



## 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.*

## Honorable Kenneth J. Krieg & Major General Stephen M. Goldfein, USAF, to Address PSA's PEO Forum in San Diego

**T**he Precision Strike Association proudly presents the 2006 edition of its very popular Program Executive Officers' (PEO) Forum on 25-26 July 2006 at the San Diego Marriott Hotel and Marina.

This year's theme *Integrated Joint Battlespace Management-Creating Desired Effects on the Battlefield* will bring together both senior level decision makers and experienced subject matter experts from DoD and industry to examine and discuss the uses of precision weapons on the dynamic battlefield.

Hear what the experts have to say about Navy Precision Weapons, Land Attack Weapons Capability Area Review, Service Precision Requirements & Programs, UCAS Development Vision, Kill Chain, Precision Weapons Command and Control, and Naval Precision Strike Weapons Testing.

Keynote speakers for this two-day forum are the Honorable Kenneth J. Krieg, under secretary of defense for acquisition, technology and logistics, and USAF Major General Stephen M. Goldfein, commander, USAF Warfare Center, Nellis AFB, NV.



Honorable  
Kenneth J. Krieg



Major General  
Stephen M.  
Goldfein, USAF

Mr. Krieg will address the PEO Forum on opening day. He intends to share his vision for improving the defense acquisition process, including highlighting challenges to streamline the entire kill chain. He is responsible for advising the Secretary and Deputy Secretary of Defense on all matters relating to the DoD Acquisition System-R&D, advanced technology, developmental T&E, production, logistics, installation management, military construction, procurement, environmental security and NCB matters.

On the second day, Major General Goldfein's will focus on his responsibilities at Nellis AFB, assuring that combat air, space and information operations forces are trained and equipped to conduct integrated combat operations, including testing and tactics development and advanced and integrated training. In his current position, he is in command of all Predator Unmanned Aerial System (UAS) operations supporting Operations Enduring Freedom and Iraqi Freedom.

Please join our distinguished lineup of speakers from across the joint spectrum. A special event, a tour of the USN's aircraft carrier USS Ronald Reagan and discussions with her officers and crew, present attendees with a truly unique opportunity. We look forward to seeing you in San Diego! ■

## IN THIS ISSUE

## Chairman's Column



### Published by:

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\*Newly elected or re-elected board members

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To all of you who attended PSA's 2006 Annual Programs Review and the annual membership meeting, thank you! A first class event. Thanks to Ginny Sniegion, Ken Britt and Maureen Koerwer for putting together an outstanding agenda. Great speakers and panelists.

I hope you were all impressed with the panels that LCDR Tony Wright, USN, CAPT Vic Steinman, USN, Alan Pickard, Earle Rudolph, Col John Croghan, USAF, Captain (NOW Admiral Select) Scott Swift, USN, Col Lance Moore, USA, and LTC Ken Britt, USA (Ret) put together. Wow!

During the annual membership meeting we announced our newly elected slate of board members. Welcome (and in some cases welcome back) to Mike Eddings-SAIC, Stan Hlavka-Raytheon, Gary Johnson-Ball Aerospace, Paul Myrick-Lockheed Martin, Max Norgart-Boeing, Ray Pilcher-ATK, Nigel Sutton-Raytheon, Mike Underwood-Honeywell, Dr. John Walter-JHU/APL and LCDR Tony Wright, USN.

You should have already marked your calendars for our next event: the PEO Forum that will be held in San Diego 25-26 July. We have put together another spectacular program. It will be a one-of-a-kind event.

Your attendance and critique of the Precision Strike Association are key to the viability of the group. The PSA is established as a non-profit, tax exempt organization for education and scientific purposes. We make every effort to bring you the correct venue, speakers and ancillary items at the lowest possible cost. We do realize that budgets are tight across industry and the government for events such as these.

When you receive the many emails and brochures that invite you to such events you should ask two questions: 1) Am I getting good value for my money and time? and 2) If it is associated with the defense industry, has it been sanctioned by the appropriate organization?

Now that I have done my final begging/pleading, I can now 'sign off' as the chairman of the board of one of the most professional groups of people I know. The PSA Board of Directors, the Executive Committee, Paul Greenberg, our executive director, and Dawn Campbell, director of operations, are dedicated to making the PSA the very best. I have had the privilege of working with them during my tenure, and could not have asked for better guidance and support.

We have gone from a 'boutique' cruise missile association to a very viable affiliate of the National Defense Industry Association. My thanks to all.

By the time you read this, the Board of Directors should have elected a new chairman and members of the Executive Committee. I am sure they will serve the PSA very well. They will need your continued support and mine. I will continue to serve on the Board of Directors as a non-voting member. And I plan on being the catalyst to get our next PEO summer event closer to me in the Hampton Roads area. Wayne's World... 150 miles south of the Washington Beltway!

That's the last word from Wayne's World...

Wayne F. Savage

# Annual Programs Review Roundup

The Precision Strike Association (PSA) held its 2006 Annual Programs Review (APR) on 18-19 April at the Crystal City Marriott, Arlington, VA. This year's APR considered the *Roles of Precision Engagement in Asymmetric Warfare*.

Leading off the first day of the APR was USN RADM Timothy L. Heely, PEO for Strike Weapons and Unmanned Aviation. He said that based on the sophistication and lethality of today's 'smart' weapons, "precision strike has been part of asymmetric warfare all along. We just didn't realize it."

