



**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.

Armaments Technology Fire Power Forum Set for June 9-10

The Precision Strike Association's Armaments Technology Fire Power Forum (PEO-09), to be conducted in cooperation with the NDIA Picatinny Chapter, is scheduled for June 9-10, 2009 at the Hanover Marriott, Whippany, NJ.

Mr. Jim Sutton, Program Executive Officer, Ammunition, will host this premier forum, which leads off a series of events, including a golf tournament, trap/skeet shooting competitions and presentation of the 34th Firepower Benefit and Scholarship Award.

The forum's theme *Affordable Precision Munitions—The Reliable Choice for the Modern Battlefield* will emphasize how important precision weapons have become on the modern battlefield while acknowledging that it is essential that we explore ways to make them more affordable as future defense budgets are expected to decline.

Our keynote speaker, Army Major General Paul Izzo, Commanding General U.S. Army RDECOM, and former PEO Ammunition, will discuss the latest innovations and development efforts in military hardware and equipment.



Army Major Gen
Paul Izzo



Dr. Joe Lannon



Jim Sutton

Attendees will also learn from Dr. Joe Lannon, Director, U.S. Army ARDEC, Picatinny Arsenal, about the exciting cutting edge technology being developed within the Picatinny Arsenal laboratories.

Mr. Peter Huessy, President, GeoStrategic Analysis, will discuss his views of the new Strategic Environment resulting from the significant changes in policy following the White House change.

Dr. Robert Gates, Technical Director, Naval Surface Warfare Center, Indian Head Division, will speak on the role of energetics in affordable precision munitions.

Once again, Jim Sutton will lead his project managers in a review of the significant Army ammunition programs.

The OSD Munitions perspective will be presented by Tony Melita, Deputy Director, Land Warfare & Munitions.

We are also very fortunate to have with us Mr. Jerry Mazza, PM for

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Chairman's Column

Let me begin by thanking the Precision Strike Association's Board of

Directors for entrusting me with the leadership of the association. It is an honor to lead this coalition of professionals, but I have rather large shoes to fill. At this year's Precision Strike Annual Review, we said goodbye to a gentleman who has actively served on PSA's board since 1997 and has done an exemplary job of leading us as Chairman since 2006.

Bill Dalecky has stepped down, but he will remain with us in an emeritus status, offering his experience and insight as we continue to evolve in concert with kill chain advancement. We also say goodbye to USAF Colonel Bill DeMaso. He has been a valued member of our Board and a friend who contributed to the betterment of PSA.

We are pleased to welcome Walter Jackson of SAIC and Suzy Kennedy of JHU/APL upon their election to the Board of Directors. We welcome back George McVeigh of OSD/NII and Dale Spencer of Kaman with their re-election.

There are numerous challenges ahead for the precision strike community, the defense industry and our nation as a whole. We have a new administration, the Quadrennial Defense Review, budget battles, continued military operations around the world and a global economic

crisis like none we have experienced in decades. Trivial matters none.

PSA exists to facilitate the government-to-industry, government-to-government and industry-to-industry dialogue. Only through effective communication will we fully understand the needs and capabilities of our collective community. Only through open dialogue will we effectively address the challenges before us. That is the beauty of PSA. We provide the forum, the environment for this critical communication. However, it only works with the active participation of our Board and our membership.

PSA continues to deliver outstanding forums packed with high-impact government and industry leaders presenting topics of great significance to the precision strike community. I encourage you to join us at our upcoming events where you will not only hear from an unrivaled lineup of speakers, but you can interact with them during Q&A sessions or more personally during our professional networking breaks.

I believe we have had a positive impact in providing solutions to our warfighters and I look forward to our continued service in their support.



Andy McHugh
Chairman of the Board
Precision Strike Association

It has been a distinct pleasure and honor to be the Chairman of the PSA Board of Directors over that last several years. It was a time of unprecedented change in our business. Our warfighter community began to consider precision delivery of weapons as commonplace. That's a good thing! It means the government/industry team has delivered what the warfighter needed, but we know the appetite to make the Kill Chain more efficient is insatiable. We remain a growth industry.

Thanks in particular to the Programs Committee under Ginny Sniegion's

superb leadership. The quality of PSA events gets better and better. Thanks also to Paul Greenberg, who helped steer PSA through the traps and into successful affiliation with NDIA. To Dawn Campbell goes the well-deserved recognition for holding everything together and herding the cats.

I'm confident under the leadership of Andy McHugh and the new Board that PSA will continue to deliver on our goal to be the most powerful facilitator of knowledge sharing in the precision strike industry.

Bill Dalecky

Precision Strike Annual Review 2009 Wrapup: New Administration—Future Strategy for Precision Engagement

The Precision Strike Association (PSA) held its Annual Review (PSAR-09) on March 10-11, 2009 at the Emerald Coast Conference Center, Fort Walton Beach, Florida. PSAR-09 combined the strategic and congressional emphasis of the popular Precision Strike Winter Roundtable with the Service updates of emerging technologies highlighting the Precision Strike Annual Programs Review of past years.

This year's theme "*New Administration—Future Strategy for Precision Engagement*" brought together senior leaders, warfighters, and experienced subject matter experts from DoD, industry, and international partners to discuss precision engagement's strategic direction.

PSA took time out during PSAR-09 to recognize the USSOCOM Stand-Off Precision Guided Munition (SOPGM) Quick Reaction Team as the 13th recipient of the prestigious William J. Perry Award. Both military and industry team members were present to receive this annual award.

Bill Dalecky (then Chairman of the PSA Board of Directors), Ginny Sniegon (PSA's Programs Chair) and LTC Kenneth Britt, USA (Ret), the Annual Review Event Chair, welcomed the speakers and attendees, including **Major General David Eidsaune**, Commander, Air Armament Center and Air Force Program Executive Officer for Weapons at Eglin AFB, who served as host of PSA's PSAR-09 and Keynote Speaker Major General David Edgington, Chief of Staff, U.S. Joint Forces Command (USJFCOM).

