating technology symposium is sponsored by the Office of the Under Secretary of Defense for

Acquisition, Technology and Logistics, Strategic and Tactical Systems.

PSTS-13 is structured to focus on the rebalance to the Asia-Pacific region. Further, this critical symposium will address hot spots in North Africa and also will review U.S. strategic posture for regional deterrence. Additionally, PSTS-13 will provide emphasis on many crucial national-security challenges facing our great Nation today and tomorrow—giving the precision strike community tremendous coverage of what's needed for our warfighters.

Numerous distinguished leaders will address the precision strike community at PSTS-13. Several other confirmed speakers—including **Ambassador John Bolton** who will deliver the Luncheon Address on Opening Day—will be highlighted in the 3rd Quarter 2013 edition of the Precision Strike Digest—along with additional key topics of special interest to the precision strike community.

See **PSTS-13**, Cont. on pg. 14



**Lieutenant General
Bradley Heithold, USAF**
Vice Commander,
HQ USSOCOM



**Rear Admiral
Mat Winter, USN**
PEO for Unmanned
Aviation & Strike
Weapons



**Major General
Garrett Harenca, USAF**
ACS for Strategic
Deterrence & Nuclear
Integration

IN THIS ISSUE

Chairperson's Column



There are two important messages in this Column. The first message is one of Thanks! The second key message is a reminder that, if we

work together, we can have a very powerful voice for national defense and the precision strike community.

First the thanks... We had a very successful Precision Strike Annual Review in March. That success is due to the hard work of the organizers and the speakers, and the participation of the attendees. We don't have room to thank everyone individually, but you know who you are... Thanks! We should give a special thanks to Ginny Sniegion. Ginny volunteers hundreds of hours of her personal time to make these events what they are. Thank you Ginny!

We'd also like to thank our new members of the Board of Directors and Advisory Board. These folks have agreed to volunteer their personal time to be active leaders in the Precision Strike Association. Thank you Michael Bawden, Bryan Mendiola, John Meyer, Steve Riker, Andrew Schwarz, Steve Cornelius, Stephen Klein, and James Lackey.

Lastly, we would like to thank the respondents of the Precision Strike Community Survey. With this survey we are seeking insights and opinions to assist us in gauging our current programs and adjusting our direction for the future. At the time of writing this article, a week has passed since the survey was distributed and 91 people have already taken the time to give us feedback. The feedback has been sincere and thoughtful. It confirms the importance of this association. It should motivate us to continue to provide the best product to our constituents. We can't thank you enough for your time, energy, and insights.

If you have not had time to fill out the survey or if you did not receive the original message, it is not too late. Please go to: <http://www.ndia.org/survey/PSAEnvironmentScan>

We are committed to consistently improving the value of our membership and the products and services that we provide. Your input is highly valued and critical in assisting us in our development and future planning.

The second important message of this column is that of engagement... A critical part of the Precision Strike Association mission is to facilitate communication amongst government and industry and to understand and promote national defense policy and military strategy. In these times of constrained budgets, these aspects of our mission become even more important. Our government and defense leaders are put in the very difficult position of having to make extremely important decisions in a highly complex and multi-faceted environment. This is a daunting task. There are often no good answers, only the lesser of various evils. It is our duty to come together for the Warfighter and provide a clear and articulate voice to help our leaders make these decisions. To be effective, we must be knowledgeable and engaged. It is the goal of the Precision Strike Association to provide the forums where we can share knowledge, discuss challenging issues, and provide that voice for our decision makers. Together we have the power to make a difference.

If I may, I would like to challenge the community to:

- Use the Precision Strike Digest as a vehicle of communication for those messages you think are critically important to the community
- Engage the Precision Strike Association to help create a forum for discussion for your specific community
- Encourage and mentor our youth to become active members of the national defense and the precision strike community

Don't forget to mark your calendars for the 2013 Precision Strike Technology Symposium, October 22-24, 2013, at the Johns Hopkins University Applied Physics Laboratory in Laurel, MD. The theme is Precision Strike in the New Strategic Environment at Home and Abroad. It promises to be a memorable event with many opportunities to discuss our most pressing problems. We will also be awarding the 2013 Richard H. Johnson Award for outstanding personal technical achievements resulting in significant contribution to precision strike systems.

Suzy Kennedy
Chairperson of the Board
Precision Strike Association

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PSAR 2013: Precision Strike/New Strategies

The Precision Strike Association (PSA) held its Precision Strike Annual Review (PSAR-13) March 19-20, 2013 at the Waterford Conference Center, Springfield, VA.

Organized by Ginny Sniegon, PSA Programs Chair and Annual Review Co-Chair; Captain Buck Burt, USN (Ret), Annual Review Co-Chair; Dick Rumpf, Congressional & William J. Perry Award Chair; Earle Rudolph, International Chair; and Suzy Kennedy, Annual Meeting Chair and PSA Chairman of the Board, the very successful two-day event held the theme **Precision Engagement—New Strategic Environment**.

The Review addressed strike warfare requirements and capability decisions critical to national security. It was structured to concentrate on global presence in the Asia-Pacific Region and describe both the new strategy and the needed characteristics of future strike weapons and systems.

The experts discussed the policies and approaches that impact precision engagement and its future, and PSAR-13 showcased the critical challenges related to the new strategic environment.

A special feature of PSAR-13 was the presentation of the William J. Perry Award that recognizes significant contributions to the development and support of precision strike systems that have led to the strengthening of our vital national security interests. Dr. Paul Kaminski—Director, Defense Science Board—once again presented this year's award on behalf of Dr. Bill Perry.