RADM Heely noted that the development of 'joint' weapons has not been without issue. "As we continue to play this game of joint weapons it may be better to buy sea-based and non-marinated weapons with the 'jointness' in the base weapon. There is a way to do jointness without sacrifice," he believes, calling the in-development Joint Strike Fighter a good example.

RADM Heely told the audience that it was important to remember the war currently being waged, but "we've got to be careful that we don't continue to only fight this war and not look forward."

Attendees were then treated to a keynote address from Major General Michael A. Vane, USA, vice director for force structure, resources and assessment (J-8), who discussed how the U.S. Department of Defense 'governs itself' through the Joint Requirements Oversight Council (JROC).



Major General Michael A. Vane, USA-Vice Director for Force Structure, Resources and Assessment (J-8)

He said that capabilities-based assessments and planning are providing 'top-down' guidance while the functional capability boards are influencing the 'process' early on. Major General Vane said "the COCOMs are fully participating in the JROC process as the capabilities process is becoming more agile, responsive and flexible." He also said that decision-making on "resources, acquisition and requirements are being coordinated early and continuously."

The Sea Strike Systems Panel was co-chaired by Captain Vic Steinman, USN, and Commander Tony Wright, USN. The expert panel members briefed planned incremental improvements to currently fielded weapons systems. Panel members included: RDML Rick Wren, USN, head, aviation and aircraft carrier plans and programs, CAPT Dave Dunaway, USN, (PMA-201), CAPT Mark Converse, USN, (PMA-242), CAPT John McCandlish, USN, Commodore, Strike Fighter Wing Atlantic, and CAPT James Spence, USN, former chief of Carrier Air Wing 9, who deployed with the USS Carl Vinson Carrier Strike Group for Operation Iraqi Freedom.

Dr. John Alexander, a senior fellow at the Joint Special Operations University and noted author, kicked off the afternoon sessions with a presentation on the role of



Dr. John Alexander-Senior Fellow at Joint Special Operations University

non-lethal weapons in the global war on terror.

Not standard fare for a PSA event, Dr. Alexander offered a fascinating overview of the flip side of weaponry, providing a survey of existing and in-development non-lethal devices. He said non-lethal weapons systems "are not a road to hell. More options are preferable

to less... Terrorism is coming to you. Non-lethal weapons are absolutely critical."

MBDA's Alan Pickard chaired the International Programs Panel that included: Air Vice-Marshal Nigel Day, RAF (Rtd), senior defence adviser (UK), MBDA Missile Systems; Squadron Leader Jim Mulholland, weapons leader, No 31 Squadron RAF; and Air Commodore Graham Bentley, RAAF, air attache, Australian Embassy.

In discussing the Storm Shadow precision strike weapon, Nigel Day said "network + effect = capability. Without it, you get a well-performed air show." Squadron Leader Mulholland, a veteran of the Iraq War, described Brimstone's attributes while Air Commodore Bentley's laid out Australia's Air Deliverable Weapons Roadmap.

Directed energy weapons developments were mapped out in two afternoon sessions, one on 18 April, the other the following day. Moderated by Earle "Rudy" Rudolph, the panelists included: Mike Booen, Raytheon's vice president for advanced missile defense and directed energy weapons; Mike Bright, Lockheed Martin's director, advanced directed energy; Northrop

See **Wrapup**, Continued on page 4

**Wrapup**, Continued from page 3

Grumman's Dan Wildt, director, business development, directed energy systems; and, Dr. Tony Castrogiovanni, ATK's vice president for strike weapons and directed energy. The 19 April directed energy session involved Mark Fleenor, president of Sol Oriens and Boeing's Dr. Robert Van Allen.

Among the programs discussed by Booen was the ground-based Vigilant Eagle Counter-MANPADS system that provides a protective dome around an airport. After detecting a missile launch, Vigilant Eagle would use a high-power microwave phased array pulse to scramble a missile's electronics, driving it away from an aircraft.

Rear Admiral David L. "Deke" Philman, USN, deputy commander,



Bill Dalecky-PSA Vice Chair, LTC Ken Britt, USA (Ret)-APR Event Co-Chair, MG Jeffrey Sorenson, USA-Deputy for Acquisition & Systems Management to the Asst. Secretary of the Army for AL&T, Ginny Sniegon-PSA Programs Chair, MG Paul Greenberg, USA (Ret)-PSA Executive Director

Joint Space and Global Strike, U.S. Strategic Command, discussed global strike and joint space requirements. Among the weapons he described was the controversial Conventional Trident Missile. Within two years, two-dozen long-range Trident missiles would swap out their nuclear warheads for conventional payloads, giving the White House more options. (See News Brief on page 10.)

PSA's Colonel Lance Moore, USA, had the pleasure to introduce Colonel Curtis Mathis, USA, and Major General David C. Ralston, USA.

Colonel Mathis is with the newly-created Joint Improvised Explosive Device Defeat Organization that is working to alleviate the devastating effects of IEDs in Iraq and Afghanistan. The organization provides a joint forum to identify IED defeat efforts and requirements that are being rapidly implemented, accelerated and developed. "There's a big mission ahead for us," he said. The Pentagon will spend \$3.3 billion this year for anti-IED initiatives, whether

aerostats, bomb handling ground robots, search dogs, hunter-killer route clearance teams, various blast mitigation efforts and anti-IED triggering devices.

Major General Ralston, commanding general, U.S. Army Field Artillery Center & Fort Sill, offered the latest on Joint Fires Training, Joint Precision Targeting, Precision Munitions (Guided MLRS and Excalibur) and the Counter-Rocket Artillery Mortar (C-RAM) system, a systems-of-systems to counter the indirect fire threat.

