



**PRECISION STRIKE  
ASSOCIATION**  
Affiliate, National Defense  
Industrial Association

4th Quarter  
**2005**  
Vol.18, No.4

**"Dedicated to advancing the art and science of  
precision engagement concepts and technology"**

## 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.*

## USN VADM Evan M. Chanik to Address Winter Roundtable 2006

**P**recision Requirements—New Policies Creating Innovative Opportunities is the theme of PSA’s Winter Roundtable 2006 scheduled for Wednesday, 25 January 2006 at the Crystal Forum-Crystal City Marriott.

Winter Roundtable is designed to provide an opportunity to become better informed about current national defense policy, strategies, and national security issues related to precision engagement. The objective of this unclassified forum is to gain insight into how the precision strike community should plan to address and meet the future key security challenges facing the United States.

Few issues impact precision strike weapons and weapons systems more than requirements and the policy that derives those requirements. Winter Roundtable provides a forum that is focused on providing insights to requirements and policy from the perspective of those charged with implementing and executing both.

PSA is delighted that the Joint Staff’s top requirements leader-Vice Admiral Evan M. Chanik, USN, will address the precision strike community at the roundtable on the *Chairman’s Process for Integrating Requirements and Joint*

*Capability Areas Development.*

Vice Admiral Chanik has been the Joint Chiefs of Staff Director of the Force Structure, Resources, and Assessment Directorate (J-8) since March 2005. Prior to this assignment, Vice Admiral Chanik was the Director, Programming Division (N80) on the staff of the Chief of Naval Operations. During the more than 30 years since he graduated from the United States Naval Academy in 1973, Admiral

Chanik’s impressive career includes flying the F-14 Tomcat, commanding the VF 84 “Jolly Rogers” and leading the squadron through combat operations during Desert Shield, Desert Storm, and Provide Comfort. Further, he was commanding officer of the USS Enterprise and led the ship on a six-month Mediterranean Sea/Arabian Gulf deployment that included Operation Desert Fox in Iraq and operations in the Adriatic Sea.

More than 4,800 flight hours and 850 carrier arrested landings have been amassed by Vice Admiral Chanik and in 1999 he was chosen as the Tailhook Association’s “Tailhooker of the Year.” His awards include Legions of Merit, Bronze Stars, Meritorious Service Medals, Air Medal (four strike/flight

See **Roundtable**, Continued on page 15



Vice Admiral Chanik

## IN THIS ISSUE

## Chairman's Column



### An Amazing Year

Wow....  
Mother  
Nature

certainly made 2005 an amazing year. I'm sure the natural disasters have impacted all of us in some way. To quote Jay Leno: "Are we sure this is a good time to take 'God' out of the Pledge of Allegiance?"

To those who attended the Precision Strike Technology Symposium (PSTS-05) at Johns Hopkins University APL: Thank You. Our event organizers did their normal superb job. A special thanks to Dawn Campbell, Paul Greenberg, Ginny Sniegon and John Walter for all of their hard work, attention to detail, and ability to react to many changes as the three day event proceeded.

I am sure most of you have been following the Department of Defense budget deliberations: the one currently on Capitol Hill that should complete congressional review by the time you read this; and, the budget request for FY07 and beyond.

All of the U.S. military services will be significantly impacted. When you combine money for disaster relief and our war against terrorism, the bills become very large. The first round of 'bogies' have already struck, reducing each of the services' budget planning levels by \$8-11 billion over the five-year plan.

I'm sure these reductions will severely impact several major 'big ticket' items. And I'm concerned about the impact to our precision strike weapons. Each of the military branches typically spend about \$3-4 billion a year for weapon procurement and development. As budgets get submitted and scrutinized, the final impact will include some reductions in both of these accounts. Lay the QDR on top of this, and I'm sure no one can predict the end results

at this time. Hang on. The budget roller coaster will continue to rise and fall for the next six to eight months.

Over the years, the Precision Strike Association has enjoyed the tremendous support of key U.S. military leaders and civilian defense officials, including the recently retired Chairman of the Joint Chiefs of Staff, General Richard B. Myers. In October, USAF Gen. Myers sent a letter of appreciation to PSA's Executive Board stating "It was an absolute privilege to watch how precision strike has contributed to our National Security." Further, Gen. Myers encouraged us to keep up the great work and to keep in touch. His leadership as the top U.S. military officer will be missed.

A key member of our board also received a personal note from the incoming Chairman, General Peter Pace, stating that "he looks forward to a continued association with PSA as it promotes advancement in precision engagement systems and concepts".

PSA's annual Winter Roundtable is just around the corner. As usual, we will have a first-rate slate of speakers. We will also present the Dr. William J. Perry Award to the Navy's Tactical Tomahawk team. The award is presented to individuals or organizations that have made a significant impact to the art and science of precision engagement. Please join us for this special event. In the interim, enjoy the holiday season, recharging your batteries for what I expect to be an interesting 2006.

Welcome to our new Silver Corporate Members, Kitty Hawk Partners and Data Fusion Corporation.

That's the view from Wayne's World...

Wayne F. Savage  
Chairman of the Board  
Precision Strike Association

#### Published by:

The Precision Strike Association  
2111 Wilson Blvd - Suite 400  
Arlington, VA 22201-3061  
tel: 703-247-2590 fax: 703-527-5094  
www.precisionstrike.org  
info@precisionstrike.org

#### Officers:

*Chairman:* Wayne Savage  
*Vice-Chairman:* Bill Dalecky  
*Chair for Programs:* Ginny Sniegon  
*Chair for Communications:* Bob Houser  
*Chair for Membership:* Andy McHugh

#### Staff:

*Executive Director:*  
MG Paul L. Greenberg, USA (Ret)  
*Executive Administrative Assistant:*  
Dawn Campbell  
*Editor:* Ramon Lopez  
*Graphic Artist:* Renee Korbely-Maiz

#### Board of Directors:

Tony Ammendolia, Aerojet • LTC Ken Britt, USA (Ret) • COL John Croghan, USAF, Chief, Weapons-Air & Space Operations • Harvey Dahljelm, ITT Industries, Defense & Electronics • Bill Dalecky, Smiths Aerospace • Douglas Detwiler, PEO (W) • Mike Eddings, SAIC • Ross Hatch • Harry Heimle, Northrop Grumman • Bob Houser, Boeing • Maureen Koerwer, EDO Corp. • RADM Walter M. Locke, USN (Ret) • Andy McHugh, Lockheed Martin • George M. McVeigh, SAIC • COL Lance Moore, USA, HQ, US Army • JT Morris, Whitney, Bradley & Brown, Inc. • Alan Pickard, MBDA • Ray Pilcher, ATK • Ray Preston, Williams International Corporation • Earle Rudolph • Richard Rumpf, Rumpf Associates International • Wayne Savage, Raytheon • LtCol Mychael Sheerin, USMC • Ginny A. Sniegon, IDA • Dale Spencer, Kaman Aerospace • LtCol Chris, St. George, USMC • CAPT Vic Steinman, USN • Major Chad Stevenson, USAF, SAF/AQ • CAPT Scott Swift, USN, OUSD AT&L DS (AW) • Mike Underwood, Honeywell • Dr. John Walter, JHU/APL • Tom Weller, Raytheon • Dick Wright, SeiCorp, Inc.