General Eidsaune's opening remarks on March 10 oriented conference attendees to Air Armament Center activities, highlighting the latest in Air Force precision strike systems and relating that Eglin AFB "is the only place I know of within the USAF where you can take an idea through a research laboratory, through research and development, acquisition, developmental/operational testing and into combat operations. As much as you talk about a 'virtual world', there's nothing like doing it face-to-face in bringing technology to our warriors."

Noted Eidsaune: "Precision strike is a relatively young concept, only 38 years in existence. Look how far we've

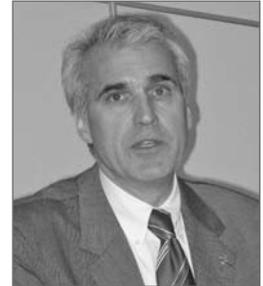
come. And who knows what the future will bring. We've got a tactical laser on a C-130 under test at Kirtland AFB, NM. It's been pretty exciting how it has gone over the last 40 years. I'm sure there will be more to come."

Doug Young, Northrop Grumman's Vice President for Business Development, Strike and Surveillance Systems Div., believes the future belongs to airborne platforms that handle both intelligence, surveillance and reconnaissance (ISR) missions and tactical strike. Today, he said, "the lines between conventional and irregular warfare are blurred. With hybrid warfare, there is a convergence of disparate types of conflicts where weapons must be discrete and deliberate."

In offering industry's perspective on changes for precision strike, he said "given the fiscal environment, it is clear that new and proposed aircraft must be adaptable to multiple missions and multiple scenarios. Meeting the contemporary challenges demands acquiring better awareness of the environment. Directed energy, laser and high power microwave weapons will advance our understanding of precision strike "in a quantitative measure," said Young. "The bottom line is we are seeing a blending of ISR/Strike missions and as new systems roll out, that convergence is continuing," he added.

USAF Major General David Edgington, Chief of Staff, U.S. Joint Forces Command was the keynote speaker on the opening day of PSAR-09, sharing his vision for providing mission-ready joint-capable forces to meet the present and future operational needs of the joint force. He focused his remarks on the challenges faced by precision engagement.

Edgington described the 'thought processes' of the joint world. He said more work is needed in providing 'precision' to the smallest combat units. He also called for development of additional simulation capabilities for the base segment of the U.S. military force and devices to pre-detonate improvised explosive devices (IEDs). He agreed with Young, saying future tactical Unmanned



Doug Young



Major General David Eidsaune, USAF



Major General David Edgington, USAF

Aerial Systems (UAS), like the current-generation GA-ASI Predator and Reaper, must be capable of handling both ISR and strike.

“You can no longer afford to think in isolation. You have to consider the whole government approach, inter-agency approach, to anything we are dealing with. Certainly, as regards [to] precision munitions, it is out of date to focus solely on their use for combat. They could be used for other missions,” said Edgington.



Jay Rouse

In his third visit with the Precision Strike Association (PSA), **Jay Rouse**, the Senior Policy Analyst supporting the Joint Staff in J-5, Deputy Directorate for Strategic Plans and Policy, discussed the Joint Strategic Planning System (JSPS) and major components, including the National Military Strategy (NMS). He provided an update on the JSPS so that the capabilities the precision strike community is providing, or are developing, will be better for military concepts and objectives. He said the way ahead will include: institutionalizing changes that work; incorporating new guidance into strategic documents and processes; and, continuing to discipline the system, preventing stovepipes.

USAF Colonel Kirk Kloepfel, Director, Munitions Directorate, Eglin AFB, offered background on the 40 Air Force Research Laboratories (AFRL) worldwide, and specifics on the Munitions Directorate. He discussed where his organization is going as regards precision strike, future planning and near/mid/long term projects. The Munitions Directorate’s vision is to provide precision engagement and deliver desired effects. Its mission is to lead discovery and develop and integrate affordable precision engagement capabilities.

He said the Munitions Directorate is comprised of three subordinate organizations: Ordnance Division, Advanced Guidance Division and Assessment & Demonstration Division. Examples of specific advanced technologies under investigation include Hard Deeply Buried Target (HDBT) Neutralization and swarming ‘flapping-wing’ micro drones able to sneak into facilities via air shafts and open doors/windows to locate snipers and search for chemical/biological agents.

Kloepfel said “we offer a lot of return on investment for a little bit of money. We turn this stuff around quickly.



Colonel Kirk Kloepfel, USAF

Precision effects and increased lethality has allowed us to go smaller and smaller. AFRL relies on industry partnerships to do research in-house or contracted out. We’ve had great partnerships over the years.”

A high point of the Precision Strike Annual Review 2009 was the presentation of the PSA’s 13th annual William J. Perry Award to the **U.S. Special Operations Command (USSOCOM) Precision Guided Munition (SOPGM) Quick Reaction Team** at a special luncheon on March 10.

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. The SOPGM Quick Reaction Team was recognized for “outstanding contributions in rapidly meeting an urgent Special Operations Forces (SOF) requirement for a precision weapon system that provides significantly greater stand-off range and lethality.”

The SOPGM QRT introduced a new, lethal precision engagement capability in record time. The team, comprised of members from government and industry, exceeded expectations by quickly developing and fielding a Commander, USSOCOM requirement for a precision engagement weapon system to be employed by SOF.

The weapon system couples a small but effective munition with a self-contained battle management capability. The SOPGM QRT fielded the first-of-a-kind SOF precision weapon in under eleven months.

Using an innovative approach to system qualification aboard an existing platform, the team achieved real-time technical fixes without jeopardizing safety. When the hosting platform was ready for weapon system installation, the SOPGM system was seamlessly integrated and tested during the course of just eight flights and is now employed in theater.

The Stand-Off Precision Guided Munition has quickly become the baseline weapon for SOF and is being integrated on additional platforms.

In accepting the award for the SOPGM Quick Reaction Team, **Colonel James Geurts, USAF**, the USSOCOM Program Executive Officer for Fixed Wing Systems, said the new weapon is doing “great work for the warfighter, all for a smidgen of a budget compared to what you think of in fielding a new weapons program.”