PSA's Annual Meeting & Reception, which included great food, fine wine and special remarks, closed out the first day's activities.

Major General Jeffrey A. Sorenson, USA, was first up to the podium on April 19. The deputy for acquisition & systems management to the Assistant Secretary of the Army (AL&T) said "in terms of the Army's precision weapons portfolio, we are due for a major review, including inventory, shelf life,



Major General David C. Ralston, USA-Commanding General, U.S. Army Field Artillery Center & Fort Sill

See **Wrapup**, Continued on page 5

**Precision Strike Association**  
would like to thank the  
following 2006 APR Sponsors

**Wrapup,** Continued from page 4  
science and technology (S&T) base, future requirements, system types, needs, launchers, etc... a complete scrub, top-to-bottom.”

The APR's second day focused on sessions related to a review of current and future precision strike weapons systems. These sessions represent a fundamental element of the Precision Strike Annual Programs Review and are very popular with the participants.

The Joint Deep Strike Systems Panel was moderated by Colonel John Croghan, USAF. Expert panelists included: Brigadier General Andrew Dichter, USAF, deputy director, Directorate of Operational Capability Requirements; USAF Lt Col Stephen Davis of the JASSM project office; Colonel Richard D. Justice, USAF, 918 ASG commander, who discussed the Small Diameter Bomb; and, Anthony L. Pang, hard target defeat program manager at the Defense Threat Reduction Agency.

The Precision Attack to Ensure Dominant Maneuvers Panel was chaired by LTC Kenneth Britt, USA (Ret), who along with EDO's Maureen Koerwer, served as the Annual Programs Review Event Chairs. Timely updates were offered on various major U.S. Army precision strike weapons developments. Knowledgeable panel members included: LTC Bill Cole, USA, deputy program manager for the Excalibur project; Raytheon's George M. Svitak who discussed the development of Future Combat System Non Line-of-Sight launch systems, John McVey who briefed on Guided MLRS and Steven Borden, deputy program manager for Viper Strike.

Borden described the Viper Strike weapon, which now arm Hunter unmanned aerial vehicles (UAVs)

deployed in Iraq. The 48-pound precision munition, which uses a semi-active laser seeker, was developed as a derivative of the BAT submunition. The weapon is designed for operations that require a steep angle of attack and someone to lase the target.

Rounding out this year's APR was the Precision Strike Acquisition Panel moderated by CAPT Scott "Notsos" Swift, USN, PSA Programs Vice Chair. Always informative as per the acquisition process, this year's panelists included Diane Wright, director, air warfare, defense systems, OUSD (AT&L) offering an OSD perspective, Kenneth E. Miller, special assistant to the Secretary of the Air Force for Acquisition

Governance and Transparency and Delores Etter, who recently took over as the assistant secretary of the navy for research, development and acquisition. A new face for PSA, Dr. Etter was a member of the electrical engineering faculty at the U.S. Naval Academy between 2001-2005. ■

### REMINDER:

PSTS-06 abstract deadline  
June 16, 2006.

See website:  
[www.precisionstrike.org](http://www.precisionstrike.org)  
for further details.

## APR 2006 Exhibitors



Kaman Fuzing



NAVAIR: Navy & Marine Corps Unmanned Air Systems-PMA 263 (UAS)



Orbital Sciences Corp



Eagle Picher



## Precision Strike Annual Programs Review

*April 18-19, 2006*





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- 1 **Rear Admiral David L. "Deke" Philman, USN**  
Deputy Commander, Joint Space and Global Strike,  
United States Strategic Command
- 2 **Colonel Curtis Mathis, USA**  
Joint IED Defeat Organization, Office of the Deputy  
Secretary of Defense
- 3 **Brigadier General Andrew Dichter, USAF**  
Deputy Director, Directorate of Operational  
Capability Requirements
- 4 **Colonel Richard D. Justice, USAF**  
918 ASG Commander
- 5 **Earle Rudolph**—APR Session Moderator,  
**Mike Booen**—VP for Advanced Missile Defense  
and Directed Energy Weapons, Raytheon, **Mike  
Bright**—Director, Advanced Directed Energy, **Dan  
Wildt**—Director, Business Development, Directed  
Energy Systems, **Dr. Tony Castrogiovanni**—  
VP Strike Weapons and Directed Energy



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- 6 **Anthony L. Pang**—Hard Target Defeat Program  
Manager, CXSH/CIVGS15 Department of  
Defense, DTRA
- 7 **Lt Col Stephen Davis, USAF**—JASSM-R  
Squadron Long Range Missile Systems Group
- 8 **Mark Fleenor**—President, Sol Oriens
- 9 **Dr. Robert Van Allen**—Acting Director,  
National Teams



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- 10 **International Panel: Alan Pickard**—APR  
Session Chair, Air Vice-Marshal Nigel Day CBE  
BSc(Eng) RAF (Rtd)-Senior Defence Adviser  
(UK), MBDA Missile Systems, **Jim Mulholland**—  
Weapons Leader, No 31 Squadron RAF,  
**Air Commodore Graham Bentley, RAAF**—  
Air Attaché, Australian Embassy
- 11 **Precision Strike Acquisition Panel: CAPT Scott  
"Notso" Swift, USN**—PSA Board Member, **Hon.  
Delores Etter**—Assistant Secretary of the Navy for  
Research, Development and Acquisition, **Diane  
Wright**—Director, Air Warfare, Defense Systems,  
OUSD (AT&L), **Kenneth Miller**—Special  
Assistant to Secretary of the Air Force for Acquisition  
Governance & Transparency