Representative Mac Thornberry (R-TX, 13th District) kicked off the Review and presented the congressional perspective on the new strategic environment.

As regards that environment, Thornberry said “the world is not getting any safer or less complex. The security challenges that we face are immense, including cyber security. Meanwhile, budgets and resources are going to be tight.”

He said cutting the defense budget won't solve the federal deficit. “Defense did not cause the federal deficit; cutting defense will not solve the enormous debt. We need to maintain some stability in defense spending.”

Even if we solve the sequestration issues, said the Texas lawmaker, “we will have tight budgets as far as the eye can see” and thus “we have to get more defense out



**Representative
Mac Thornberry
(R-TX, 13th District)**

of the money we spend. We need serious defense acquisition reform. If we keep going the way we're going, we'll buy one fighter aircraft every other year, maybe a warship every third year.”

He warned against shortchanging research and development, a tempting area to cut during tight budgets. “You can't reduce your investment in future capabilities. You tie your hands on what you're able to do in the future,” he believes.

His bottom line: “This situation of limited resources and unlimited problems is going to require the best of all of us to solve our problems.”

Next up on the podium was **Rear Admiral Rick Snyder, USN**, Deputy Director, Joint Strategic Planning, The Joint Staff (J-5), who spoke of the security environment in which the U.S. military forces remain actively engaged, focusing on the rebalance for the new strategic environment.



**Rear Admiral
Rick Snyder, USN**

“After a decade of extended operations in Afghanistan and Iraq, we are at a strategic inflection point,” said Snyder. He said the need to reset a modernized force in a period of significantly reduced resources will require balance in resources, investments, operations and risks. “I am talking about balancing efforts in a time of transition and as part of a new strategic environment.”

He talked about an “ever shifting domestic and international environment” that is framed by the current Joint Strategy Review, which outlines major aspects of the strategic environment over the next two decades and provides a common long-range strategic baseline to plan future activities.

What does the future hold? Snyder sees wide ranging transitions that will be complex, dynamics and uncertain with rapid rates of change in areas of technology and human interaction.

He said “balance between reset, recap and force modernization means we must carefully decide how to spend diminished dollars to meet deferred modernization demands and prepare for future challenges while repairing current equipment and continuing to make science and technology investments.”

Rear Admiral Mat Winter, USN, PEO for Unmanned Aviation and Strike Weapons, believes PSA “brings

together minds across different organizations for dialogues in technical and programmatic areas.”

He provided an overview of his weapons portfolio and discussed how the Navy is designing, developing and fielding new capabilities. Winter spent time discussing the surface warfare capabilities domain, ASuW capabilities and the ASuW kill chain that “brings in analysis that allows us to make smart investment decisions.”

He said ASuW problems include the need for network-enabled weapons, the ability to target better and ways to better pass information around. Winter said the Offensive ASuW Initiative (OASuW) is a pilot effort towards fielding the next-generation ASuW weapon, but he noted it is facing budget issues.

David Ochmanek, Deputy Assistant Secretary of Defense for Force Development, talked about the policy/strategy context in which the Obama Administration is reshaping defense strategy in an era of constrained budgets.

He said the strategy for the FY2015 five-year defense plan responds to the challenges and the dynamic security environment that poses a range of tasks and addresses a constrained budget environment. “We must step back and think about the FY2015 budget, the enduring missions, capabilities, priorities and investments that we must pursue as resources are further constrained,” he told the PSAR-13 attendees.

Ochmanek said the Defense Strategic Guidance has four main elements: defeat Al-Qaida and its affiliates; rebalance towards Asia-Pacific; deter/defeat aggression in two separate regions; and, support a National Security Strategy through active global leadership. “We can’t abandon any of them even as resources are under pressure,” he said.

Ochmanek said precision engagement will need improved intelligence. He said “affordability is central to everything” and “strike also includes photons on target versus just steel.” And in times of budget austerity, he said, “we must lean more heavily on our Allies and partners.”

Travis Smieja, OPNAV N980W, Air to Ground Weapons Requirements, and **Maj Kevin Kuginskie**, USMC, APW-72 Air to Ground Weapons Requirements,



**Rear Admiral
Mat Winter, USN**



David Ochmanek

discussed Navy and Marine Corps precision weapons, respectively. Smieja outlined the weapons roadmap for naval strike fighters, including the F/A-18 and the F-35C, and ongoing efforts to make attack helicopter pilots (like Maj Kuginskie)

into “precision strikers”. Smieja said “we are trying to increase the number of network-enabled weapons to let them talk to more platforms as part of a fully integrated network.

“Kujo” Kuginskie discussed the USMC’s tactical aircraft and weapons blueprint that includes transition to the AH-1Z SuperCobra helicopter gunship and fielding of KC-130J Harvest Talk aircraft. The Harvest Hawk system includes a version of the target sight sensor used on the AH-1Z as well as a complement of four AGM-114 Hellfire and 10 Griffin missiles, a modular, precision-guided missile system typically employed on unmanned aerial vehicles.

He also described how the BAE Systems Advanced Precision Kill Weapon System (APKWS) II is being qualified for MQ-8B Fire Scout drones, the AH-1Z, the AV-8B Harrier and the USAF’s A-10 Warthog attack aircraft.

The Air Force Precision Weapons Session was anchored by **Bill Dries**, a member of the Air Force Air-Sea Battle Team, and **Major General Steven Kwast**, USAF, Director, Air Force Quadrennial Defense Review. Dries addressed the Air-Sea Battle Concept while Kwast focused on essential future initiatives and challenges.