Colonel Jim Geurtz, USAF

“Our message is: It can be done. You don’t need a five-year buildup, a five-year development, five years of production. We now have a class of low collateral damage

weapons that USSOCOM needed, It is flexible, adaptable and a very, very precision weapon, offering precision effects on the battlefield,” Geurts added. Flight tested at Eglin AFB and China Lake, Geurts said industry and government support was exceptional.

Named after the former U.S. defense chief and precision strike weapons advocate, others who 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); the NAVSTAR Global Positioning System Joint Program Office (2001); Rep. James V. Hansen (R-UT) (2002); Terry Little, a well-respected acquisition reform pioneer (2003); the USAF/USN/Boeing JDAM Program Team (2004); U.S. warriors of Operation Enduring Freedom and Operation Iraqi Freedom (2005); the government-industry Tactical Tomahawk Team (2006); the government-industry Small Diameter Bomb Team (2007); and the Guided Multiple Launch Rocket & High Mobility Artillery Rocket System Team (2008).



Keith Sanders

After lunch, **Keith Sanders**, Deputy Director, Portfolio Systems Acquisition (Air Warfare), Office of the Deputy Under Secretary of Defense (Acquisition and Technology), offered an OSD view on changing business practices, which include design maturity prior to the full scale engineering

go-ahead, competitive prototyping, peer review for major source selections and greater cost and schedule control, to include renewed emphasis on fixed price incentive contracts.

Sanders said the implications to precision strike include fewer new starts of major programs; renewed interest in upgrade/modification efforts; renewed interest regarding system reliability, persistence and endurance. And for major acquisition programs, there will be more competitive prototyping and down-selects based on test results, and “lots of outside scrutiny, schedule risk analyses, and second-guessing by well-informed third parties,” Sanders warned.

“The emphasis is on the here and now, the current wars, putting the assets of DoD to the very fullest advantage supporting the warfighter in Iraq and Afghanistan. We are less interested in things in the future,” he stated.

Larry Phillips, Deputy Program Manager for the High Energy Laser Technology Demonstration Program, Army Space & Missiles Defense Command, Huntsville, AL, offered an update on the U.S. Army's investigation of



Larry Phillips

future laser weaponry. He said the science and technology effort remains on schedule with a critical design review of the HEL's beam control subsystem set for later this year followed by demonstration of the HEL BCS with a bench-level laser expected in 2014 or 2015. As regards the S&T effort, the Army is stressing produce-ability, affordability, maintainability and reliability as the technology is matured. Phillips envisions the HEL as a brigade-level asset initially, but sees it gravitating to smaller Army units as the technology matures and the HEL gets smaller.

USAF Lieutenant Colonel

Brenda P. Cartier, Commander, 4th Special Operations Squadron (SOS), AF Special Operations Command, Hurlburt Field, FL, provided a detailed briefing on the current use of USAF AC-130U Spectre gunships, which she described as “extremely flexible weapons platforms.” Used for close air support, combat search and rescue, convoy escort and air interdiction, the lethal and precise aerial platform is armed with a 25mm gatling gun, a 40mm and a 105mm cannon.

Lieutenant Colonel
Brenda P. Cartier, USAF

Cartier said the AC-130 gunship has become the weapon of choice because of its extremely accurate gunfire (thus reducing collateral damage), real time battle damage assessment (BDA), long loiter, high situational awareness of the ground situation and tailored weapons effects. But limitations include its inability to safely operate in a high radar environment and in daylight. The gunship also has limited capability against hardened targets and limited sensors.

The role of coalition forces in Afghanistan was described by Canadian Forces' **Lieutenant-Colonel Sylvain Gagne**, Director of Land Requirements (fire support, surveillance and target acquisition) at the Land Force Headquarters, National Defence Headquarters in Ottawa. He previously served as Chief of Joint Fires and Targeting, Multinational Regional Command South in Afghanistan. Describing “the power of precision,” Gagne said precision weapons are needed for irregular warfare, need to be cheaper and need to be more avail-

Lieutenant-Colonel
Sylvain Gagne

able. Based on his nine months in Afghanistan, Gagne believes “we need more precision weapons in today’s operational environments. We need them for counter-insurgency operations and irregular warfare.” He listed as coalition challenges access to some of the precise weapons and availability of certain supporting tools, such as the Remotely Operated Video Enhanced Receiver (ROVER) and Precision Strike Suite for Special Operations Forces (PSS-SOF).

Wrapping up things for the first day of PSAR-09 was Air Force Wing Commander **Jim Mulholland**, RAF Assistant Director Weapons Directorate of Equipment Capability (Deep Target Attack), who briefed on employment of precision weapons by the RAF. He said the spectrum of conflicts is broad and thus the RAF needs multi-mission weapons with tuneable effects. And the RAF needs fewer, cheaper weapons to shorten the logistics chain. Mulholland described the capabilities of the in-service Brimstone and Paveway IV. The goal, he said, is better intelligence capabilities, shared battlespace awareness, agility and adaptability and increased precision, persistence, speed and tempo.



Jim Mulholland



Timothy J. Harp

Another goal for the RAF is acquisition of a Selective Precision Effect at Range (SPEAR) weapon, the UK’s next-generation capability for military operations in urban terrain (MOUT).

PSAR-09 got an early start on March 11 with a briefing from **Timothy J. Harp**, Deputy Assistant Secretary of Defense (C3ISR & IT Acquisition), NII/CIO/OSD. He is responsible for the review of major acquisition programs for C3, ISR, space and information technology programs. He also leads reviews of major defense acquisition programs and major automated information systems. In as much, Harp said “a move is afoot to change the acquisition process. DoD acquisition is at a crossroads in the information technology area.”

He believes creating a world class acquisition environment for the Pentagon and the U.S. military departments will require: trained and experienced program managers; final performance criteria in advance of weapons entering the development phase; technology maturity before commitment to a program; stable funding as a pre-requisite for program success; application of the correct acquisition model; partnering with proven, competent and motivated

contractors; and adherence to a deliberate and disciplined process, selecting and using appropriate management metrics.