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- 12 **Bill Dalecky**—PSA Vice Chairman, **Wayne  
Savage**—PSA Chairman, **Ginny Sniegon**—PSA  
Programs Chair, **Major General Michael A.  
Vane, USA**—Vice Director for Force Structure,  
Resources and Assessment (J-8), **LTC Ken Britt,  
USA (Ret)**—APR Event Co-Chair
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CAPT Dave Dunaway, USN, CAPT Mark  
Converse, USN, RDML Rick Wren, USN, CAPT  
James Spence, USN, CAPT John McCandlish,  
USN, Commander Tony Wright, USN**
- 14 **LTC Ken Britt, USA (Ret)**—APR Event Co-  
Chair, **LTC Bill Cole, USA**—Deputy PM, Combat  
Ammunition Systems, **George Svitak**—Deputy  
Director, Business Development, NetFires, Raytheon  
Missile System, **John McVey**—Department of the  
Army System Coordinator Guided MLRS, **Steven  
Borden**—Deputy PM, Submunitions, Product Office  
Lead Systems Engineer, Submunitions

# Targeting Pods Enhance Battlefield Awareness

Armed USAF fighters watch the road below for the convoys rolling through a dangerous land. The concept of using fighter aircraft equipped with targeting pods to monitor the battlespace is known as Non-Traditional Intelligence, Surveillance and Reconnaissance, or NTISR.

Air Force NTISR operations began only four years ago and are the result of increased demand for complete battlespace awareness. With the production and development of traditional ISR capabilities struggling to keep pace, leveraging fighters, bombers, and air mobility aircraft in a similar role is helping ensure information dominance.

“Before NTISR, we had fighter aircraft with surveillance capabilities burning holes in the sky, just waiting to be tasked by ground commanders,” said Maj. Marco Fiorito, deputy chief of collections management. “Instead of wasting these resources, we’ve begun to use them to fill some of the gaps in our traditional ISR operations.”

NTISR multiplies the commander’s capability, without the logistical and financial implications of creating more forces, but that is not its only benefit.

“NTISR increases the cross-talk between the Army and the Air Force in joint operations,” Major Fiorito said. “The majority of the time NTISR aircraft aircrews communicate directly with ground units. This fosters a greater understanding of what ground units are looking for and thinking.”

Recently two F-15E Strike Eagles proved the value of this capability during a mortar attack on Balad Air Base, Iraq. The aircraft were called to the scene by the base’s Joint Defense Operation Center. Using



F-15E Strike Eagles are capable of monitoring the battlespace with their targeting pods in a concept known as non-traditional intelligence, surveillance and reconnaissance

their electro-optical and infrared sensor capability, they quickly located three insurgents fleeing in a vehicle from the scene. After following the suspects to a house, the aircraft relayed their location to ground forces. All three individuals were successfully detained.

“This engagement was an exceptional example of how air forces are contributing to the counterinsurgency campaign,” said Royal Air Force Air Commodore Ray Lock, Combined Air Operations Center director. “In this case, we realized the overwhelming advantage we have in the innovative use of fighter aircraft for NTISR.”

In addition to these capabilities, NTISR aircraft are a comfort factor for troops in hostile areas, soldiers here said. “These jets are overhead for them,” Major Fiorito said. “These

aircraft can scout ahead of convoys, looking for possible ambush sites or any other threat.” More importantly, if there is a skirmish or firefight, the aircraft can quickly respond and help the troops on the ground, he said.

NTISR also has the potential to be a player in the fight against improvised explosive devices. “We’re working around the clock to find a good way of employing NTISR and other assets to the counter-IED fight,” Major Fiorito said. “There are a lot of good people trying to come up with a viable solution.”

While employing this type of technology is now an everyday practice, Major Fiorito said there have been some growing pains. “We’re in a unique situation because we don’t want to turn the fighter into an intelligence asset; we just want to get the information to the warfighter in a simplified and quick manner,” he said. “Right now we’re developing a streamlined process, from beginning to end, that has a single tasking process.”

The intelligence community, along with ground and operations personnel, is working towards this goal, while exploring the effectiveness of NTISR in combat. Admittedly though, it is only one facet of the bigger fight against anti-coalition forces.

“If you concentrate on one aspect of warfare, you lose sight of everything else,” Major Fiorito said. “There’s no magical solution, you have to hit the enemy at multiple points – counter-IED, ISR and NTISR, convoy support, direct actions support – all of these pieces make him reel back so he’s fighting on your terms, instead of his.” ■

## Global Hawk Operations Reach New High

**B**attlefield awareness has reached new levels with Global Hawk production-model aircraft flying in the U.S. Central Command Air Forces theater.

Reaching a breakthrough point in April, the Global Hawk team has maximized the aircraft's sorties, collecting nearly 5,000 images of enemy locations, resources and personnel.

The Global Hawk has proven its worth in recent operations, said USAF Capt. Ty Gilbert. "With the Global Hawk, we are seeing the capabilities we've talked about in the past," he said.

In 2003, a test-model Global Hawk was sent to the theater. Officials expected it to fly for 500 hours. Instead, the aircraft flew close to 5,000.

With its multiple sensors and ability to gather vast amounts of imagery, the Global Hawk brings a welcome dimension to intelligence, surveillance and reconnaissance (ISR) operations.