Dries said the Air-Sea Battle force development initiative was launched in 2009 to develop an air-sea battle concept involving the USN, USMC, USAF and the U.S. Army. His office is assisting in multi-service programmatic collaboration. The networked force will be integrated to attack in depth, he said. The initiative has included



**Travis Smieja and
Maj Kevin Kuginskie, USMC**



Bill Dries



**Major General
Steven Kwast, USAF**

workshops and wargaming. “The next step is to initialize it. We will work over the next few years to do that, through experiments, additional wargames, exercises and training,” Dries said.

Major General Kwast said “the way we’ve been doing business is showing signs of wear and tear. I’m seeing red flags of diminishing return on investment.” He said the USAF continues to do the job despite the inefficiencies of stove piped solutions. “That kind of luxury won’t last forever,” he warned. “We need to break down the paradigms of stove piped thinking for solutions that are interconnected.”

He stated: “If we continue to try and solve new problems with old methodologies, I dare say we will find ourselves on a path where we will spend ourselves into oblivion.”

Gregory Knapp, Vice Assistant Deputy Director, Joint Development in Joint & Coalition Warfighting (J-7) The Joint Staff, supports training and development of joint, interagency and multinational capabilities to meet operational needs of joint coalition forces. “We’re doing well on tackling joint integration problems. What we’re not doing well on is non-material/material integration,” he said.



Gregory Knapp

“We’re good at building precision weapons, but what is the broader context? Our people don’t have a clue on how to optimize non-material/material perspectives, but J-7 is pushing for joint interdependence, deeper and sooner, and a cross-domain synergy.”

Science & Technology initiatives were the topics of **Acting Assistant Secretary of Defense (Research & Engineering) Al Shaffer’s** briefing. He said S&T must do three things: mitigate against emerging threats; build and engineer affordability into current and emerging platforms; and, create technology surprises while developing new capabilities.



Al Shaffer

He identified seven S&T priority areas, including electronic warfare, space/cyberspace and modern integrated air defense systems. Shaffer believes “U.S. EW superiority is being broadly challenged” and “future enemies will seek to control space and cyberspace as a means of denying operational access to U.S. joint forces.” He said “defense reductions will have an impact, but S&T remains a steady priority.” Shaffer also stated that Asia-Pacific rebalance is a foundation of the research and engineering strategy.

Dr. Linton Wells, Director of the Center for Technology & National Security Policy, National Defense University, discussed the need for C4ISR integration in global operations. “No lessons are learned until behavior is changed. We need to do things differently and training and exercises must change if we are to get there.”



Dr. Linton Wells

Colonel Dave Rice, U.S. Army (Ret), a former program manager for precision fires, rockets and missiles, said the forecast for precision engagement is “cloudy and windy with a chance of rain.” In other words there will be uncertain spending for precision weapons, increased DoD and congressional oversight, and some time before the sun shines on the precision strike portfolio. “We face budget problems, and new program starts will be rare. In the wild west of defense acquisition, we don’t know what will happen. Uncertainty is driving the train. Industry needs to be flexible and adaptable from both a technical and programmatic perspective,” Rice believes.



**Colonel Dave Rice,
U.S. Army (Ret)**

PSAR-13 went down two tracks with the first day of PSAR-13 concentrating on the new defense strategies in a tight budget environment, the weapons roadmap, air-sea battle, S&T initiatives and C4ISR.

Ginny Sniegon said the second day of PSAR-13 would focus on acquisition opportunities in meeting the precision strike challenges in the new strategic environment, the subject of the final day’s keynote address.

Honorable Frank Kendall, Under Secretary of Defense (Acquisition, Technology and Logistics), said “we live in interesting times since we face an insane budget environment. We face a huge problem and the politicians must sit down and resolve their differences and come to some compromise on how to handle the federal deficit. We are going through a bit of a rough time, but we’ll get back on track.”



Honorable Frank Kendall

Right now, he said, “we’re taking some risks. We’re tight on readiness and some R&D and acquisition investments. We’re being challenged in terms of technology development and U.S. military modernization programs. We’ve neglected electronic warfare and held off on some

advancements in precision weapons systems. But we need to start thinking about the next generation of weapons, and I'm trying to carve out some funds for future investments and next generation concepts."

USAF Colonel Michael Schmidt, PEO for Fixed Wing (SORDAC-PEO/FW), U.S. Special Operations Command, followed Kendell on the podium. He offered an update on current special operations aircraft rapid acquisitions, including Dragon Spear, which received the 15th annual William J. Perry Award. Developed by Air Force Special Operations Command, 'Dragon Spear' is the roll-on, roll-off Precision Strike Package used on MC-130W aircraft in AFSOC's inventory. The MC-130W is operated by the 73rd Special Operations Squadron, assigned to Cannon AFB, NM. The Dragon Spear development team helped USSOCOM and the Department of Defense meet other requirements, such as the USMC's Harvest Hawk program.



USAF Colonel Michael Schmidt

Meanwhile, The first MC-130J to be converted into Air Force Special Operations Command's newest variant of the gunship, the AC-130J Ghost rider, arrived at Eglin AFB, FL, early this year. Ghost rider will inherit the AC-130W Stinger II's precision strike package. The precision strike package includes dual electro-optical infrared sensors, a 30mm cannon, Griffin missiles, all-weather synthetic aperture radar and Small Diameter Bomb capabilities. The sensors allow the gunship to visually or electronically identify friendly ground forces and targets at any time, even in adverse weather.

LTC Ken Britt, USA (Ret), moderated the Army Precision Weapons Session. **David Hicks**, a System Coordinator in the Office of the Asst. Secretary of the Army (AL&T), discussed maneuver precisions missiles while **Lt. Col. Nate Fischer, USA**, tackled cannon precision fires and **USA Lt. Col. Francis Moss**, Deep Fires Team Chief, addressed long-range precision fires.