Army’s Future Precision Strike Weapons Systems panel

PSA’s **Ken Britt** once again chaired the Army’s Future Precision Strike Weapons Systems panel, which offered updates on the Army’s major smart weapons programs. Panel members included: **Steven L. Borden**, Deputy Program Manager, Small Guided Munitions, Joint Attack Munition Systems Project Office; **Colonel Dave Rice, USA**, Program Manager, Precision Fires-Rockets & Missiles; **LtCol Benjamin Greiner, USA**, TRADOC Capabilities Management office for Fire Support Command Control and Communications, Fort Sill, OK; and, **Colonel Ole Knudson, USA**, Program Manager for Combat Ammunition Systems.

Borden said the Army successfully used the Viper Strike weapon in Iraq from a Hunter UAS, taking out an insurgent who was emplacing an IED. The original Viper Strike developed as a quick reaction capability has been product improved with addition of GPS-aided navigation, providing an extended glide range. Borden said Viper Strike, armed with a 4.5-pound shaped-charge warhead, offers very low collateral damage.

A weapon being evaluated by the Army’s Small Guided Munitions Office is the Raytheon Griffin Real-Time Attack System — an internal development of Raytheon. It employs extensive re-use and repackaging of proven weapons components. Having successfully completed flight testing and qualification, it is now in low-rate initial production. Tests show its suitability for employment from a host of ground and air platforms and ground teams. The powered, maneuverable, small, lightweight, accurate and lethal weapon offers “reduced risk of collateral damage”, said Borden.

Colonel Rice provided the latest on the Precision Fires Rocket and Missiles Systems, reminding the PSAR-09 attendees that the Multiple Launch Rocket System (MLRS) was the recipient of the 2008 William J. Perry Award. He discussed the weapon’s performance in theater and briefed on the Alternative Warhead Program,

which will yield a next-generation warhead that will comply with DOD's new cluster munition policy.

LtCol Greiner discussed the development and fielding of digital precision strike suite (DPSS) technologies, which are automation tools to derive precision coordinates. The DPSS-SM (with scene matching) provides operators the ability to generate mensurated coordinates using tactical data. The Precision Strike Suite for Special Operations Forces (PSS-SOF) gives operators the ability to generate precision coordinates using a laptop. Other systems he discussed include the Precision Fires Image (PFI) and the Pocket-sized Forward Entry Device (PFED) used by joint forward observers.

Colonel Knudson discussed cannon artillery and mortar precision effects to include Excalibur (XM982), a fin stabilized precision-guided 155mm artillery round, offering all-weather, day/night and fire-and-forget capabilities. The Precision Guidance Kit (PGK) is geared to improving existing artillery rounds, making "accuracy independent of range," said Knudson. Operational benefits will include reduced ballistic dispersion thus improving accuracy; decreased time needed to achieve desired effects; low collateral damage benefits; increased number of kills per basic load of ammunition; and, greatly reduced logistics burdens. He called the PGK project "a Joint Direct Attack Munition (JDAM) approach to making current ammunition smarter." PGK Increment I will be fielded in 2010 on 155mm projectiles, the same year that development of PGK for 105mm rounds begins.

Captain John "Snooze" Martins, USN, Director, Air Vehicle, for the stealthy Lockheed Martin F-35 Lightning II Joint Strike Fighter (JSF) Program provided a detailed briefing on the status of the multi-service aircraft program that will yield the next-generation Conventional Takeoff and Landing (CTOL), Carrier Variant (CV) and Short Take-Off and Vertical Landing (STOVL) for the U.S. military and allied forces. Much detail was offered on the weapons loadout for the three aircraft variants.



John J. Cronin

Those attending the luncheon on the second day of PSAR-09 were treated to a thoughtful address from **John J. Cronin**, ATK's Senior Vice President & President, ATK Mission Systems, regarding "affordable innovations," the heart-and-soul of ATK's business



Captain John Martins, USN

strategy. Cronin discussed the need for a new way of thinking about precision systems.

"It is no longer enough to talk about mission effectiveness in tactical operations. As we move forward, we must also achieve meaningful capability at a fraction of historical costs, and more than ever, at a fraction of the normal procurement timeline," Cronin believes.

"We need precision with confidence. We need to launch guided weapons without collateral damage and fratricide. We need affordable precision strike. In the end, it's all about capabilities. New is not necessarily better," he added.

Cronin said "there are many things we can do to achieve an intersection between affordability, innovation, and precision. We develop systems from the start so that their component elements are nodes on the tactical net. We harness the information that is unmined before we create systems that generate more information. We consider not only cost but also time. We force open systems frameworks and we recognize that the era where technology and requirements force ultra-complex long development solutions is over. This is the era of speed and precision and industry and the acquisition community must adapt to this reality.

"Why is all this important? In truth relevance is defined every time one of our pilots or airmen employs our systems to accomplish his or her mission successfully and safely. For Precision Strike 'relevance' is defined as systems that can plug, play, and kill the target and the winning argument looks at total mission cost and total mission effectiveness.

"All this could be ominous or appropriate for this audience. If we are aggressive in adapting to a new line of thinking, we can win in real battles overseas and budget battles in Washington, DC," Cronin believes.



Air Force panel

After lunch, **Colonel William DeMaso**, USAF, who leads the Combat Force Application Requirements Div., Headquarters, USAF, moderated an Air Synergy with Coalition Forces Panel that offered first hand experiences from the air war in Iraq and Afghanistan. His panelists included: **Lieutenant Colonel Craig Walker**, USAF, an AC-130 Spectre gunship pilot and squadron commander stationed at nearby Hurlburt Field; **Lieutenant Colonel**

Dan Spires, USAF, Air Combat Command, Chief, Weapons and Tactics, who spoke by telephone hookup from Langley AFB, VA; **Lieutenant Colonel Mike “Tiger” Greiger, USAF**, a General Dynamics F-16 fighter pilot with the Michigan Air National Guard but assigned to Central Command for the past three years, the J-3, Chief of Fires and Strike Standards; **Lieutenant Colonel Jeff “Fish” Fischer, USAF**, a senior navigator, now serving as the Branch Chief for Electronic Attack US Air Staff; and, **Lieutenant Colonel Andre Mouton, USAF**, a member of DeMaso’s staff, but currently working as an advisor to the Afghan National Army Air Corps. He participated via a phone patch from Afghanistan.