The Precision Strike Digest is published quarterly. Correspondence should be sent to the above address. The Association assumes no responsibility for unsolicited materials; these require return postage. Reproduction in whole or part is authorized with the appropriate credit. Copyright © 2005 by the Precision Strike Association, Inc. Postmaster: Please send any address changes received to the location identified above.

# PSTS '05 Wrapup:

## Accelerating Precision Strike Technology for Stability Operations and Protection of Coalition Forces

The Precision Strike Association held its 15th Precision Strike Technology Symposium (PSTS) on October 18-20, 2005, in the Kossiakoff Conference Center at the Johns Hopkins University Applied Physics Laboratory (JHU/APL) located in Laurel, MD.

Richard Roca, director of the JHU/APL, discussed "the promise and pitfalls" of precision strike net centric weapons.

"Precision strike would be advanced by a networked solution that enables warfighters to have the right information at the right place and the right time. We remain some distance from 'joint' or even 'service' implementation of that networked solution, but we're getting there. I look forward to the day that we will avoid the pitfalls and achieve the promise," stated Roca.

David K. Sanders, the Navy's deputy program executive officer for strike weapons, said the U.S. military now has precision weapons, precision targeting, persistent surveillance, networked information and is now beginning to make information timely.

"We need to look at the whole integrated solution in order to provide efficient and effective solutions for the warfighter," Sanders added.

Following Sanders at the podium was Alison K. Brown, who led off the Targeting Session. The head of NAVSYS Corp. said small unmanned aerial vehicles using inexpensive MEMs/IMUs are difficult to use for inertial navigation in areas where GPS is not available. Her firm has developed the means to overcome the problem.

David Toms, with Mercury Computer Systems, said roadblocks are preventing synthetic aperture radar (SAR) imagery from being captured, transmitted, and exploited in real time. He offered a potential solution to this problem. On the other hand, David A. Silvia, with the Naval Undersea Warfare Center, discussed how the Tactical Tomahawk missile could be made more effective against relocatable and mobile targets.

The luncheon speaker on the first day of PSTS '05 was Philip Coyle, a former director of operational test and evaluation, and a commissioner on the 2005 Base Realignment and Closure (BRAC) Commission. He offered insight into "the largest and most complex BRAC in history." Coyle said the work of the BRAC Commission is not over, saying "the next BRAC could be equally complex."

P. Kevin Peppe, Raytheon's deputy director of Phalanx, who also spoke at PSTS '04, considered the future of precision engagement, including the impact of loitering weapons on the battlefield. He was followed on the podium by Mike Knollmann, ADUSD (Joint & Coalition Operations Support) Advanced Systems & Concepts, OUSD (AT&L) who described the Joint Concept Technology Demonstration Program (JCTD). Michael S. Richman, associate director, Aerospace Technology ODUSD (S&T) rounded out the Accelerating Technologies for Precision Engagement Panel with a discussion on high speed and networked weapons, including the RATTLRS and HyFly projects.

PSTS '05 then took on an international flavor with Helmut F.

Muthig, president and chief executive of EADS/TDW who briefed his firm's penetrating weapons, including the multiple warhead MEPHISTO used on the German TAURUS standoff weapon system. USAF Col. James Dendis, International Cooperation Regional Manager, International Cooperation Directorate, OUSD (AT&L) discussed the obstacles in working international programs, including technology transfer rules.

The second day was kicked off with a classified presentation by Jeffrey Sinclair, a senior analyst from SAIC, who offered technical details on the Enhanced-Blast AGM-114 Hellfire Warhead, explaining the benefits on this improved weapon.

The C4ISR Session chaired by Smith Aerospace's John Bigelow plumbed a very broad area in the context of precision strike operations. He said much of the requisite technology exists or is emerging to accomplish high confidence precision strike on both fixed and mobile targets. However, the transformation is "unsynchronized" and comprehensive solutions are needed to enable effective deployment of these technologies, with Joint C4ISR at the center.

His panelists covered a number of perspectives in this domain from doctrine, organization and training to simulation and modeling of battlespace systems to real world experiences and achievable incremental capabilities. The presenters approached the subject from an

See **Wrapup**, Continued on page 4

**Wrapup**, Continued from page 3

Army, Navy, USAF and Joint Force perspective.

The Air Armament Center's Gregory Jenkins discussed just-in-time strike augmentation, a solution for the need to shorten the kill chain across the spectrum of warfare. Raytheon's Mark Hall did double duty in the session: discussing synchronized persistence of C4ISR and weapons; and, a missile as a node in the net architecture, intended to develop methods for taking missiles into the net-centric battlespace of the 21st Century.

Raytheon's John Weinzettle believes one of the Army's current force capability gaps is the ability to provide responsive, networked indirect precision fires. Navy CDR John "Snooze" Martins sees the combat power of net centric operations while LCDR Theodore Ferrazano, USNR, showed how a "system of elements" can provide a tipping point capability to shorten the kill chain execution timeline further.

In a luncheon address, the Honorable James Gilmore, the former Virginia governor, and chairman of the Congressional Advisory Commission on Terrorism, WMD, and Domestic Response, offered his insights on the domestic war on terrorism in a luncheon address.

The ever popular Weapons Session, showcased Northrop Grumman's Rick "Wigs" Ludwig who updated the X-47 J-UCAS project, Raytheon's Barry Maxwell who offered the latest on the various Paveway guided weapons, and CAPT David Dunaway, USN, who provided a status report on the JSOW-C.

The Weapons Session continued with an update on the Advanced Anti-Radiation Guided Missile (AARGM) by Navy CDR Darryl Lenhardt. Dual recoil artillery was the topic for William Zepp.

The Effects Session included: Steven Ritacco who discussed the development and use of non-lethal weapons; DTRA's Anthony Pang who summarized activities regarding defeat of hard & deeply buried targets; and, Ben Huguenin who outlined the results of the Precision Target Locator Tomahawk Demonstration.

Classified technical sessions completed the symposium on Thursday, 20 October.

The third day of PSTS-05 started as a SECRET-NOFORN classified session for the initial part of the morning. A new joint methodology for estimating collateral damage was briefed by USAF Captain Nathan Rabe who worked on the methodology with the Force Application Requirements Directorate on the Joint Staff (J-2). It appeared to be a fairly straightforward methodology supported with readily available software.

This paper was followed by a most interesting briefing on the RATTLS tactical weapon, presented by Barry

Brown, the program manager for Lockheed Martin Aeronautical Systems, who tied the system to improving time critical strike.