"What's unique about the Global Hawk in comparison to other ISR platforms is the persistence it offers in providing imagery and intelligence," said USAF Maj. Ricky Thomas. With the ability to loiter for up to 24 hours, the aircraft can monitor the whole theater with few limitations.

In addition to the platform's ISR capabilities, its flexibility is another key to the battlefield success. The Global Hawk allows commanders to rapidly re-task the aircraft in flight. "Recently in Afghanistan we had an



Global Hawk has proven its worth in recent operations, surveying large geographic areas with pinpoint accuracy, giving commanders near real-time info.

aircraft crash," Major Thomas said. "By the time notifications of the crash were received, the Global Hawk put an image of the crash site in the hands of the individuals planning the rescue." ■

## B-52s Protect U.S. & Coalition Forces

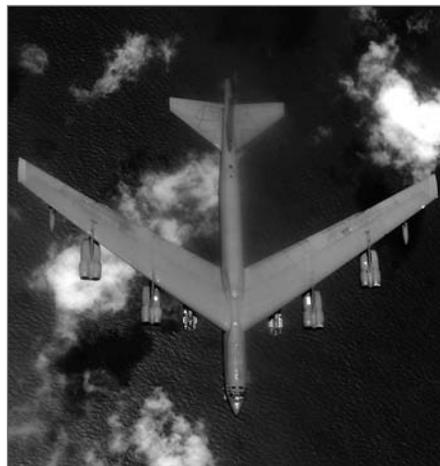
**T**he B-52 Stratofortress is felt despite their flying thirty thousand feet above Afghan territory. The bomber's presence is welcomed by U.S. and coalition forces fighting in support of Operation Enduring Freedom, but unwelcome by terrorists.

But maintaining the fleet of B-52s is no easy task. Over the past eight months B-52 pilots have flown more than 450 combat sorties, equaling more than 7,500 hours, and have released more than 150 weapons on the enemy. That adds up to a lot of wear and tear on the airframe, and this is where the maintainers come in.

"The B-52 maintainer's mission is clear and simple: provide safe, reliable, combat-ready B-52s to the aircrews ready to perform their assigned missions," said Master Sgt. Carl Paskey, 40<sup>th</sup> Expeditionary Maintenance

Squadron lead production superintendent at a forward operating base.

"The part that's not so clear is what it takes to perform such a mission. We have airmen working 24/7," Sergeant Paskey said. Challenges for the maintainers are



B-52 bomber at work

limited equipment and resources. At a forward location aircraft parts are difficult to get in a timely manner.

Another challenge is the weather. It is hot, humid and salty. It is a constant battle to preserve the aging metal aircraft and keep them healthy.

Pilots know how pivotal the maintainers are to their mission. Together with aircrew and support agencies, the maintainers feel they are saving lives.

"Our mission here is vital to life," said Tech. Sgt. Perry Pagan, 40<sup>th</sup> EMXS B-52 structural maintenance craftsman. "It's vital because when you hear of a group of Marines pinned down in a firefight in Afghanistan calling in an air strike, you better bet they appreciate that." ■

## News Briefs

### Conventional Trident to Provide Diverse Capabilities

The conventional Trident missile is part of a larger strategy to better address diverse threats facing the United States and will further the country's defense goals.

The Conventional Trident Modification program will cost about \$503 million. The conventional missile program will provide the capability to defeat threats on short notice without crossing the nuclear threshold.

To ensure other countries don't mistake a conventional missile launch for a nuclear missile attack, DoD is developing confidence-building measures, such as advance notification and shared early warnings. Also, DoD can borrow notification

procedures from its long history of test launches of dual-role weapons systems.

The Conventional Trident Modification program gives the United States a long-range strike option against targets beyond the range of current systems or that are heavily defended. ■

### Tactical Tomahawk Production Builds

Raytheon has been awarded a \$346 million contract to supply the U.S. and United Kingdom navies with the Block IV (Tactical) Tomahawk cruise missile. This is the third installment on a multi-year contract whose value could reach \$1.6 billion.

The fiscal year 2006 production contract calls for production of 473 missiles, 65 of which are the submarine torpedo tube-launched variant

for the U.K. Manufacturing work will be done at Raytheon's Missile Systems businesses in Tucson, AZ, and Camden, AK, and is expected to be completed in 2009. Raytheon began delivering Block IV missiles to the U.S. Navy in mid-2004.

Block IV Tomahawk is the next generation of the Tomahawk family of cruise missiles, incorporating innovative technologies to provide new, flexible operational capability while dramatically reducing acquisition, operations and lifecycle support costs. ■

### F-15K Makes History with SLAM-ER Release

The Boeing F-15K multi-role fighter built for the Republic of Korea Air Force (ROKAF), has become the first F-15 to release a Standoff Land Attack Missile-Expanded Response (SLAM-ER)

### Lone Star Aerospace

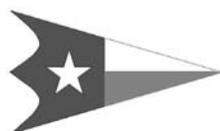
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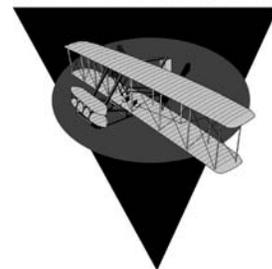
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weapon. The historic weapons release occurred at Point Mugu, CA, during the F-15K's certification testing.

For the test, the F-15K released the Boeing-built SLAM-ER at 25,000 feet at Mach 0.8 approximately 100 nautical miles from its target. The SLAM-ER maneuvered to its target and scored a direct hit.