Col. DeMaso noted that USAF Major General Edgington spoke about joint operations with overarching military capabilities for combat, security, engagement and reconstruction. “Today, we look at the engagement piece,” he told the PSAR-09 attendees.

“What we’re seeing now in Afghanistan is engagement activities more geared towards building a partnership, getting coalition forces to play out well, getting indigenous folks to participate and take control of their destiny,” he stated.

He said the panelists were hand picked to offer their “thoughts, ideas and recent combat experiences, providing insight and some context against which you (the industry attendees) can continue your work in developing precision strike capabilities.”

LtCol Walker discussed integration of fires in Afghanistan, then and now. He said coalition forces now have a better understanding of the evolving battlespace. LtCol Walker said the integrated use of tactical aircraft, including the AC-130 gunship, A-10 and F-15 is providing “a judicious use of fires.” He likes seeing both high-end and low-end precision weapons in theater, including the mortars and cannons on the gunships and 2,000-pound JDAMs.

LtCol Spires said “the stuff we’re bringing to the table is working well” including the Laser JDAM and Small Diameter Bomb (SDB). He dubbed JDAM “the work-horse and weapon of choice in Afghanistan now and into the future.” LtCol Spires said future smart weapons need to be designed for universal applications and training needs to be conducted in a joint/coalition environment. His job at ACC is to harmonize operational planning to specific theater attack targets.

LtCol Greiger talked about his experiences from two combat tours in Iraq and thanked the industry participants for “putting forth the innovative ways for us to do our job, the tools that you have given us.”

With three tours in Iraq and two tours in Afghanistan, with one commanding a provincial reconstruction team, LtCol Fischer was well-qualified to discuss lessons learned

from current theater operations. As an in-country advisor, Fischer was part of “a four-headed monster” that also included AID, State Department and Agriculture members. “We did not always agree. Sometimes our priorities, goals and missions did not always align,” the electronic warfare officer candidly noted.

LtCol Fischer’s advisor tour matches that of LtCol Mouton, who spoke of his current work rebuilding the Afghan military infrastructure. He is helping to set conditions down range to improve Afghan security.

The final speaker of PSAR-09 was **Dr. Bruce Simpson**, Director, 308th Armament Systems Wing, Eglin AFB, who described the flexibility that US-made precision weapons are bringing to the fight. He updated the status of the various weapons in the USAF’s portfolio, noting their flexibility.



Dr. Bruce Simpson

He discussed the status of the SDB-I, an all-weather, autonomous, precise 250-pound class GPS/INS weapon with reduced collateral damage, the SDB Focused Lethality Munition (FLM), a low collateral damage variant of the SDB-I and the in-development SDB-II, which will be able to attack moving targets. He said SDB-II is nearing the end of risk reduction, with a Milestone B decision due later this year. After a three-year engineering and manufacturing development (EMD) phase, production would begin in the FY 2013/14 timeframe.

“Our capabilities are evolving and integrating into the battlespace,” he believes. Simpson provided the latest unclassified information on the JDAM family of weapons, including the Laser JDAM (LJDAM), which mates a laser guidance kit on the GBU-38 (Mk82) 500-pound JDAM. Developed and fielded in only ten months, the LJDAM can engage targets moving up to 70mph. He called the LJDAM the “perfect example of asymmetrical acquisition, which turned the cycle time down much quicker to bring capability much faster to the warfighter.” ■

**PSA would like to thank the following
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ATK exhibit



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OSD Test Resource Management Center



Yulista Aviation exhibit



LTC Horab, USA; Col DeMaso, USAF;
Maj Gen Edgington, USAF;
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Krebs—Raytheon Co.; Bill Dalecky



SOPGM Quick Reaction Team
receives Perry Award.

JTACs Keep Pilots on Target

FORWARD OPERATING BASE ORGUN-E, Afghanistan — Minimizing collateral damage is at the forefront of military leader's priorities in Afghanistan. Those leaders depend on the teamwork between pilots and Air Force joint terminal attack controllers (JTACs) to ensure innocent civilians and their property aren't put at unnecessary risk.

By combining laser-guided munitions with constant communication between JTACs on the ground and pilots in the sky, collateral damage is kept at the lowest possible level.

"Preventing civilian casualties and [friendly fire] is our primary concern," said Master Sgt. Leigh Bradley, JTAC superintendent from the 19th Expeditionary Air Support Squadron. "The Air Force has gone to great lengths in providing precision strike weaponry that serves this very purpose."

The JTACs serve as liaisons between Army ground commanders and pilots by planning, communicating and coordinating close-air support to eliminate enemy threats.

These airmen have several tools they use to minimize collateral damage such as published fixed-wing risk estimate distances, accredited collateral damage estimate charts and flight restrictions, according to Bradley.

"These efforts provide the ground commander a valid means to neutralize a target while preserving the lives of friendly forces and the civilian populace," the 20-year JTAC added.

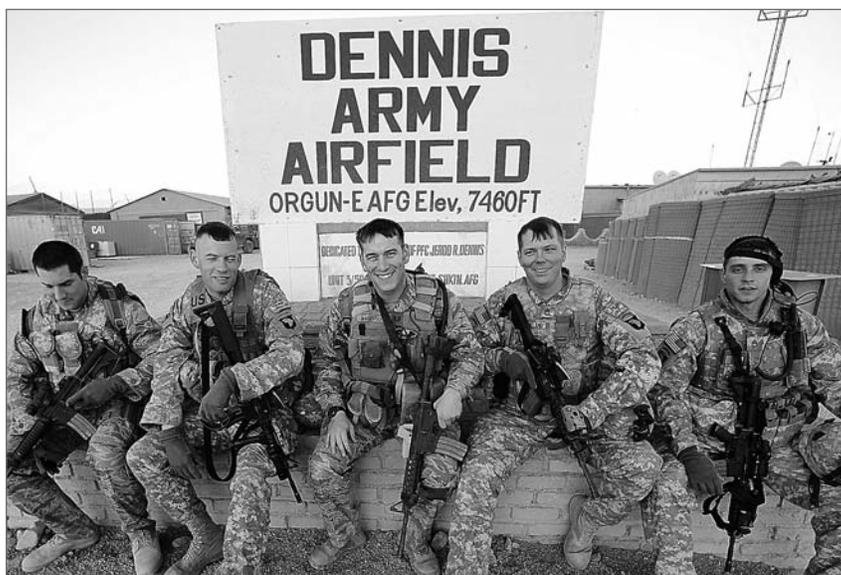
While the JTACs rely on their tools, the trust between them and the pilots serves as one of the most important aspects of close-air support.