Regan Burmeister, lead engineer, Targeting/Weaponing Assistance Cell, Applied Research Associates, Inc. discussed defeating hard targets using a response surface map methodology, coupling physics and software to solve a most difficult problem.

Mark Gage, senior manager, Joint & International Requirements, WBB Inc., captivated the audience with a discussion of potential directed energy weapons employment and warfighter requirements.

The classified technical session was capped off by Conrad Mueller, senior engineering fellow, INS/GPS/G&C Integrated Avionics, Honeywell International, who presented a discussion on Precision Terrain-Aided Navigation (PTAN) with Low Cost MEMS INS as an alternative and backup to precise navigation without GPS.

Following a short break on a full schedule, the classified briefings continued with Scott Rodgers, from the Air Force Intelligence Center at Wright Patterson AFB, providing an excellent and comprehensive overview of the current air-to-surface threats in the world today.

Continuing the NATO releasable session, Group Captain Gavin Daffarn, BSc FCMI RAF (Ret), business development manager, Weapons Division, QinetiQ, presented a most interesting process for preparations for successful precision strike, using readily available software to walk through the process.

Thursday's keynote address was given at mid morning by Dale E Klein, assistant secretary of defense (nuclear, chemical and biological defense programs). Addressing

**Precision Strike Association  
would like to thank  
the following 2005  
PSTS Sponsors**

- Raytheon
- Northrop Grumman
- Honeywell
- ATK
- Smiths-Aerospace
- Lockheed Martin
- MBDA
- General Dynamics
- Whitney, Bradley & Brown

See **Wrapup**, Continued on page 5

**Wrapup,** Continued from page 4  
 briefly the overall policy that his department works under and some on the organization. He then talked about the progress his group has made with the prominent concern about weapons of mass destruction (WMD), particularly in the hands of terrorists.

Klein was followed by James A. Tegnalia, director, Defense Threat Reduction Agency (DTRA). He carried the previous discussion further talking about the challenges, efforts and some of the methods to counter the proliferation of WMD.

The final speaker was Army National Guard Brigadier General

Thomas P. Mancino, Oklahoma's assistant adjutant general, who provided an outstanding and captivating success story of the training the Afghan National Army, using two film clips and a presentation dotted with humor. Many attendees felt his brief was the highlight of the conference. ■



Applied Research Associates



The Boeing Company



Lockheed Martin



Marotta Controls, Inc



MBDA



Northrop Grumman



Orbital Sciences Corp.



Raytheon Company



Smiths-Aerospace, Inc.



Ultra Electronics



Whitney, Bradley & Brown

# PSTS 2005 EXHIBITORS





6



9



15



19

- 1 **Dr. Richard T Roca**, Director, JHU/APL
- 2 **David K. Sanders**, Deputy PEO for Strike Weapons and Unmanned Aviation
- 3 **FEATURED SPEAKER: Honorable Philip E. Coyle, III**, Commissioner, 2005 Base Realignment and Closure Commission & Former Director of Operational Test and Evaluation, OSD
- 4 **P. Kevin Peppe**—Deputy Director of Phalanx, Raytheon Co.
- 5 **Jeffrey Sinclair**—Senior Analyst, SAIC
- 6 **TARGETING SESSION: PSA Vice Chairman:** Bill Dalecky, Smiths-Aerospace, **Dr. Alison K. Brown**—President & CEO of NAVSYS Corp., **David A. Silvia**—Tactical Tomahawk WCS ACWG, Naval Undersea Warfare Center, **PSTS Co-Chair: Dr. John Walter**—JHU/APL, **David Toms**—Business Development Director, Mercury Computer Systems' Defense Technologies Group, **PSTS Session Chair: JT Morris**—Whitney, Bradley & Brown, Inc.,
- 7 **TECHNICAL SESSION: Mark D. Gage**—Senior Manager, Joint & Int'l Requirements, WBB Inc., **Barry Brown**—Deputy PM for RATTLS Tactical Weapon System, Lockheed Martin Aeronautical Systems, **Captain Nathan Rabe**, USAF—Chief, Force Application Requirements, Deputy Directorate for Targets Joint Chiefs of Staff (J-2), **PSTS Co-Chair: George McVeigh**—SAIC, **Wes Hawkinson**—Honeywell, **Regan E. Burmeister**—Lead Engineer, Targeting/Weaponing Assistance Cell, Applied Research Associates, Inc.
- 8 **INTERNATIONAL TECHNOLOGY PROGRAMS: Dr. Helmut F. Muthig**—President & CEO of TDW GmbH, **PSTS Session Chair: Alan Pickard**—MBDA, **Colonel James Dendis**, USAF—International Cooperation Regional Manager, Int'l Cooperation Directorate, OUSD(AT&L), **PSA Vice Chairman: Bill Dalecky**, Smiths-Aerospace
- 9 **C4ISR SESSION: Gregory K. Jenkins**—Capability Architect for Capability Integration Directorate, Air Armament Center, Eglin AFB, **John P. Weinzettle**—Director for Precision Engagement, Raytheon Missile Systems, **LCDR Theodore T. Ferrazano**, USNR—Joint Operational Test Bed System Assessment Lead, USJFCOM (J-28), **PSTS Session Chair: John Bigelow**—Director, Advanced Technology, Smiths Aerospace, **Mark Hall**—Mission Solutions Manager, Precision Engagement Strategic Business Area, Raytheon Company, **CDR John K. Martins**, USN—Member of the Advanced Development Group, FA-18 Program Office
- 10 **Honorable James S. Gilmore III**—Chairman, Congressional Advisory Commission on Terrorism, WMD, and Domestic Response & former Governor of Virginia
- 11 **KEYNOTE ADDRESS: Honorable Dale E. Klein**—Assistant to the Secretary of Defense for Nuclear, Chemical & Biological Defense Programs
- 12 **Dr. James A. Tegnella**—Director, Defense Threat Reduction Agency
- 13 **Brigadier General William M. Rajczak**, USAF—Deputy Director for Joint Requirements and Integration Directorate, U.S. Joint Forces Command (J-8)
- 14 **Brigadier General Thomas P. Mancino**, ARNG—Assistant Adjutant General of Oklahoma
- 15 **EFFECTS SESSION: Steven M. Ritacco**—Requirements Center of Excellence Director, Whitney, Bradley & Brown, Inc, **PSTS Session Chair: Suzy Kennedy**—JHU/APL Tomahawk Weapons System Program Mgr., **Maj Mike Lauden**—BLU-122 Flight Commander DASG/RU, **Benjamin A. Huguenin**—Power Projection Systems Dept., JHU/APL, **Anthony L. Pang**—Test & Demo PM, HDBT Branch, Technology Development Directorate, Defense Threat Reduction Agency
- 16 **Pre-Eng Session: Mike Knollmann**—ADUSD (Joint & Coalition Operations Support) Advanced Systems & Concepts, OUSD(AT&L), **PSTS Co-Chair: Dr. John Walter**—JHU/APL, **Dr. Michael S. Richman**—Associate Director, Aerospace Technology ODUSD (S&T), **PSTS Co-Chair: Harvey Dahljelm**—Director, Air Force & Space Programs, ITT Industries
- 17 **Scott Rodgers**—Air Force Intelligence Center, Wright Patterson Air Force Base, **Group Captain Gavin Daffarn BSc FCMI RAF (Ret)**, Business Development Manager, Weapons Division, QinetiQ, **PSTS Session Chair: George McVeigh**—SAIC
- 18 **John B. Tuley**—Office for Targeting, National Geospatial-Intelligence Agency (NGA)
- 19 **WEAPONS SESSION: Rick Ludwig**—Manager, Business Strategy & Development, J-UCAS Program, Northrop Grumman, **CDR Darryl J. Lenhardt**, USN—Developmental Tester & Military Lead & Class desk for ARM PO, China Lake, NAVAIR Warfare Center Weapons Division, **Barry Maxwell**—Manager, Paveway Operations and Training, Raytheon Missile Systems, **William T. Zepp**—Senior Artillery Engineer at US Army ARDEC, Picatinny Arsenal, **Captain David Dunaway**—Program Manager for Precision Strike Weapons, PMA-201, **Session Chair: Captain Scott Swift**, USN— OUSD(AT&L)/Defense Systems, Air Warfare, **Lynn Seal**—EDO