Korea is the first international customer for the SLAM-ER, the only long-range, precision-guided, man-in-the-loop weapon currently providing the F-15K with a precision standoff weapon capability. The U.S. Navy recognizes the SLAM-ER, with its 500-pound warhead, as the most accurate weapon in its inventory. ■

### \$108M Contract for SFW Production

Textron Systems has been awarded a \$108 million USAF contract for its Fiscal Year 2006 procurement of the Sensor Fuzed Weapon. The three-year contract is part of an on-going Long Term Pricing Agreement (LTPA). Overall, Textron Systems will deliver approximately 6,500 SFWs to the USAF by the end of 2013.

Sensor Fuzed Weapon is a smart, air-to-ground, direct attack munition that can detect and defeat a wide variety of combat targets. Combat proven initially on April 2, 2003 in Operation Iraqi Freedom, the SFW received worldwide recognition after defeating multiple Iraqi tanks in a single aircraft pass that halted an Iraqi armored column from advancing on U.S. military forces. Subsequent operations confirmed the high military value of this unique weapon.

Sensor Fuzed Weapon first entered full rate production in 1996. A Pre-Planned Product Improvement (P3I) Program enhanced the weapon's

capability, and placed it into production in 2001. Textron Systems marked its first international sale of the SFW in 2004. ■

### SDB II Field Narrowed

A Boeing/Lockheed Martin team and Raytheon have each won USAF contracts for the competitive risk reduction phase of the Small Diameter Bomb (SDB) Increment II program.

As the prime contractor, Boeing will supply the air vehicle – a derivative of SDB Increment I – as well as the data link system. Lockheed Martin, the principal supplier, will provide the multi-mode seeker able to acquire moving targets. Raytheon is bidding a tri-mode seeker.

The current Boeing SDB quadruples the weapon load on U.S. fighter

and bomber aircraft. The SDB system will be deployed on the Boeing F-15E Strike Eagle later this year.

The USAF is expected to award a sole source contract for the SDB II system design and development phase by late 2009. The SDB II program has a potential value of more than \$1.3 billion. ■

### Northrop Grumman Delivers "Smart" Bomb Rack

Northrop Grumman has completed an upgrade of the USAF's B-2 stealth bomber that allows the aircraft to deliver five times its previous capacity of independently targeted, "smart" (GPS-guided) weapons.

The company recently delivered the 54th and final smart bomb rack assembly (SBRA) to the Air Force's

See **News Briefs**, Continued on page 12

## PEOPLE

USAF Lt. Gen. **David A. Deptula** becomes deputy chief of staff for intelligence, HQ, USAF, while USAF Lt. Gen. **Victor E. Renuart, Jr.**, takes on the job of senior military assistant to the Secretary of the Defense.

USN Vice Admiral **James G. Stavridis** picks up his fourth star with assignment as Commander, U.S. Southern Command. USAF Major General **Charles N. Simpson**, USJFCOM's director for requirements and integration, plans to retire in June.

USAF Lt. Gen. **William M. Fraser III** is now the assistant to the Chairman of the Joint Chiefs of Staff. USAF Lt. Gen. **Kevin P. Chilton** was promoted when he became commander, AF Space Command. **Robert J. Elder, Jr.**, picks up his third star with assignment as commander, Eighth Air Force.

USAF Maj. Gen. (Ret.) **Robert Chedister** has joined Proxy Aviation Systems as vice president of operations. He served as Air Force PEO for Weapons, and Commander, Air Armament Center, at Eglin AFB, FL.

**Rudy F. deLeon**, senior vice president for Boeing's Washington, D.C. office, has announced his plans to retire from the company, effective June 30. **Tod R. Hullin** will succeed deLeon and moves to Washington, D.C., from Chicago where he currently serves as senior vice president for public policy and communications.

Retired USAF General **Richard B. Myers**, former chairman of the Joint Chiefs of Staff, has been elected to the Northrop Grumman Board of Directors, which has named **Wesley G. Bush**, president and chief financial officer.

Boeing employee **Todd Alexander** received the Pentagon's Defense of Freedom medal, the civilian equivalent of the military's Purple Heart, honoring non-military personnel injured or killed in the line of duty. He was wounded in Iraq while supporting Boeing/Insitu ScanEagle UAV operations.

## News Briefs, Continued from page 11

509th Bomb Wing at Whiteman AFB, Missouri, home of the B-2 fleet. A SBRA-equipped stealth bomber can deliver 80 500-pound smart weapons, each targeted against a different aimpoint. ■

### Upgraded Paveway II Laser Guided Bomb

Lockheed Martin and the USAF recently qualified an upgraded version of its Paveway II Laser Guided Bomb (LGB) through comprehensive flight testing to meet current USAF and U.S. Navy joint performance specifications. The qualification

followed extensive joint service testing in accordance with the services' performance requirements.

Lockheed Martin is currently in production of the GBU-10, -12 and -16 for the U.S. Air Force, U.S. Navy and international customers. The Dual Mode Laser Guided Bomb (DMLGB) combines fire-and-forget GPS/INS guidance with Semi-Active Laser (SAL) terminal guidance technology, providing ultimate flexibility to the warfighter. ■

### Raytheon Launches MPLM System Concept Development

Raytheon is developing a Multi-Purpose Loitering Missile (MPLM) System that would fill the joint fires capability gaps and meet long war requirements.

The system's airframe was successfully vertically launched in December 2005 at the Naval Air Warfare Center, Weapons Division Land Range, China Lake, CA.