David Hicks, Lt. Col. Nate Fischer, USA, USA Lt. Col. Francis Moss and LTC Ken Britt, USA (Ret)

Among the weapons briefed by Hicks was the Lethal Miniature Aerial Munition (LMAM) system, also known as Switchblade. Provided by AeroVironment, the Switchblade air vehicle launches from a small tube that

can be carried in a backpack and transmits live color video wirelessly for display on a small unmanned aircraft system (UAS) ground control unit. Upon confirming the target using the live video feed, the operator then sends a command to the air vehicle to arm it and lock its trajectory onto the target.

Flying quietly at high speed the Switchblade delivers its onboard explosive payload with precision while minimizing collateral damage. With the ability to call off a strike even after the air vehicle is armed, Switchblade provides a level of control not available in other weapon systems. Hicks said the Army hopes to transition Switchblade to a program of record by FY2015.

Fischer discussed the status of the cannon precision fires Excalibur and the XM1156 Precision Guidance Kit (PGK). The PGK is a global positioning system guidance kit with fuzing functions that turns the U.S. Army's conventional stockpile of 155mm high explosive M549A1 and M795 cannon artillery projectiles into near precision munitions.

It provides add-on precision guidance capability to the projectiles used in the M109A6 Paladin and M777A2 Lightweight 155mm Howitzer weapons systems. Meanwhile, Moss outlined Precision Fires Rocket and Missile Systems (PFRMS), which includes the Multiple Launch Rocket System (MLRS) that continues to evolve.

Dr. Peter Huessy, President, Geostrategic Analysis, provided the luncheon address on the second day of PSAR-13. He said next year the U.S. and its allies will face the beginning of a massive cascade of nuclear weapons proliferation as Iran and North Korea export their technologies.



Dr. Peter Huessy

"This dark future has been birthed by eight key false narratives adopted by the U.S. and its allies. This in turn has led to further consequences, particularly key policy failures, which in turn has been a mid-wife to an emerging nuclear weapons proliferation that is the most serious threat facing the United States. These eight false narratives...come from both a deliberate falsification of history as well as a clinging to a convenient story line that excuses a failure to make tough choices," he said.

Huessy also described "how misguided our nuclear deterrent and arms control policy has become, and how we have completely misread the factors that have led to Iran seeking a nuclear arsenal, North Korea acquiring one and China expanding one."

He said the Constitution requires us “to provide for the common defense” and “diplomacy without the threat of force is prayer.”

Rear Admiral Bert Johnson, USN (Ret), a former Vice Commander of NAVAIR, sees a technology race in the future. “As other economies grow and technology advances, the unintended consequence is that we will no longer corner the market on new technology. We will not be alone in conducting cutting edge defense research. The world is catching up with us while our ability to spend money on defense is shrinking. We can no longer afford to develop all systems to fill all requirements.”



Rear Admiral Bert Johnson, USN (Ret),

Jose Gonzalez, Director, Land Warfare & Munitions, discussed the DoD Joint Munitions Program (JMP), which among other things has provided the BLU129/B 500 lb. low collateral damage munition. The Joint Fuze Technology Program (JFTP), the Joint Insensitive Munitions Technology Program (JIMTP) and the Critical Energetic Materials Initiative were also outlined.



Jose Gonzalez

Tony Melita, Senior Advisor to the National Warheads and Energetics Consortium (NWECE), described the DoD Ordnance Technology Consortium (DOTC), a collaborative partnership between the Pentagon and the NWECE. Commissioned in 2002, the Enterprise facilitates Government, Industry and Academic research, development and prototyping of ordnance technologies. He said DOTC “offers access to non-traditional sources and one-stop shopping for munitions technology.”



Tony Melita

Finally, the International Weapons Systems Session presented a catalogue of the numerous weapons for the F-35 Lightning II Joint Strike Fighter. Lieutenant Colonel Jeff “Jive” Geraghty, USAF, lead representative for systems development and demon-



Lt. Col. Jeff Geraghty, USAF



Ginny Sniegon



Suzy Kennedy



National Warheads & Energetics Consortium Exhibit

stration phase requirements in the F-35 JPO, said three versions will be built for the USAF, USN and USMC. About a quarter of the aircraft would be purchased by other countries, namely Norway, Canada, the UK, Australia, Turkey, Italy, the Netherlands and Denmark. The total cost of the U.S. military’s 2,443 aircraft is now estimated at \$395.7 billion. ■

PSA would like to thank the following corporations for sponsoring PSAR-13

ATK
Lockheed Martin
SAIC



PSA Honors JAMS/Lockheed Martin Hellfire II Team

A high point of the 2013 Precision Strike Annual Review was the presentation of the PSA's 17th annual William J. Perry Award to the **JAMS/Lockheed Martin Hellfire II Team**.

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. The Perry Award recognizes public or private sector leadership or achievement that results in significant contributions to the development, introduction or support of precision strike systems.



Dr. Paul Kaminski—Chairman, Defense Science Board—made special remarks during the PSAR-13 award ceremony. He first spoke of a

career developing and fielding precision weapons and stealth technology. Kaminski then warned about new threats: cyber attacks and, as he put it, “an insidious cyber espionage problem.”

With just a few strikes on a keyboard, officials warn, hackers could knock out the electric grid of a major city, leaving millions without power or heat. And the White House is pushing for legislation amid reports that Chinese hackers are waging an extensive cyber spying campaign against American companies.

National Intelligence Director James Clapper says a cyber attack is the number one threat to the country. During his State of the Union address, President Obama described

how hackers are targeting the U.S. to steal companies' trade secrets and also inflict harm on critical infrastructure.