# 1<sup>st</sup> EMS Troops Build JDAMs for F/A-22 Raptors

When 1,000 pounds of steel and concrete fell a mile and smashed through the back of a truck, it ushered in a new era for the 1st Fighter Wing — the return of air-to-ground combat. That mission ended in 1975 for the wing.

Getting the Joint Direct Attack Munition (JDAM) ready for the mission was no easy task. It started a week before Langley AFB's F/A-22 Raptors deployed to Hill AFB, Utah.

The 1st Equipment Maintenance Squadron deployed 10 ammunition troops to aid the 27th Fighter

Squadron's deployment. The EMS members left earlier than the others did with a mission to construct 1,000-pound, inert JDAMs that would be dropped by F/A-22 pilots.

"It's exactly what a lot of us have been waiting for," said Tech. Sgt. James Peddicord, the 1st EMS assistant non-commissioned officer in charge of munitions control. "The 1st FW is finally getting back into the air-to-ground stuff."

The 1,000-pound JDAM is not only new to the Raptor; it is new to the Air Force. The Navy's F/A-18

Hornet uses the weapon, but the Air Force has only used the 500- and 2,000-pound variants. The F/A-22 is the first Air Force aircraft to use the 1,000-pound model.

"The JDAM makes a hole so big it takes a week to fill it in," said Earl Peet from the JDAM Joint Program Office, which worked with the 86th Fighter Weapons Squadron to gather data on the behavior of the JDAM.

During the exercise, the JDAMs dropped by the 27th FS were filled with concrete rather than the usual 496 pounds of explosives. ■

## Raptor Drops First Bomb

"Weapon's away." Those two words from USAF Lt. Col. Jim Hecker put the 27th Fighter Squadron into the record books.



F/A-22 Raptors on the prowl.

The squadron commander dropped the first bomb — a 1,000-pound global positioning system-guided joint direct attack munition (JDAM)—from an F/A-22 Raptor Oct. 18 at Hill AFB, Utah. Eight more bombs followed shortly.

On the first day of bombing, five Raptors took flight loaded with two

of the bombs. Each sortie led to direct hits on targets, despite this being the first time many of the pilots had ever completed an air-to-ground mission in the next-generation stealth fighter. It was the first-ever deployment for the Raptors, based at Langley AFB, VA.

Though each bomb nailed its target, one weapon did not release from Raptor 43. The airplane's stores management system, which enables the pilot to release the weapon, received an error message from the bomb's internal telemetry test package, and automatically aborted the drop — as designed.

The Oct. 19 bomb drops were as successful. Each bomb released and reached

their surveyed impact points.

One drop was so accurate it made the truck-target bounce off the ground.

"These concrete-filled inert bombs don't carry any explosive material," said Chris Robinson, range operations flight chief. "But when you're this accurate, you don't need the explosion to see the kill." ■



Adding 'teeth' to a Raptor



## Troops Look Up to Compass Call

Operation Enduring Freedom is as much about electrons as about bullets since providing an umbrella of electronic protection over ground forces has become the role of EC-130H Compass Call aircraft in Afghanistan.

Since November 2004, the 41st Expeditionary Electronic Combat Squadron has been providing electronic close air support. Offering this type of direct electronic attack support to ground forces is a new role for the airframe.

The Compass Call essentially provides an electronic shield around ground forces. The shield gives friendly forces freedom to do their job, while denying the enemy the ability to use many of their technological assets. It is a mission that has garnered customer respect.

“I can tell you soldiers rest easier knowing the EC-130s are flying overhead,” said Brig. Gen. James Champion, Combined Joint Task Force-76 deputy commander for operations. “From the ground forces’ perspective, it gives us added protection from a number of threats and it also keeps the enemy from doing what he wants to do. The result is

saved lives. You can’t put a price on that.”

The EC-130s have been continuously deployed in Afghanistan for more than 18 months.

“The drive to accomplish the mission has never slackened or wavered,” Colonel Worley said. “It’s an honor to be in command of such a group of warriors.” ■



BAGRAM AB, Afghanistan — An EC-130H Compass Call start its engines before a combat sortie.

## LOCASS on Steroids

Lockheed Martin has unveiled a high performance attack cruise missile that hails from the USAF’s Low Coast Autonomous Attack System (LOCASS) Advanced Technology Demonstration (ATD) that was recently wrapped up.

The Surveilling Miniature Attack Cruise Missile (SMACM) is a long range, high endurance, expendable weapon able to attack moving or stationary targets. A version without a warhead would operate as a recoverable unmanned aerial vehicle (UAV) with a reconnaissance role.

The TDI J45G-powered SMACM, which has a range of over 200 miles, weighs 142 pounds and is about six feet long. LOCASS, on the other hand, is a three-foot long, 86 pound weapon with half the range.

SMACM can be launched from outside the range of enemy air defenses from the F/A-22 Raptor fighter and the F-35 Joint Strike fighter. It incorporates a proven turbojet engine, two-way data link, multimode warhead and an all-weather seeker. It is similar to the size of a Small Diameter Bomb, and compatible with the BRU-61A munition rack.

SMACM offers a choice of two seekers. The first, a Tri-Mode seeker, is a combination of a millimeter wave (MMW) RF radar, an imaging infrared (IIR), and a semi-active laser (SAL). These three modes provide an all-weather capability. When seeker data is fused, it can categorize the target.