The system will be capable of being launched from both vertical launch systems (VLS) and self-contained canister launch systems.

The Dec. 5, 2005, launch featured an MPLM airframe fired from a MK-14 ground launch canister. ■

### First International JSOW Sale to Turkey

Raytheon will provide Joint Standoff Weapons (JSOW) to Turkey for integration on that nation's F-16 aircraft, representing the first international sale of the advanced precision strike weapon.

Raytheon received a foreign military sales contract from the Naval Air Systems Command for procurement of JSOW AGM-154 A-1 with the BLU-111 warhead and JSOW AGM-154 C with the Broach warhead.

A foreign military sales contract for JSOW-C integration for Poland F-16s was awarded in 2003, and Poland's procurement of the system is expected next year. In addition, letters of agreement for JSOW integration with Greek F-16s and Singapore F-15s have been signed. These contracts are expected to be awarded soon. Future JSOW missile procurement by these countries is planned.

Development of a Block III variant of JSOW has started, which will add moving target capability by adding a weapons data link and other improvements. ■

### Raytheon to Develop FCS Hard-Kill APS

Raytheon has been awarded a contract worth up to \$70 million from BAE Systems to develop the hard-kill Active Protection System (APS) for Future Combat System (FCS) vehicles under a three-phase agreement. The initial phase is pegged at \$10 million.

APS is a key element in a full-spectrum suite of "hit avoidance" technologies designed to keep FCS manned ground vehicles and their troops safe from harm. Using FCS's sensors and its common radar, the APS detects, tracks and defeats enemy threats with precision munitions in the blink of an eye. ■

### JDAM for Norway

Boeing will provide the Joint Direct Attack Munition (JDAM) weapon system to the Royal Norwegian Air Force (RNoAF) under an agreement recently reached with Norway.

The JDAM system will equip RNoAF F-16 aircraft with all-weather, autonomous, accurate delivery of bombs against a broad

See **News Briefs**, Continued on page 13

## CALENDAR OF EVENTS

### Precision Strike PEO Forum

Date: July 25-26, 2006

Theme: "Integrated Joint Battlespace Management—Creating Desired Effects on the Battlefield"

Location: San Diego Marriott & Marina-San Diego, CA

### Precision Strike Technology Symposium

Date: October 17-19, 2006

Theme: "Capabilities Required for Global Strike—Technology Implications for the Future"

Location: The Johns Hopkins University/Applied Physics Laboratory, Kossiakoff Center, Laurel, MD

### Precision Strike Winter Roundtable

Date: February 1, 2007

Location: Crystal Forum-Crystal City Marriott, Arlington VA

For more information on these events, and other activities please contact the PSA office directly.

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**News Briefs,** Continued from page 12 spectrum of targets. The contract includes JDAM guidance kits, F-16 weapon system integration and operational support.

Norway is the fifth member of the European Participating Air Forces (EPAF) to select JDAM, resulting in a common weapon system across EPAF member nations. This JDAM contract also brings to 14 the number of international customers for this weapon system.

A GPS-aided, near-precision weapon, JDAM guidance kits are capable of guiding inventory warheads ranging in size from 500 to 2,000 pounds. ■

### **Thermobaric Hellfire on Target**

The Thermobaric Hellfire missile product team is closer to fielding another important technology to the warfighter.

Two successful shots of the shaped trajectory Hellfire missile were completed on May 2 at the Naval Air Systems Command (NAVAIR) land test ranges in southern California. Both air launches were executed from an AH-1W aircraft based out of NAVAIR China Lake test squadrons.

The purpose of these air launches was to evaluate recently modified flight control software, which allows the missile to fly a flatter trajectory and impact targets at a near zero obliquity angle. The launches were thirty minutes apart, and from the same mission. Each missile impacted separate targets, both of which were simulated hardened, urban targets. The impacts of both shots were near dead center of the target and appeared to match the predicted impact angle.

These test launches were in support of a trajectory shaping study, which is a software enhancement to

the Lockheed Martin Thermobaric Hellfire Missile (AGM-114N).

This effort began in late 2005, and is sponsored by the Office of Naval Research and Defense Threat Reduction Agency. The goal is to flatten-out Hellfire's trajectory in order to improve its use against buildings, concealed targets, caves, and a broad variety of military operations in urban terrain.

This capability will be fielded on all Thermobaric Hellfire missiles delivered after October 2007. The Navy, however, expects to begin retrofitting its inventory of Hellfire missiles sooner. ■

### **Harris to Provide JASSM ER Weapon Data Link Transceiver**

Harris has been selected by Lockheed Martin for a 2-year, \$10 million development contract to provide the Joint Air to Surface Standoff Missile – Extended Range (JASSM ER) weapon data link (WDL) transceiver. The WDL will enable the JASSM ER to engage relocatable and time-critical targets.

Harris will design, fabricate, test and deliver a state-of-the-art, miniaturized, two-way data link transceiver module for JASSM beyond-line-of-sight communications. The addition of the weapon data link to the JASSM ER significantly enhances the battlespace commander's situational awareness through real-time weapon-in-flight tracking. In addition, a weapon data link-equipped JASSM ER can be re-tasked in-flight, allowing adjustment for “pop-up” targets.