Meanwhile, it is reported that the Pentagon is putting the finishing touches on rules that will give military commanders clear authority if they have to respond to an enemy cyber attack. The so-called rules of engagement will “provide a defined framework for how best to respond to the plethora of cyber-threats we face,” said a Pentagon spokesman.

Kaminski believes “we need a credible, demonstrable response so adversaries can expect to create a worse situation for themselves.”

He added: “I don't think kinetic precision strike systems will be replaced by cyber weapons, but how do we leverage both capabilities together? The overall question is how do we protect critical data while also protecting the effectiveness of our fielded systems? We must do much better protecting our defense industry. Let's have a careful look at precision strike revisited in a cyber environment.”

In announcing this year's Perry Award winner, PSA Vice-Chairman LTC Ken Britt (USA Ret) said: “At an urgent, strategic time in our nation's history, the joint Lockheed Martin Missiles and Fire Control Air-to-Ground Missile Systems Heliborne Laser Fire-&-Forget Missile System (HELLFIRE) /U.S. Army Joint Attack Munition Systems (JAMS) program team provided exemplary technical, schedule, and cost performance to meet the vital needs of our Warfighters.”

The team increased their production rate by five times; incorporated time sensitive performance enhancements; identified and implemented

corrective action for supply chain issues; and met constantly changing Warfighter demands with multiple product variants. All of these elements contributed to cost reductions of 6.5% over the course of three years.

The Hellfire II missile has been successfully integrated on a variety of aircraft, including the AH-1W/Z Cobra, AH-64 Apache, KC-130J Harvest Hawk, MC-130W Dragon Spear and MQ-1 and MQ-9 drones.

The Perry award was accepted by

Col James

Romero, U.S.

Army, the Joint Attack Munition Systems Project Manager, who spoke for the government team.

He thanked

Lockheed Martin

and the subcon-

tractor team for “longstanding dedication to our soldiers, providing them additional capabilities and for working to reduce the cost of the missile and increase the rate of production. An absolutely outstanding job and team effort.”

Romero said Hellfire was developed for an anti-tank Fulda Gap scenario, but “is now shooting at virtually every target you can think of.” But he added: “We're not done yet. The latest version, the Romeo model, will converge many capabilities of the current versions into one missile as we await the Joint Air-to-Ground Missile (JAGM).”

Accepting the award for the contractor team was Lockheed Martin Missiles and Fire Control's **Frank St. John**, Vice-President, Tactical Missiles/Combat Maneuver Systems. He said JAMS is “a model for indus-



Col James Romero, U.S. Army



Col James Romero, U.S. Army and Frank St. John

try/customer cooperation, showing passion for the mission of providing the soldier with exemplary equipment. Hellfire is very effective, very reliable and very affordable.



Suzy Kennedy, Col James Romero, U.S. Army and Frank St. John



Col James Romero, U.S. Army, Ginny Sniegon and Frank St. John



Dr. Paul Kaminski, Suzy Kennedy, Frank St. John and Col James Romero, U.S. Army



Hellfire Away



Marines loading Hellfires onto Attack Helicopter

“I’m most proud of our responsiveness to the needs of the Warfighter over the past decade per the production rate and providing new variants that meet new threats and for integrating it on new platforms. At Lockheed Martin we never forget who we work for and today I am pleased to receive this award as validation of that concept,” said St. John.

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 (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); the Sniper Advanced Targeting Pod (2010); and, the Project Dragon Spear Joint Acquisition Task Force (2011); Massive Ordnance Penetrator (MOP) Team (2012). ■



Hellfire II Missile

Lockheed Martin Continues LRASM R&D

Lockheed Martin has received a \$71 million Long Range Anti-Ship Missile (LRASM) modification contract from the Defense Advanced Research Projects Agency (DARPA) to conduct air- and surface-launched flight tests and other risk reduction activities.

Under this contract, an additional air-launched LRASM flight test will be conducted from a B-1B in 2013. There are already two air-launched flight tests scheduled for this year as part of the Phase 2 LRASM contract awarded in 2010.

The contract also includes two surface-launched LRASM flight tests scheduled for 2014. Risk reduction efforts, such as electromagnetic compatibility testing of the missile and follow-on captive carry sensor suite missions, are also included under the contract.

LRASM is an autonomous, precision-guided anti-ship standoff missile based on the successful JASSM-ER, and is designed to meet the needs of

the USN and USAF. LRASM is in development with DARPA and the Office of Naval Research.



LRASM at work

“This contract modification furthers the development of LRASM as we are committed to provide the Navy with an offensive anti-surface weapon (OASuW) alternative that is compatible with multiple platforms,” said Mike Fleming, LRASM air-launched program manager at Lockheed Martin Missiles and Fire Control.

Lockheed Martin is also investing internal research and development funds in LRASM’s shipboard inte-

gration with the Weapon Control System and MK 41 Vertical Launching System. As part of this investment, Lockheed Martin successfully demonstrated the mission planning of a LRASM-based OASuW capability using a simulated surface ship Weapon Control System.

“Our company investment in shipboard integration, combined with the new surface-launch flight tests, will provide an integrated OASuW solution compatible with surface ships,” said Scott Callaway, LRASM surface-launched program manager at Lockheed Martin Missiles and Fire Control.