The second seeker option has a MMW, an active LADAR, and a SAL. This combination of sensors is called a Tri-Star seeker. When coupled with automatic target recognition algorithms, it provides a high probability combat ID of tactical vehicles with extremely low false alarm rates. The 3-D images give the LADAR the capability to identify targets in cluttered environments.

Lockheed Martin officials say prototypes can be available for USAF/USN flight testing eight months after the firm finds the \$4 million needed to advance the SMACM project. They call the SMACM “a credible weapon that will do the job well, which is to kill moving or stationary targets, and do it affordably.” ■

## News Briefs

### Airmen Test Small Diameter Bomb

Gunfighters with the 366th Maintenance Group at Mountain Home AFB, Idaho, put their skills to use recently when they tested the new Small Diameter Bomb (SDB) system.

The GBU-39 SDB is a low-cost, precision-strike weapon system that will soon be used by fighters, bombers and unmanned combat air vehicles. The weapon is currently being tested on F-15E Strike Eagles.



Mountain Home AFB, Idaho — A load crew airman uses a jammer to attach a pair of GBU-39 bombs to an F-15E Strike Eagle.

Mountain Home is one of several Air Combat Command and Air National Guard bases receiving training for the new munition. The 250-pound bomb is half the weight of the current precision bombs used on F-15Es. Its small size allows four bombs to be attached to each of the five weapon stations on the aircraft, said Dave Ward of the Air Armament Center at Eglin AFB, FL. “We can now send one aircraft to do the job of four. So increased load outputs are the primary advantage of the new weapon system.”

Another advantage of the bomb is reduced collateral damage. The “smarter” bomb will be able to maximize damage to enemy targets.

Ward’s team initially trained the munitions system technicians, and then armament craftsmen. The maintainers were able to become familiar with both the design of the weapon and the four-place smart

carriage system that it attaches to on the F-15E. After training, a full test of the bomb was completed.

Maintainers said they like the new system because it is more user-friendly than current weapon inventories.

## PEOPLE

**Michael Wynne** was confirmed 28 October as secretary of the air force. NRO Director **Donald M. Kerr** takes on the added duties of secretary of the air force (intelligence space technology).

USAF Gen. **Lance Smith** has taken command of U.S. Joint Forces Command and USAF Gen. **Norton A. Schwartz** has taken reins of U.S. Transportation Command. Meanwhile, USAF Gen. **Duncan J. McNabb** has become commander of Air Mobility Command.

USAF Lt. Gen. **Daniel P. Leaf** becomes deputy commander, U.S. Pacific Command. Army Maj. Gen. **Michael D. Maples** is nominated for appointment to the grade of lieutenant general and assignment as director, Defense Intelligence Agency. USAF Lt. Gen. **John F. Regni** has been nominated for assignment as superintendent, USAF Academy. USAF Maj. Gen. (selectee) **Jeffrey R. Riemer**, has been named commander, Air Armament Center and Air Force PEO for Weapons, Air Force Materiel Command, Eglin AFB, FL.

Retired Navy Vice Adm. **Arthur K. Cebrowski**, who until recently served as director of force transformation, passed away Nov. 12 at age 63 after a long illness.

KittyHawk Partners mourns the loss of **Greg Kyprios**, founder, and **Luis Marina**, managing consultant, to a private aircraft accident on October 22. This is a tragic loss not only to KittyHawk, but also to the aerospace industry. They will be dearly missed. KittyHawk Partners is a proud sponsor of PSA and provides time-critical decision support to the aerospace/defense industry out of Steamboat Springs, CO.

A retirement ceremony was held on 4 November at the Marine Barracks for USMC Lieutenant General **Michael A. Hough**, Deputy Commandant for Aviation. It included a magnificent musical tribute and remarks by Commandant General Michael W. Hagee. LtGen Hough thanked the audience for a priceless journey. He stated: “I have been honored and privileged to serve my nation for 42 years, working with the finest men and women on this earth.” LtGen Hough has been a true friend to PSA, and he has delighted the precision strike community on numerous occasions with his fine intellect on precision strike systems and his wonderful sense of humor. Take care of yourself, dear friend.

PSA is proud to pay tribute to USAF General **Richard B. Myers** who retired as the Chairman of the Joint Chiefs of Staff in September. Over the years, he has been a strong advocate for precision strike systems and a tremendous supporter of the PSA.

Gen. Myers’ Armed Forces Farewell Tribute honored one of America’s finest ambassadors who led our great nation’s armed forces in a fight to protect America’s freedoms and its values.

President George Bush presented Gen. Myers the Presidential Medal of Freedom. “Dick Myers was a source of wisdom, clear analysis and broad vision,” the president said. “As chairman, he helped design a thorough and innovative strategy for victory in the war on terror.” Gen. Myers left the service with “four stars on his shoulder and his place in American history secure,” the president added.

Gen. Myers, we are deeply honored and proud to call you our friend. The precision strike community salutes you.

The SDB is expected to become fully operational in 2007. Air Force officials plan to initially field the bomb on the F-15E and later on the F/A-22 Raptor, F-35 Joint Strike Fighter, and eventually every other weapon platform. Initial estimates are that the Air Force will procure at least 24,000 weapons and 2,000 carriages. ■

### AFRL Focus on Moving Ground Targets

The Air Force Research Laboratory (AFRL) has awarded two contracts, with a combined value in excess of \$5 million, for research to improve engagement of moving ground targets on the battlefield.

The two-year contracts are funded by the Defense Advanced Research Projects Agency (DARPA) in support of its Dynamic Tactical Targeting (DTT) program.

BAE Systems Advanced Information of Burlington, MA, was awarded a \$3.3 million contract: "All-Source Track and Identify Fuser (ATIF) for DDT Fusion." A \$2 million contract, "DTT Target Motion Prediction," was awarded to Lockheed Martin Corp. of Fort Worth, TX.

"BAE researchers will be developing a fusion algorithm that will utilize multiple data sources to actually detect, track and identify various moving ground targets and provide that information to the commander," said David D. Ferris Jr., program manager with the AFRL Information Directorate.

"Lockheed Martin engineers will focus on developing approaches to predict where a target is likely to go, so that you know where to start looking for it with a variety of sensors," said Mr. Ferris.

DARPA's Information Exploitation Office is sponsoring research under the DTT program.

DTT is intended to support tactical combat by detecting, identifying, and tracking mobile ground targets. DTT will provide key enabling technologies to maintain wide area coverage while locating and identifying regions / targets of interest, and to maintain track of critical targets for extended periods. ■

### JASSM Goes on B-1B Lancer

The 337th Test and Evaluation Squadron at Dyess AFB, TX, set a number of "firsts" recently for the B-1B Lancer.