"One major component of the relationship between the JTAC and the [aircrew] is the trust and understanding of expectations," said Capt. Daniel Wester, 34th Expeditionary Bomb Squadron weapons system officer. "The JTAC must trust that the aircrew is going to strike precisely when and where needed in order to save friendly lives. The aircrew in turn must trust that the JTAC passed [on] the right coordinates, properly assessed the threat and mitigated collateral damage to the [maximum] extent he can.

"This expectation of professionalism results from the trust that forms from the life-saving interaction between aircrew and JTACs," he said.

The pilots know to trust the JTACs because of the exhausting measures they go through before requesting kinetic weapon support.

"We do not act on a sole source of intelligence; we collect as much data as we can gather before employing



As a joint terminal attack controller with the 2nd Battalion, 506th Infantry Regiment, Tech. Sgt. Harvey Wagenmaker is a liaison between Army ground commanders and pilots. He's responsible for planning, communicating and coordinating close air support.

anything," said Tech. Sgt. Harvey Wagenmaker, 2-506th Battalion Air liaison officer. "We have to have enough evidence to determine the [targets] to be hostile."

The JTACs also estimate the potential collateral damage to ensure there are no structures, such as schools or mosques that can be affected by the bombs impact.

"A common misconception is that bombs create a lot of uncontrolled damage," said Wagenmaker, the 13-year JTAC deployed from Fort Campbell, KY. "But with precision-guided munitions, our risk-estimated distances and the information we have on the munition's blast radius, unless something goes severely wrong, the bomb will hit it's intended point of impact."

It's that sort of confidence in their profession that gives military leaders the trust in their Airmen to accomplish their mission while minimizing collateral damage.

"It's a priority every time we drop [munitions]," Wagenmaker said. "The bottom line is we go through extraordinary measures to ensure there are no civilian casualties." ■

B-1B Aircrews Bring Unique Capabilities to the Fight

B-1B Lancer aircrews of the 34th Expeditionary Bomb Squadron guard warfighters from high above Iraq and Afghanistan while carrying the largest payload of any aircraft in the theater.

Squadron members are responsible for close air support, non-traditional intelligence, surveillance and reconnaissance (ISR) and armed overwatch for troops supporting operations Iraqi Freedom and Enduring Freedom.

“We provide the kinetic firepower for any of the three operations in the theater,” said Lt. Col. Kevin Kennedy, the 34th EBS commander. “Right now we’re primarily focused on OEF in Afghanistan. We provide a great deal of the firepower there.”

The unit was one of the first to deploy to Afghanistan for Operation Enduring Freedom after the Sept. 11, 2001, attacks. Now, in addition to the ability to lower the boom on the bad guys there, the aircraft of the 34th EBS feature Sniper Advanced Targeting Pods. The pod allows aircrews to detect and analyze targets on the ground through real-time imagery.

“Before we didn’t have the television or infrared capability on the jet,” the colonel said. “Now we have that technology. We can look at something on the ground with our targeting pod and the (joint terminal air controller) on the ground can also see it.”

The unit’s B-1Bs can also loiter for long periods over the area of responsibility because of their fuel capacity, two pilots and two weapons systems officers on the aircrews.

“We have the ability to fly for a long period of time and the speed to move through the country fairly quickly,” Colonel Kennedy said.

The unit uses these capabilities on a daily basis. On a typical mission crews will fly for 12 hours, most of which



Capt. Chad Hillen and Capt. Aaron Wargo work their way through preflight checklists from the cockpit of a B-1B Lancer at an air base in Southwest Asia. They are assigned to the 379th Expeditionary Bomb Squadron deployed from Ellsworth AFB, S.D.

is spent conducting armed overwatch of troops on the ground or looking at requested areas of interest.

“If there happens to be a troops-in-contact situation, we’ll check in with the JTAC who will bring us up to speed and if we need to deliver weapons we’ll do that,” the colonel said.

One of the biggest challenges for 34th EBS aircrews is staying alert through the long sorties, Colonel Kennedy said.

“You have to be ready to execute at almost any minute,” he said. “There are no rest periods while we’re up there.”

Because of the long missions, many of the unit’s aircrew members have logged a large number of combat hours in the area of responsibility. Capt. Jess Hamilton, the unit’s chief of weapons and tactics, recently went over 1,000 combat hours in the aircraft. Hamilton dropped the first bomb from a Rockwell B-1B equipped with the Sniper pod. ■

News Briefs

Active Denial System Works

Air Force Research Laboratory officials recently completed an extensive bioeffects research program for an invisible, counter personnel, directed energy weapon known as the Active Denial System (ADS).

Data showed that millimeter waves do not promote cancer or cause reproductive problems, and researchers also defined skin and eye exposure thresholds, as well as levels at which effective repel occurs.



An operational version of the Active Denial System is shown. It is an invisible, counter personnel, directed-energy weapon.

Results demonstrate that the Active Denial System can be used operationally while maintaining a significant safety margin, thus making the device a landmark nonlethal weapon.

AFRL has been involved in researching the operationally useful effects of millimeter waves for almost two decades. The system focuses a beam of millimeter waves occurring at 94 GHz frequency. The effect is a rapid heating of the human target's skin that is extremely uncomfortable and ultimately prompts the individual to flee the beam.