Armed with a proven penetrator and blast-fragmentation warhead, LRASM cruises autonomously, day or night, in all weather conditions. The missile employs a multi-modal sensor, weapon data link, and an enhanced digital anti-jam Global Positioning System to detect and destroy specific targets within a group of ships. ■

Triton to Monitor Vast Ocean Areas & Coastal Regions

The Northrop Grumman built MQ-4C Triton high-altitude long-endurance (HALE) unmanned aerial system (UAS) successfully completed its first flight on May 22, 2013 from the company’s manufacturing facility in Palmdale, CA.

The U.S. Navy’s Triton is specially designed to fly surveillance missions up to 24 hours at altitudes of more than 10 miles – allowing coverage out to 2,000 nautical miles. The advanced suite of sensors can detect and automatically classify different types of ships.

“Triton is the most advanced intelligence, surveillance and reconnaissance [ISR] unmanned aircraft system ever designed for use across vast ocean areas and coastal regions,” said Mike Mackey, Northrop Grumman Triton UAS deputy program director. “Through a cooperative effort with the Navy and our industry partners, we successfully demonstrated the flight control systems that allow Triton to operate autonomously. We could not be prouder of the entire team for this achievement.”

“First flight represents a critical step in maturing Triton’s systems

before operationally supporting the Navy’s maritime surveillance mission around the world,” said Capt. James Hoke, USN, Triton program manager with Naval Air Systems Command. “Replacing our aging surveillance aircraft with a system like Triton will allow us to monitor ocean areas significantly larger with greater persistence.”

Triton carries a variety of ISR sensor payloads that allow military commanders to gather high-resolution imagery, use radar to detect targets, and provide airborne communications and information sharing capabilities to military units across long distances. ■

Safer Artillery Rounds

Beginning March 2014, the U.S. Army will take delivery of new artillery rounds that will be safer, but which will also deliver the same performance as those currently used, according to an engineer who has tested them.

“Cost, performance and IM” were the deciding factors in the Army choosing IMX-101 to replace trinitrotoluene, called TNT for short, as the explosive material found in artillery shells, said Phil Samuels, a chemical engineer at Picatinny Arsenal, N.J.

“IM” or insensitive munitions, is the safety factor that was tested. “TNT does pretty poorly in IM testing against threats such as bullets, fragments, and shaped-charge impacts and fires,” he said.

The testing is fairly rigorous, Samuels said, simulating worst-case situations where enemy fire might impact the TNT or IMX-101 filled rounds.

When normal precautions are followed, the TNT doesn’t pose a significant threat. The Army has been using it for at least 90 years, he said.

Army and Marine Corps artillery units will be the first to receive IMX-101 deliveries next year, in the form of 155mm M795 artillery shells.

Projectiles filled with TNT will continue to be used until they are expended, he said, which makes the phase-out period difficult to determine due to training and mission requirement uncertainties. But, he expects the transition to take at least several years.

After the artillery round transition, other large caliber rounds that carry TNT will be phased out and replaced by IMX-101, Samuels added.

Following World War II, there was a surplus of another type of explosive known as Composition B, which contains both TNT and RDX, Samuels said. RDX, like TNT, is also a sensitive explosive. Today, that surplus of Composition B is still

being used, but the Army is looking to phase it out just like TNT.

Composition B is used for high performance artillery, mortar, and demolition rounds, Samuels said, meaning higher performance than just TNT alone. Composition B is also being phased out by a formulation called IMX-104, which has properties very similar to IMX-101.

Both IMX-101 and 104 are manufactured by BAE Systems at Holston Army Ammunition Plant, TN.

The cost of IMX-101 and IMX-104 are more expensive than TNT and Composition B, Samuels said. However, savings will be realized in greater ease of storage and transport, as the IMX requires much less stringent standards for handling and can be stored much closer to the troops in the field without expensive facilities.

The performance of the IMX-101 and 104 rounds is equivalent to the TNT and Composition B rounds they are replacing, Samuels added, meaning their lethality against enemy forces will be just as effective. ■

First Catapult Launch of UAS from a Ship

On May 14, 2013, Northrop Grumman and the U.S. Navy launched a new chap-



Up, Up and Away

ter in the history of unmanned aerial systems by successfully catapulting the X-47B Unmanned Combat Air System (UCAS) demonstrator from the deck of the USS George H.W. Bush (CVN-77).

While the carrier was under way off the coast of Virginia, the tailless, strike-fighter-sized aircraft flew autonomously back to Naval Air Station Patuxent River where it landed safely 65 minutes later.

“Catapulting the unmanned X-47B off the USS George H.W. Bush is an event as historic as the Navy’s first catapult of a manned aircraft,



X-47B in Profile

which occurred in Nov. 1915 from the armored cruiser USS North Carolina (ACR-12),” said Carl Johnson, vice president and Navy UCAS program manager for

See **First Catapult**, Cont. on pg. 12

News Briefs

DAGR Missile Ground Launch

Lockheed Martin recently demonstrated the ability of its DAGR missile to launch from a ground vehicle during a series of flight tests at Eglin AFB, FL. DAGR was launched from a pedestal launcher mounted in the bed of a prototype Joint Light Tactical Vehicle (JLTV). DAGR locked onto the laser spot two seconds after launch, flew 5 km down range and impacted the target within one meter of the laser spot.