Those 'firsts' were demonstrated over the White Sands Missile Range, NM, when two Lancers from Dyess auto-released a Lockheed Martin Joint Air-to-Surface Standoff Missile (JASSM) as well as three dissimilar weapons from the same launcher.

The 7th Bomb Wing became the first unit to achieve initial operational capability of the JASSM cruise missile. "This is a great step forward for the B-1 community and represents a tremendous leap in capability," said Lt. Col. Pete VanDeusen, 337th TES commander.

The AGM-158A, is an air-to-surface, single warhead self-propelled missile. The July 25 launch continued the bomber's perfect record for JASSM launches when it struck its target after traveling more than 170 nautical miles.

In addition to carrying one JASSM each, both B-1Bs used in



Dyess AFB, TX -Loading JASSM on a USAF B-1B Lancer bomber

## CALENDAR OF EVENTS

### Winter Roundtable

**Date:** January 25, 2006

**Theme:** *Precision Requirements—New policies Creating Innovative Opportunities*

**Location:** Marriott Crystal City – Crystal Forum, Arlington, VA

Sponsored by Raytheon Company

### Annual Programs Review\*

**Date:** April 18-19, 2006

**Theme:** *Role of Precision Engagement in Asymmetric Warfare*

**Location:** Marriott Crystal City – Potomac Ballroom, Arlington, VA

### PRECISION STRIKE PEO FORUM\*

**Date:** July 25-26, 2006

**Theme:** TBD

**Location:** Marriott San Diego Hotel & Marina, San Diego, CA

### PRECISION STRIKE TECHNOLOGY SYMPOSIUM\*

**Date:** October 17-19, 2006

**Theme:** TBD

**Location:** Johns Hopkins University-Applied Physics Laboratory, Laurel, Md.

For more information on these events, check out our website: [www.precisionstrike.org](http://www.precisionstrike.org).

\*Sponsorships and Exhibit Space Available

the White Sands demonstration carried 28 MK-82 500-pound free-fall, general purpose "dumb" bombs, one GBU-38 500-pound GPS-guided Joint Direct Attack Munition, one GBU-31 2,000-pound GPS-guided JDAM, and an MK-84 2,000-pound general purpose "dumb" bomb.

Prior to the White Sands demonstration, the B-1B and 337th TES accomplished another first when a

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

**News Briefs,** Continued from page 11

Lancer over the Gulf of Mexico dropped guided cluster weapons on a moving maritime target.

The flight was the culmination of a six-month test to evaluate the maritime role of an anti-tank weapon, the Cluster Bomb Unit-105 wind corrected munitions dispenser. The test also evaluated the B-1's use of its moving target radar mode to find, track and successfully target three remotely controlled motor boats on three separate runs prior to releasing two weapons in a single pass. ■

**QinetiQ and L-3 in Deal**

A Memorandum of Understanding (MoU) has been signed between L-3 Communications' subsidiary

Integrated Systems, QinetiQ and QinetiQ Inc, to collaborate on technology development around Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) and ISR programs of mutual interest. ■

**Aerojet Wins TOW Warhead Work**

Aerojet has been awarded a contract with Raytheon Missile Systems to assemble, qualify and produce TOW bunker buster warheads. Aerojet's contract is valued at more than \$8 million.

The Tube-launched, Optically Tracked, Wire-guided (TOW) Bunker Buster missile is intended to defeat urban structures and earthen bunkers on the battlefield. Aerojet's

first delivery of the warhead is planned for September of 2006. Explosive loading will be accomplished at Aerojet's Camden, AK, facility while final assembly will be conducted at the company's Socorro, NM site. ■

**An Effects-Based Operations Planning and Analysis Capability**

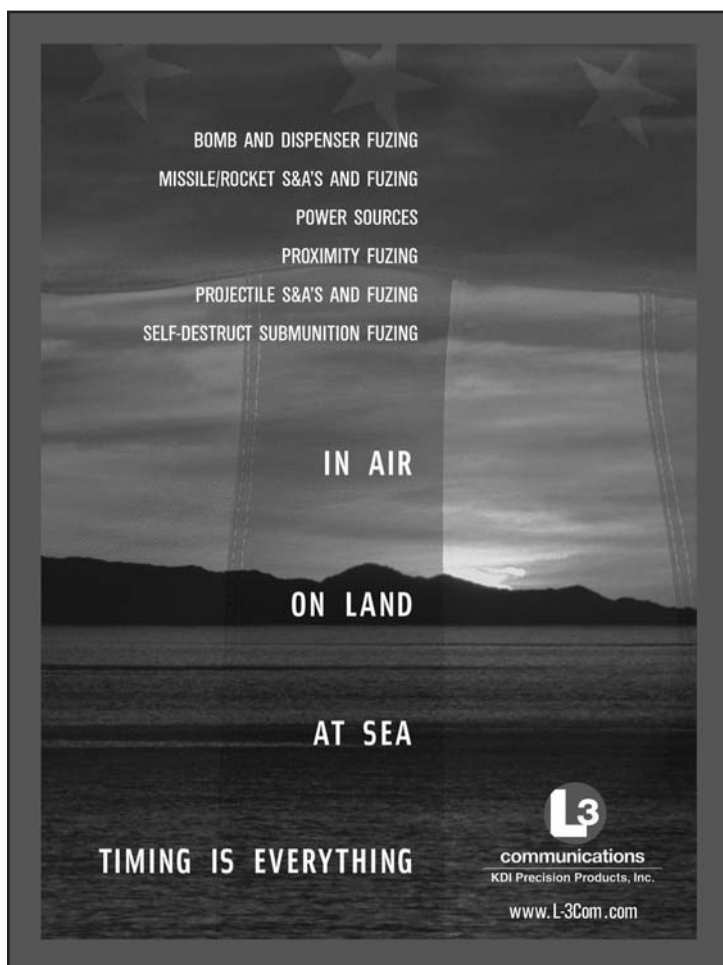
The Defense Advanced Research Projects Agency (DARPA) recently awarded Lockheed Martin \$3.5 million to develop a new tool that will allow commanders to better understand and evaluate options as they plan military operations.

Called the Commanders Planning Reifier to Explore Hypothetical Action/Effects in N-Domains, or COMPREHEND, the new tool will enable commanders to develop Effect-Based Operations (EBO) plans that are rooted in a more thorough understanding of achieving desired effects and anticipating unintended consequences. Such a capability is important because – as warfighters transition from target-to effects-based assessments – the complexity of planning increases and the cumulative, relational effects that ripple through an event become more important.

COMPREHEND is part of DARPA's Integrated Battle Command program. The agency's award to Lockheed Martin is for an initial nine-month phase of a 31-month program. ■

**Multi-Weapon Netted Battlefield Demo**

Raytheon has successfully demonstrated how battle systems — showing future force capabilities using current and near term systems — can work together to benefit the warfighter.



PSA Corporate Member since 4/2005

The demonstration proved that precision engagements in the net-enabled battle space of the future are available to the warfighter today.