The WDL transceiver award follows Harris' recent participation in the WDL Network (WDLN) Advanced Concept Technology Demonstration (ACTD) for the U.S. military. ■

### **EDO/Terma to Develop Smart-Weapon Ejector Rack**

EDO and Denmark's Terma have entered into a teaming agreement to jointly develop an Enhanced Smart Triple Ejector Rack (ESTER) to be used on the F-16. The ESTER program will upgrade existing TER-9 racks by adding the capability to carry three modern ‘smart’ weapons under one pylon.

The Royal Danish Air Force (RDAF) has already authorized testing of the ESTER capability for qualification on its F-16 Mid-Life Update (MLU). This includes system integration laboratory testing in October 2006 followed by flight testing in November.

The Triple Ejector Rack is a weapon-suspension unit that attaches to an aircraft's weapon pylons, enabling each pylon to carry three weapons. The TER-9 version is suitable for supersonic under-wing F-16 weapons stores.

ESTER will improve the capability to carry “smart” precision-guided weapons and individually target and release each one. ■

### **Radar Upgrade Key to Future B-1 Combat Capability**

The USAF recently awarded a \$180-million contract to Boeing to upgrade the fire-control radar on 67 B-1B Lancer long-range bomber aircraft.

The nine-year Reliability and Maintainability Improvement Program, or RMIP, will replace two units that make up the current radar system in an effort to improve its performance. The RMIP system development and demonstration is the first significant radar upgrade for the B-1 in more than 20 years. The upgrade will significantly improve

See **News Briefs,** Continued on page 14

## News Briefs, Continued from page 13

the reliability of the B-1's radar system and reduce the time and manpower the Air Force is spending to maintain this critical capability.

Modification kits to replace the bombers' receiver and processor will be available beginning in 2011. The RMIP kit comprises a new radar transmitter and receiver, a radar processor computer, and a software package. Installation is scheduled to be completed in 2014. ■

### Australia Selects JASSM for AIR 5418

The Australian Ministry of Defence has selected the Lockheed Martin JASSM as the preferred solution for its AIR 5418 Follow-on Standoff Weapon (FOSOW) requirement. This marks the first international sale of JASSM, originally developed for the USAF. The contract includes production, integration and support of the advanced weapon.

JASSM provides the Royal Australian Air Force (RAAF) with the capability to strike both land-based and maritime targets. The missile will be equipped with a data link to permit position updates on moving targets or missile retargeting after launch. In addition, the F/A-18 integration schedule proposed by Lockheed Martin enables retirement of the Australian F-111 aircraft on schedule.

JASSM deliveries to the RAAF will begin in 2009, with the missile initially slated for integration on Australian F/A-18 aircraft. The USAF plans to continue JASSM production through 2018. ■

### Aircraft Carrier Sunk, 'Reefed' off Pensacola

The Oriskany, a decommissioned USN aircraft carrier, was sunk May 17, becoming an artificial reef 24 miles off the coast of Pensacola, FL.

The 888-foot ship took about 37 minutes to sink below the surface after strategically placed explosives were detonated. The Navy developed an engineered sink plan to place the 32,000 ton ship upright on the ocean floor in a north-south orientation at an existing artificial reef site at a depth of approximately 212 feet, as requested by the state of Florida. ■

### \$45.6M for Unitary Army Tactical Missiles

Lockheed Martin has received \$45.6 million from the U.S. Army Aviation & Missile Command for Army Tactical Missile System (ATACMS) Quick Reaction Unitary missiles. Work on the contract will be conducted at the company's facilities in Dallas and Horizon City, TX. Delivery of the missiles is scheduled for 2008.

The ATACMS Block IA Unitary PIP also has vertical impact capability, which reduces collateral damage. This system will have a much more efficient logistical footprint, while it will expand the traditional target-set for Army TACMS.

The Army TACMS Unitary missile is a responsive, all weather, long-range missile, with a high explosive, single burst warhead fired from the Multiple Launch Rocket System (MLRS) family of launchers, including the MLRS 270A1 launcher and the High Mobility Artillery Rocket System (HIMARS). ■

### BAE Systems on APKWS II Contract

The U.S. Army has selected BAE Systems as prime contractor for the Advanced Precision Kill Weapon System II (APKWS II) program. The company received a \$96.1 million System Development and Demonstration (SDD) contract to provide APKWS II laser-guided rockets. The contract is for a two-year SDD program with options for production to begin as early as 2007.

APKWS II will provide a low-cost, lightweight guided weapon that is effective against soft and lightly armored targets and is well-suited to urban operations. The system will be used on all Army and Navy aircraft currently operating the Hydra 70 rocket. BAE Systems is partnered with Northrop Grumman and General Dynamics. ■

### Lockheed Martin Improves Warthog

The Lockheed Martin-led A-10 Prime Team has delivered a new weapons delivery system to the USAF's A-10C flight-test program. Called the Digital Stores Management System (DSMS), the new system is integrated with the Sniper and Litening targeting pods to give the aircraft a 'smart' weapons capability for its close air support role. The USAF has designated the Joint Direct Attack Munitions and the Wind Corrected Munitions Dispenser guidance kits for the A-10C aircraft. The DSMS weapons capability is the latest in a series of upgrades delivered by the Prime Team for the A-10 Precision Engagement (PE) program. ■

## *In the next Issue*

*Wrapup on PSA's Summer PEO Forum*

## Precision Strike PEO Forum July 25-26, 2006

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### Wednesday, 26 July

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- Prompt Global Strike Capability and Technology Options
- What Role Should Precision Strike Weapons Play in Iranian/Chinese/North Korean Ballistic & Cruise Missile Threat?
- Nuclear Issues-How they relate to Precision Strike Requirements
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