DAGR incorporates proven HELLFIRE II technology into a 2.75-inch/70 millimeter guidance kit that integrates seamlessly with lega-



DAGR Missile Ground Launch

cy Hydra-70 rockets. The result is a laser-guided missile that puts a 10-pound warhead within one meter of the laser spot, defeating high-value, non-armored or lightly-armored targets while minimizing collateral damage. DAGR's lock-on-before launch mode ensures the missile identifies the correct target prior to launch. ■



Excalibur 1b

Excalibur 1b Low-Rate Initial Production

Raytheon recently received a U.S. Army FY 2012 contract for the production of Excalibur Increment 1b precision-guided projectiles. The \$56.6 million award marks the start

of low-rate initial production (LRIP) of Excalibur 1b. Excalibur is a 155mm precision-guided, extended-range projectile that uses GPS precision guidance to provide accurate, first round, fire-for-effect capability in any environment. The Excalibur Increment 1b round was designed to improve reliability and lower unit costs. ■

FLIR Achieves Milestone

Raytheon recently marked a five-decade heritage as the maker of Forward Looking Infrared (FLIR) technology that has allowed U.S. forces to track objects in total darkness, often from long distances. Over the span of 50 years, the devices have shrunk in size and weight — from several hundred pounds to less than two — while providing ever-clearer images and more accurate data.

Their history began in 1963 when Texas Instruments' Defense Systems and Electronics business (later acquired by Raytheon) created a

First Catapult , Cont. from page 11

Northrop Grumman. "We are delighted to help launch this new era of naval capability."

"Today's catapult launch of the X-47B is a momentous feat for naval aviation," said Capt. Jaime Engdahl, USN, UCAS program manager for the Naval Air Systems Command. "It proves that the Navy's goal of operating unmanned systems safely and effectively from aircraft carriers is well on its way to becoming a reality."

The current at-sea period is the second such test period for the UCAS-D program. In December 2012, the program hoisted an X-47B

aircraft aboard the USS Harry S. Truman (CVN-75), then demonstrated that the aircraft could be

maneuvered safely and precisely on the ship's flight deck, in its elevators and in its hangar bay. ■



X-47B Launches

capability to essentially allow the warfighter to see at night. By the end of the 1960s, the first product had been developed and deployed on board a C-47 fixed wing aircraft, nicknamed “Puff the Magic Dragon.”

The devices are used on land, air and sea, and in space, to provide intelligence, surveillance, navigation and targeting capabilities. During the Gulf conflicts, FLIR gave U.S. ground forces an advantage on the battlefield, allowing troops to “own the night”.

Raytheon’s FLIR technology is deployed across multiple platforms — from satellites, fixed-wing aircraft, unmanned aircraft systems, helicopters, tanks and military vehicles to hand-held thermal weapon sights and missile systems.

The company has consistently evolved the technology. The next generation will provide a common high-definition view across the battlefield, and high definition resolution and magnification at much greater standoff distances. This enhancement will help increase warfighter survivability and effectiveness, enabling our servicemen and women to identify and determine threats faster and with more precision. ■

JASSM Completes Reliability Testing

Lockheed Martin’s Joint Air-to-Surface Standoff Missile (JASSM) recently completed Reliability Assessment Program (RAP) Lot 6 testing with two final flights. The tests met success criteria and demonstrated the effectiveness of hardware enhancements to Lot 6 missiles.

In the first test, a B-52 at the Utah Test and Training Range released a JASSM from 35,000 feet

traveling at Mach 0.71. In the second test at White Sands Missile Range, N.M., a B-1B released JASSM from 25,000 feet traveling at Mach 0.85. Both 2,000-pound cruise missiles navigated through pre-planned routes before destroying their intended fixed targets. ■



LRLAP

LRLAP Aces Live Fire Tests

BAE Systems and Lockheed Martin recently completed a series of successful guided flight tests for the USN 155mm Long Range Land Attack Projectiles (LRLAP) as part of the on-going qualification test program at White Sands Missile Range, NM. The three tests evaluated the LRLAP’s long-range (63 nautical miles) flight performance and accuracy with a pre-conditioned tactical rocket motor in hot, ambient, and cold temperatures. All test requirements were met or exceeded, and all range, accuracy, and lethality objectives were successfully demonstrated.

The 155-mm LRLAP supports the deployment of the Advanced Gun System aboard the DDG 1000. The 155-mm LRLAP is effective against a variety of targets in multiple mission areas and was designed to provide expeditionary forces with an affordable, ship-launched alternative to currently used missiles. The LRLAP is guided by a GPS and Inertial Measurement Unit, allowing for high levels of accuracy at ranges

beyond 63 nautical miles. BAE Systems is progressing toward completing 155-mm LRLAP live fire testing in Q4 of 2013. ■

Navy Matures Laser Weapon System

The U.S. Navy has selected Northrop Grumman for the initial phase of the Solid State Laser Technology Maturation (SSL-TM) program. SSL-TM is a research and development project to mature solid-state, high-power laser weapon systems and components for ship defense.

This selection is the first step in the development of a Prototype Laser Weapon System by the Office of Naval Research (ONR). This developmental effort will pave the way for a future Navy program that will integrate laser weapon systems

CALENDAR OF EVENTS

Precision Strike Technology Symposium (PSTS-13)

Date: October 22-24, 2013

Theme: Precision Strike in the New Strategic Environment at Home & Abroad

Location: Johns Hopkins University/ Applied Physics Laboratory — Laurel, MD

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

Precision Strike Annual Review (PSAR-14)

March 18-19 2014

Location: Waterford at Springfield – Springfield, VA (tentative)

Sponsorships and exhibit opportunities available for all events—for more information email info@precisionstrike.org or visit our website: www.precisionstrike.org

on existing and future ships.

In 2011, Northrop Grumman worked with ONR to demonstrate the first high-energy laser at sea in the Maritime Laser Demonstration. This proved the basic physics and demonstrated that the core technologies were where they needed to be. ■

DAB Approves Standard Missile-6 FRP

The Defense Acquisition Board (DAB) recently approved full-rate production of Raytheon's Standard Missile-6. Once operational in 2013,

the SM-6 will provide U.S. Navy vessels extended range protection against fixed- and rotary-wing aircraft, unmanned aerial vehicles and cruise missiles.