The Tucson demonstration illustrated the increased capabilities available by linking three different strike weapons — Tomahawk Block IV cruise missile, Joint Standoff Weapon and Maverick Lock On After Launch (LOAL) — with the AFATDS (the Advanced Field Artillery Tactical Data System), command and control (C2) system and the Integrated Real-time Tactical Targeting System.

Raytheon demonstrated the capability to integrate and exercise the entire effects chain from sensors (finding the target) to C2 (deciding to attack the target) to final effects (attack and destruction of the target), including results verification using battle damage assessment images. ■

### SDBs Dropped in Final Development Test

Four Boeing Small Diameter Bombs (SDB) were released on Aug. 25 from two separate carriages on a USAF F-15E, testing the full capabilities of the SDB guided-weapon system.

The test at Eglin AFB, FL, was conducted at an altitude of 15,000 feet, approximately 20 nautical miles from four separate targets. After receiving target coordinates, the F-15E crew released the four bombs from two separate BRU-61 carriages.

Three of the bombs targeted military trucks on the ground, while the fourth targeted a 40-ft. wall of shipping containers, and each SDB hit its intended target. In addition to accuracy, the test was designed to further demonstrate the optimal trajectory to the target and the terminal dive angle, heading and velocity



SDB Away!

of the weapons.

With the final planned free-flight test in the development test program completed, the SDB team is undergoing operational testing.

The all-weather SDB weapon system includes four bombs and is compatible with every U.S. fighter and bomber aircraft. It has a standoff range of 60 nautical miles. At 71 inches long, this 250-pound class weapon quadruples the number of weapons on each aircraft can carry. The system will first be deployed on the Boeing F-15E Strike Eagle in 2006. ■

### Shipboard Protection System for Navy

Northrop Grumman is developing for the U.S. Navy a Shipboard Protection System, intended to enable naval vessels to counter asymmetric terrorist threats while moored to a pier, at anchor or during restricted maneuvering.

Under the \$6 million contract, Northrop Grumman will provide surface combatants, amphibious ships and aircraft carriers with a fully integrated and seamless sensor, analysis and response system. The system will provide constant 360 degree situational-awareness and engagement capability to counter such threats, with no increase in manning.

“The Shipboard Protection System represents an important step forward in our anti-terrorism/force-protection program and lays the foundation for follow-on capabili-

ties,” said Rear Adm. William E. Landay, III, program executive officer for Littoral and Mine Warfare, NAVSEA. “It’s about adding technology and automation to increase the range, flexibility and time a ship’s crew has in which to react to potential threats.”

During the first phase of the system development and demonstration effort, to be completed next March, Northrop Grumman will provide an integrated surface-surveillance system and non-lethal weapons and devices. The surface-surveillance system will incorporate electro-optical and infrared sensors, and radar into a common tactical-surveillance system.

The next phase of the Shipboard Protection System program, to be implemented in fiscal year 2007, will incorporate swimmer- and diver-detection capabilities, with an unmanned surface-vehicle capability to be added in the future. Additional future plans may include adding non-lethal technologies, providing capability to deal with air threats, and developing predictive-awareness tools. ■

### Wynne: USAF Needs More Jointness

Air Force Secretary Michael G. Wynne said as the Air Force evolves to a new global war on terrorism era he wants it to participate in more joint operations. The Air Force is operating “as a joint service, right now – today,” the secretary said. But he said the service needs to foster a more joint approach. Instead of “waiting to be joint,” Mr. Wynne wants the Air Force to be “aggressively pursuing joint.”

Situational awareness is a given. Persistent situational awareness is always being aware of what is going on both inside and outside the battle

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

**News Briefs,** Continued from page 13  
space, he said. That includes everything from keeping the lines of communication open to the warfighter, to knowing at all times the state of maintenance on weapons systems, to knowing how much money is left in the budget. ■

### **DARPA/Rockwell Collins Successfully Demo TTNT**

The Defense Advanced Research Projects Agency (DARPA), Air Force Research Laboratory (AFRL) and Rockwell Collins have successfully demonstrated Tactical Targeting Network Technology (TTNT) in operational tactical aircraft.

The demonstration and testing of TTNT Phase 3 terminals took place Sept. 12-30 at the Naval Air Weapons Station in China Lake, CA. Fifteen prototype Phase 3 terminals were used in a multi-platform demonstration to validate the TTNT requirements in a flight demonstration using tactical combat aircraft.

TTNT is the high throughput, low-latency solution for addressing the sensor to shooter link and providing other real-time information. TTNT is an Internet Protocol (IP) based, high-speed, dynamic ad hoc network designed to enable the U.S. military to quickly target moving and time-critical targets. TTNT enables net-centric sensor technologies to correlate information among multiple platforms, precisely locating time-critical targets. ■

### **Lockheed Martin Wins \$65M Paveway II Dual Mode LGB Contract**

Lockheed Martin has been selected to develop, qualify and produce the Paveway II Dual Mode Laser Guided Bomb (DMLGB), the next-

generation precision-guided weapon system for the U.S. Navy.

The contract calls for a 2006 procurement worth \$65 million and a five-year procurement with a potential value of \$266 million. The program will upgrade the Navy's inventory of 5,000 legacy Paveway II kits by replacing an existing Computer Control Group (CCG) system with an Inertial Navigation System/Global Positioning System (INS/GPS), an all-weather guidance system that provides dual-mode guidance capability.

"The DMLGB weapon provides increased flexibility to warfighters by combining the proven technology of laser terminal guidance with all-weather fire-and-forget capabilities," said U.S. Navy Capt. Dave Dunaway, program manager, PMA-201. ■

### **Autonomous System for Urban Battle Zones**

Northrop Grumman has successfully demonstrated a system that autonomously controls low-flying unmanned aerial vehicles (UAVs) to deliver real-time surveillance data to U.S. military forces in urban battle zones.

The flight exercise showed that individual warfighters could receive video surveillance information about enemy positions on handheld computers, making their efforts safer and more effective.

Northrop Grumman is leading the Pentagon's "HURT" program under an \$11.6 million contract awarded in January 2005. The effort is funded and managed by the Defense Advanced Research Projects Agency (DARPA) with the Air Force Research Lab serving as technical and contracting agent. HURT stands for heterogeneous urban RSTA (reconnaissance, surveillance and target acquisition) team.

Currently, military forces in urban warfare situations have no direct access to surveillance data, nor can they control the high-altitude aircraft and satellites that collect it. In addition, high-altitude platforms are more limited in providing information with the detail and timeliness required in a rapidly changing urban combat zone. ■

### **Hellfire Thermobaric Warhead Approved for Production**

The U.S. Government has approved the thermobaric Hellfire (AGM-114N) missile for an accelerated full-rate production run.