The AFRL Joint Nonlethal Weapons Directorate, Air Force Force Protection Battlelab, and Office of the Secretary of Defense Advanced Systems and Concepts Office funded ADS development through an Advanced Concept

Technology Demonstration. This produced two versions of the system: a mobile version that has since served as a technology demonstrator and a containerized version that is suitable for operational deployment. ■

New Class of Hypersonic Propulsion Systems

Alliant Techsystems has successfully completed testing for a new class of hypersonic propulsion systems that will enable High Speed Strike Weapons and Unmanned Aerial Vehicles to travel long distances at velocities more than five times the speed of sound.

The most recent tests involved flight-weight, fuel-cooled Thermally Throated RamJet (TTRJ) technology built with conventional materials and manufacturing processes, and burning readily-available JP-10 jet fuel. This long-duration testing was funded by the U.S. Air Force and conducted at ATK's Ronkonkoma, NY facility.

A major benefit of the ATK engine technology is its scalability and adaptability to a wide variety of applications. Scalability studies conducted by ATK for the USAF Robust Scramjet program are evolving the tools and techniques necessary for rapid development of derivatives suitable for a range of vehicles including missiles and reusable drones. ■

Insect Vision: Guiding Force for Smarter Weapons

Studying how insects see and navigate has resulted in a smart weapon seeker and guidance technology, according to Australian researchers. The technology has been developed by the Defence Science and Technology Organisation (DSTO) under the Capability and Technology Demonstrator (CTD) Program.

It is planned to incorporate the Bioseeker technology in a low cost, miniaturized and rugged add-on device that provides autonomous guidance to airborne systems, increasing their ability to acquire, track and strike moving targets.

The Bioseeker technology has a range of possible defense applications, including enhancing the capability of the rocket on the Aussie Tiger Helicopter, various air delivered weapons and shoulder launched or mortar based land weapons.

The Bioseeker technology will undergo final testing in the second

See **Newsbriefs**, Continued on page 14

CALENDAR OF EVENTS

Armaments Technology Fire Power Forum

Date: June 9-10, 2009

Theme: *Affordable Precision Munitions —the Reliable Choice for Modern Battle*

Location: Hanover Marriott, Whippany, NJ

Precision Strike Technology Symposium (PSTS-09) SECRET/NOFORN

Date: October 27-29, 2009

Theme: *Improving Precision Weapons to Win the War on Terror*

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

Precision Strike Winter Roundtable

Date: February 10, 2010

Theme: *Strategic Challenges for Precision Engagement*

Location: Marriott Crystal Gateway Arlington, VA

Precision Strike Annual Review

Date: April 20-21, 2010

Location: Waterford at Springfield

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



Celebrating 20 years of Excellence

Precision Strike Association

CALL FOR PAPERS

The Precision Strike Association will sponsor its Nineteenth Annual Precision Strike Technology Symposium (PSTS-09) on 27-29 October 2009 at Johns Hopkins University Applied Physics Laboratory – Kossiakoff Conference Center in Laurel, MD.

OVERVIEW AND PURPOSE

The theme for the 2009 Precision Strike Technology Symposium is *Improving Precision Weapons to Win the War on Terror* which is aligned with the strategic focus of the Department of Defense, including the renewed emphasis on winning the war in Afghanistan.

Current Precision Strike systems are very proficient. We can autonomously fly weapons for very long distances and precisely navigate weapons to a particular point in space, and we have very sophisticated sensor systems. We have the world's most advanced strike platforms. Our adversaries, however, are fully aware of this military prowess and are increasingly successful at using denial and deception techniques. Moving, dispersing, and hiding key targets are relatively cheap and easy ways to counter the United States' superior military capabilities. Similarly, our adversaries successfully exploit US and Coalition Rules of Engagement and collateral damage measures. This means that targets will appear unpredictably in challenging locations and be visible for short periods of time. To counter this denial and deception, we must employ truly persistent ISR. We must also possess the capability to rapidly and effectively fuse the many sources of sensor and intelligence data into a reliable and coherent picture to support engagement decisions.

We are especially looking for papers that describe technologies that improve or enhance Special Operations and Irregular Warfare capabilities. Such Kill Chain improvements include overall time compression, improved target detection and location, effective data fusion, improved weapon effectiveness and accuracy.

PSTS-09 will continue to provide a Forum for exchanging insights, experiences, and ideas regarding Joint and Coalition Precision Strike Technologies to improve the Kill Chain. Updates on current and emerging Kill Chain technologies, concepts, capabilities, and processes for both near term and future planning and operations are desired.

Also of interest are innovative concepts for Prompt Global Strike, Precision Strike in Urban Environments, Surface Warfare and Maritime Interdiction.

REQUIREMENTS

Individuals desiring to submit a paper for consideration should ensure that the abstract is pertinent to the desired symposium topics and that it is no longer than 500 words. Abstracts are due no later than 12 June 2009.

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

DESIRED TOPICS

- Persistent ISR
- Data Fusion
- Decision Support
- Engaging Moving Targets
- Defeating Weapons of Mass Destruction
- Precision Electronic Attack
- Non-Kinetic Effects
- UAVs (ISR and Lethal)

THE FOLLOWING SCHEDULE APPLIES:

Deadline for Abstracts: 12 June 2009

Acceptance Notification Sent by Email:
Week of 6 July 2009

Please file your abstract at the following weblink and complete ALL required Information:
<http://application.ndia.org/abstracts/OPST>

Additional information on this symposium will be available at precisionstrike.org

Newsbriefs, Continued from page 12
half of 2009, using the Australian developed Cybird UAV as a platform. The test will involve guiding the UAV to strike a moving land target. ■

Navy Contract for Electromagnetic Railgun

BAE Systems has been awarded a \$21 million contract from the Office of Naval Research (ONR) to develop an advanced Electromagnetic (EM) Railgun for the U.S. Navy. The 30-month contract is for the detailed design and delivery of an Innovative Naval Prototype (INP) Railgun.

“This EM Railgun contract is a continuation of BAE Systems’ dedication to delivering advanced technology for tomorrow’s sailors,” said Jim Schoppenhorst, vice president of Navy Programs for BAE Systems.