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



PSTS-13, Continued from page 1

Please review page 15 of this Digest for a snapshot of major topics already confirmed for PSTS-13. Be certain to note the six "Hot-Topic" Sessions—*Intel, Cyber, Air-Sea Battle, QDR-14, North Africa & Nuclear*—that will provide you with exceptional need-to-know information and discussion.

Now, we are privileged to feature three leaders who will address PSTS-13 – **Rear Admiral Mat Winter, USN**—PEO for Unmanned Aviation & Strike Weapons, Naval Air Systems Command; **Lieutenant General Bradley Heithold, USAF**—Vice Commander, Headquarters U.S. Special Operations Command; and, **Major General Garrett Harencak, USAF**—Assistant Chief of Staff for Strategic Deterrence & Nuclear Integration, HQ USAF.

Rear Admiral Winter will kickoff PSTS-13 by addressing *Meeting Precision Strike Challenges and Opportunities*. Admiral Winter is a 1984 graduate of the University of Notre Dame with a BS in mechanical engineering. He received his

commission through the Naval Reserve Officer Training Corps and was designated a naval flight officer in 1985. At sea, Admiral Winter flew the A-6E Intruder with several attack squadrons aboard numerous aircraft carriers. His NAVAIR shore assignments—including his current leadership position—continue to focus on precision strike weapons. Admiral Winter also holds advanced degrees in computer science, national resource strategy, and program management.

Lieutenant General Heithold will highlight *New Precision Strike Capabilities for Global SOF Needs*. He is responsible for planning, coordinating and executing actions with OSD, the Joint Staff, the Military Services and other government agencies in the NCR on behalf of the Commander USSOCOM. General Heithold was commissioned in 1981 as a distinguished graduate of the ROTC program at the University of Arkansas. He has commanded at the squadron, group, wing and agency levels including the 451st Air Expeditionary Group in SWA. His staff assignments include posi-

tions on the Air Staff and a unified command staff. General Heithold is a master navigator with more than 3,400 flight hours in the C-130, AC-130H and MC-130P.

Major General Harencak will focus on *Nuclear Deterrence Operations*. He advocates for and overseas stewardship of Air Force nuclear weapon systems. General Harencak is a 1983 graduate of the U.S. Air Force Academy. His assignments include aircraft command of the B-52, instructor pilot and squadron command in the B-1B, and service as aide to the Commander of U.S. Central Command. Prior to his current assignment, he was Commander, Air Force Nuclear Weapons Center. General Harencak is a command pilot with more than 3,000 flight hours in the T-37, T-38, B-52G, B-1B and B-2.

We look forward to having you join us at PSTS-13 for this must-attend symposium that will prepare the precision strike community for emerging challenges over the coming decade and beyond in the Asia-Pacific region and elsewhere in the world. ■

Please plan to join us!

PRECISION STRIKE TECHNOLOGY SYMPOSIUM (PSTS-13)

22-24 OCTOBER 2013

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

SECRET/US ONLY Classification Level

Precision Strike in the New Strategic Environment at Home & Abroad

Six Hot-Topic Sessions

Intelligence—U.S. Global Threats

Cyber—Services' Role in the Operational Kill Chain

Air-Sea Battle Panel—Services' Perspectives

Quadrennial Defense Review (QDR-14)—Services' QDR Directors Discussions

Hot Spots in North Africa—USAFRICOM's Overview

Nuclear Panel—Strategic Challenges & Nuclear Deterrence

Other Confirmed Riveting Critical Global Topics

- National Strategy Challenges and Fiscal Realities
- Meeting Precision Strike Challenges and Opportunities
- S&T Challenges for the Asia-Pacific Region
- Sustaining U.S. Global Leadership
- Next Generation Air Dominance
- Geospatially Enabled Targeting Materials
- Global Reachback for Targeting Support
- ISR Support in a Changing DoD Environment
- Digital Interoperability—Optimizing the Kill Chain
- Arming Current & Next Generation Aircraft—Counter A2AD
- New Precision Strike Capabilities for Global SOF Needs
- Future Joint Force Development
- Electronic Warfare Challenges for the Asia-Pacific Region
- TRADOC's Prime Role & Key Initiatives
- Testing Against Hard & Deeply Buried Targets
- Future Technologies for Hard & Deeply Buried Targets and WMD Defeat
- Sandia National Laboratories' Perspective
- Strategic Posture for Regional Deterrence
- Conventional Prompt Global Strike & Its Special Roles
- U.S. Strategic Nuclear Perspective

Presentation

5th Richard H. Johnson Technical Achievement Award

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email: PSAchair@precisionstrike.org*

The Precision Strike Digest is an important vehicle for the Precision Strike Association to share information and to engage in discussion. You have an opportunity to share your passion about a particular Precision Strike topic. The Precision Digest is published quarterly. Please contact PSA Chair for Communications Earle "Rudy" Rudolph (earle.rudolph@mbda-us.com), if you would like to have an article included in The Precision Strike Digest.

IN THE NEXT ISSUE...

More on Precision Strike
Technology Symposium

Membership Application – Precision Strike Association

The undersigned, desiring to support and cooperate in the activities of the Precision Strike Association, applies for Membership:

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Tax deductibility, membership activation Members are entitled to deduct all of their dues, either as a business expense or as a charitable contribution if the dues are not business related. Members are encouraged to rely on the advice of their tax advisers. PSA is an integral part of NDIA, which is a 501(c)3 association, federal ID 53-0196547. No amount of dues goes toward lobbying. Membership status is conferred only upon receipt of payment.



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