A government-industry team conducted a successful Production Readiness Review (PRR) of the metal augmented charge (MAC), also known as a thermobaric warhead, clearing the way for production of the AGM-114N version of the precision-strike semi-active laser-guided Hellfire II missile.

The MAC warhead will be manufactured at the Alliant Techsystems facility in Rocket Center, WV, and shipped to Lockheed Martin for integration with the missile.

The U.S. Army has called for the production of 900 AGM-114N MAC missiles; 180 AGM-114K missiles, the high-explosive anti-tank (HEAT) version; and conversion of 100 HEAT missiles to the MAC warhead configuration. ■

**Congratulations to  
the 2006 Recipients  
of the  
William J. Perry Award  
Tactical Tomahawk Team**

Mark your calendar for **WEDNESDAY, 25 JANUARY 2006**

**PRECISION STRIKE ASSOCIATION** presents

## **WINTER ROUNDTABLE 2006**

CRYSTAL FORUM - MARRIOTT CRYSTAL CITY  
Arlington, VA

### *Precision Requirements-New Policies Creating Innovative Opportunities*

Gain valuable insight into how the precision strike community should plan to address and meet the future key security challenges facing the United States

**\*\*\*Highlight of the Day\*\*\***

*Presentation of the William J. Perry Award to the Tactical Tomahawk Team*

Key topics to be addressed by other confirmed & invited speakers:

- **Six Decades of Guided Weapons:** *Barry Watts*—Senior Fellow, Center for Strategic & Budgetary Assessments (Confirmed)
- **Congressional Perspective:** *Representative Mac Thornberry (R-TX)* (Invited)
- **Overview of the Quadrennial Defense Review:** *Speaker TBD*—Office of the Under Secretary of Defense for Policy (Invited)
- **National Military Strategy:** *Colonel Bradley May, USA*—Strategy Division Chief, J-5 Strategic Plans and Policy Directorate, The Joint Staff (Confirmed)
- **Chairman's Process for Integrating Requirements and Joint Capability Areas Development:** *Vice Admiral Evan M. Chanik, USN*—Director for Force Structure, Resources and Assessment (J-8), The Joint Staff (Confirmed)
- **Distinguished Remarks—Award Ceremony:** *Honorable William J. Perry*—Former Secretary of Defense (Confirmed)
- **Congressional Panel-Priorities and Issues:** *Select SASC, SAC, HASC, & HAC Professional Staff Members*  
**Moderator:** *Dick Rumpf*—President, Rumpf Associates International (Confirmed)
- **Precision Strike to Precision Effects:** *Terry J. Pudas*—Acting Director, Force Transformation, OSD (Confirmed)
- **Joint Command and Control Criticality to Precision Strike:** *Major General Charles N. Simpson, USAF*—Director for Joint Requirements & Integration Directorate (J-8), USJFCOM (Confirmed)
- **New S&T Futures for Navy-Marine Corps—Critical Capabilities for 2020:** *Dr. Michael B. Deitchman*—Head, Air Warfare & Weapons Department, Office of Naval Research (Confirmed)
- **Unmanned Aircraft Systems (UAS) Roadmap—Precision Strike Support:** *Dyke Weatherington*—Deputy for Unmanned Aerial Vehicles Planning Task Force, OSD (Confirmed)

**Roundtable 2005**, Cont. from page 1 awards), Navy Commendation Medals with Combat “V”.

Please join Vice Admiral Chanik and our other outstanding and dynamic speakers from the Congress, the Office of the Secretary of Defense, Combatant Commands, the Joint Staff, Military Departments,

and Defense Think Tanks as they highlight the way ahead for meeting key national security challenges.

Check above for a complete listing of topics and confirmed/invited speakers for Winter Roundtable 2006.

Don't forget that you are in for a special treat when Dr. Bill Perry presents the William J. Perry Award to the Tactical Tomahawk Team. ■

## **PRECISION STRIKE ASSOCIATION CORPORATE MEMBERS**

### **GOLD**

Aerojet Corporation  
Alliant Techsystems  
Applied Research Associates  
BAE Systems Mission Solutions  
Ball Aerospace & Technologies  
Barr Associates, Inc.  
EDO Corporation  
General Dynamics C4 Systems  
General Dynamics OTS  
Goodrich Aerospace  
Honeywell International  
Kaman Aerospace  
L-3 Communications Corporation  
L-3 Government Services, Inc.  
L-3/KDI Precision Products, Inc  
Lockheed Martin Corporation  
MBDA  
Northrop Grumman Corporation  
Orbital Sciences Corp.  
QinetiQ  
Raytheon Company  
Rockwell Collins  
Science Applications Int'l Corporation  
Smiths-Aerospace  
Southeastern Computer Consultants  
Taurus Systems  
Teledyne Continental Motors  
Textron Inc.  
The Boeing Company  
Whitney, Bradley & Brown, Inc.

### **SILVER**

Burdeshaw Associates, LTD  
CarterCopters, LLC  
Chugach Support Services  
Data Fusion Corp  
Kittyhawk Partnership, Ltd.  
Marotta Controls, Inc.  
Software Engineering Associates, Inc.  
Ultra Electronics

### **BRONZE**

BAE Systems RO Defense  
Raytheon Technical Services  
Science Applications Int'l Corporation

# Membership Application – Precision Strike Association

I hereby apply for membership in the Precision Strike Association. My understanding is this entitles me to invitations to appropriate Association activities, the bimonthly 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.*
- Silver Sponsor \$300 annual dues (annual sales less than \$10M): includes 10 individual memberships  
*Include \$10 for each individual membership requiring mailing outside of North America.*
- Bronze Sponsor \$100 annual dues (only available to Gold Sponsor members). This allows operating units, field offices, or divisions of large corporations to add 5 additional members to their list. There is no limit on Bronze sponsorships.  
*Include \$10 for each individual membership requiring mailing outside of North America.*

## Individual Membership

- \*One Year \$40    \*Two Years \$75   *Include \$10 for each individual membership requiring mailing outside of North America.*

Name		Affiliation	
Address			
City,		State,	Zip Code
Telephone		Fax	E-mail

Is this a renewal  or a new membership  ?

**Payment:**    Check (Payable to Precision Strike Association)  
 Visa    M/C    Amex

Card #		Exp. Date	
Signature		Date	

**Please Mail to:**  
Precision Strike Association  
2111 Wilson Blvd - Suite 400  
Arlington, VA 22201-3061  
703-247-2590 / Fax 703-527-5094  
E-mail: [info@precisionstrike.org](mailto:info@precisionstrike.org)  
Website: [www.precisionstrike.org](http://www.precisionstrike.org)



## Precision Strike Association

2111 Wilson Blvd - Suite 400  
Arlington, VA 22201-3061

**PRECISION STRIKE  
ASSOCIATION**  
Affiliate, National Defense  
Industrial Association

PRSR STD  
U.S. Postage  
**PAID**  
Permit #20  
Leonardtown, MD  
20650