Under this contract, BAE Systems will develop advanced railgun technologies including a composite launcher (barrel) that will be demonstrated in 2011. BAE Systems is partnered with IAP Research, and SAIC to develop the railgun. ■

Sniper Pod Improves B-1 Lancer

The Rockwell International B-1 Lancer, one of the most versatile aircraft in the USAF’s arsenal, is now even more lethal.

This lethality is not due to bigger bombs in its bomb bay, but to a

small torpedo-shaped pod stuck to the plane’s underbelly.

Called the Sniper Advanced Targeting Pod, this device enables the B-1’s aircrew to “see” the battlefield better using both infrared and television sensors. This gives them the capability to positively identify targets without additional aids such as other aircraft or ground personnel



A B-1B Lancer flies a combat patrol over Afghanistan in support of Operation Enduring Freedom. B-1s are being equipped with Sniper Advanced Targeting Pods to enable aircrews to “see” the battlefield better.

and allows the operator to see behind the aircraft for a 360-degree view.

The Sniper ATP possesses advanced targeting technology and its high-resolution image processing allows aircrews to detect and identify tactical-size targets outside threat rings for the destruction of enemy air defense mission, as well as outside jet noise ranges for urban counter-insurgency operations. The pod also offers a three to five times increase in detection range over the legacy LANTIRN system, or Low-Altitude Navigation and Targeting Infrared for Night.

We are privileged to have with us U.S. Army Major General Vincent Boles, the Assistant Deputy Chief of Staff, G-4, who will provide us with an Army logistics update.

As you can see, we are fortunate again this year to offer our attendees an outstanding group of expert speakers from the military services, industry, and defense agencies who will provide a review of current

Designed, developed and manufactured by Lockheed Martin, the Sniper ATP also has streaming capability, which means B-1 operators can downlink the video captured by the sniper pod and allow personnel on the ground to see exactly what the bomber crew is seeing.

The B-1 isn’t the first aircraft to use the Sniper ATP. The Boeing F-15E Strike Eagle, the General Dynamics F-16 Fighting Falcon and the Fairchild Republic A-10 Thunderbolt II have used the Sniper ATP in operations in Iraq and Afghanistan. The system also is being integrated on the venerable Boeing B-52 Stratofortress. ■

Successful Intercept in Missile Defense Flight Test

The Department of Defense’s Missile Defense Agency and U.S. Army soldiers from the 6th Air Defense Artillery Brigade, Fort Bliss, TX, completed a successful intercept of a ballistic missile target during a test of the Terminal High Altitude Area Defense (THAAD) missile defense element of the nation’s Ballistic Missile Defense System March 17 at the Pacific Missile Range Facility off the island of Kauai in Hawaii.

Preliminary indications are that planned flight test objectives were achieved. THAAD is a mobile system now in development designed to intercept short to medium range ballistic missiles. ■

Forum, Continued from page 1
Ammunition, Marine Corps Systems Command, Quantico, VA to review Marine munitions programs. Rear Admiral Victor G. Guillory, USN, Director, Surface Warfare Division, N86, will discuss Joint Fire gaps.

Army munitions requirements will be discussed by Col. Richard Mason, USA, Mr. Don Chrans, and Ms Sue Carlson.

activities involving their programs. Interaction with fellow munitions industry participants is one of the more valuable benefits of attending this premier event.

All these topics and more await our attendees for this “not to be missed” event. We look forward to seeing you in New Jersey in June. ■

PRECISION STRIKE ARMAMENTS TECHNOLOGY FIRE POWER FORUM

JUNE 9-10, 2009 — HANOVER MARRIOTT-WHIPpany, NJ

Affordable Precision Munitions—the Reliable Choice for Modern Battle

You will have the opportunity to hear from, and interact with, senior military leaders and civilian professional munitions managers on a wide variety of relevant subjects and issues relating to the current conflicts in Iraq and Afghanistan. This forum seeks to acknowledge their continuing accomplishments by focusing on:

- Picatinny Laboratory Initiatives
- OSD Munitions Perspective
- Joint Fire Gaps
- Army Logistics Update
- Common Smart Submunition
- Remote Weapons Stations
- Role of Energetics in Affordable Precision Munitions
- Army PEO Munitions Programs Overview Panel
- Extended Area Protection Survivability Gun/Bullet
- The New Strategic Environment
- Marine Corps Munitions Overview
- Army Munitions Requirements
- Reliable Precision Munitions
- Munitions Reliability
- NDIA Picatinny Chapter Benefit

Schedule at a Glance

PRECISION STRIKE TECHNOLOGY SYMPOSIUM (PSTS-09)

**27-29 OCTOBER 2009 — The Johns Hopkins University
Applied Physics Lab Kossiakoff Center — Laurel, MD**

Improving Precision Weapons to Win the War on Terror

PSTS-09 Highlights Eight Technical Topics:

Persistent ISR • Data Fusion • Decision Support • Engaging Moving Targets
Defeating WMD • Precision Electronic Attack • Non-Kinetic Effects • UAVs

PSTS-09 Showcases Two Excellent Hot-Topic Panels:

Anti-Surface Warfare (ASuW) Weapons Requirements & U.S. Special Operations

PSTS-09 Features a Riveting Agenda of Additional Focus Areas:

Intelligence Threat Update • Meeting COCOM Requirements for
Precision Engagement Capability • Role of National Defense in Winning
the Future • Priorities for Improving Precision Weapons • Science and
Technology for Precision Strike • Winning the Global War on Terror •
Technologies for Directed Energy Weapons • Strike & Targeting Challenges
in CENTCOM's AOR • Challenges in Calculating Collateral Damage •
Improving the Capability and Employment of Precision Weapons • Precision
Strike in a Jamming Environment • Net Enabled Weapons • The Future
of Carrier & Expeditionary Aviation • Naval Strike Aircraft & Weapons •
Testing in Tomorrow's Joint Environment • New Global Strike Command •
How is USSOCOM Employing Precision Engagement • SOF Requirements
for Target Location • Precision Tactical Targeting in OEF and OIF

Presentation of Award for Technical Excellence in the Field of Precision Strike during Luncheon on 2nd Day

PSTS-09 will be conducted at the SECRET/NOFORN level

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

Corporate Membership

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