



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

2nd Quarter  
2007  
Vol.20, No.2

**"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.*

## USAF Maj. Gen. Mike Hostage and Al Resnick to Speak at Summer Forum

The Precision Strike Association's critically acclaimed Summer Forum will be held this year on 10-11 July at the Virginia Beach Resort Hotel, Virginia Beach, VA. This event will again feature outstanding speakers who will discuss critical aspects of policy and execution relating to all portions of the kill chain. Take advantage of this opportunity to combine both business and pleasure.

This year's theme *Joint Perspectives on Precision Engagement* reminds us that winning the war on terrorism mandates that the military services work together in a fully integrated, unified way. Our featured speakers for this exceptional event include a number of outstanding career professionals, including very senior career civilians and a distinguished USAF general officer.

Our keynote speaker for the first day is Allan M. Resnick, the Director for Capabilities Development & Assessments at the Army Capabilities Integration Center (ARCIC), Training and Doctrine Command, Fort Monroe, VA. He is responsible for TRADOC plans, policies, procedures, and programs for Capabilities Developments and requirements-related functions. He provides senior level representation to Headquarters, Department of the Army, external agencies, and industry. Resnick

will provide an overview of Army precision strike doctrine and future precision weapons programs.

USAF Maj. Gen. Mike Hostage, our second day keynote speaker, is the U.S. Joint Forces Command's Director for Joint Capability Development (J8) and serves as the lead joint integrator for all of DoD's uniformed components. He works with all combatant commanders, The Joint Staff, the U.S. military services, other Federal departments and agencies to combine all of the military's capabilities into a single focused effort –

thereby connecting current capabilities to future concepts. He will discuss the joint perspective on precision engagement.

You are urged to attend this outstanding event and also take advantage of one of Virginia's premier vacation spots. See page 15 for additional information regarding PSA's Summer Forum. ■



Al Resnick



USAF Maj. Gen. Mike Hostage

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## Chairman's Column

**T**he Precision Strike Association (PSA) Executive Committee and the Board of Directors

have been grappling with a topic and we need your help.

Specifically, we believe intuitively that as PSA strives to broaden our focus to all aspects of the kill chain—Find, Fix, Track, Target, Attack, and Assess—there are portions of government and industry we are missing.

By that I mean the number of entities involved in the conduct of an efficient and effective precision engagement operation is growing. As our fielded forces get better at operating in the information domain, precision engagement missions are rapidly changing. To make an oversimplified example, in the potential linear battlefield of the past—let's say the Fulda Gap of 1975—our strike capability from fixed-wing aircraft involved either close air support or battlefield air interdiction. In most cases the front end of the kill chain involved a black and white photo or a radio report back from someone using mark-one, mod-zero eyeballs. How times have changed!

Now information flows from machine to machine, or at least the vision of our warfighters certainly entails that. The ability to turn data into information brings a whole new set of potential players into the kill chain process. Not only the classic Intelligence, Surveillance and Reconnaissance (ISR) specialists with fancier sensors, but businesses in the commercial world where


information dominance is frequently critical to survival and success.

The challenge for PSA is to keep pace with these phenomena by ensuring we have the new capabilities and concepts captured in our membership, both government and industry.

We would like to hear from you about organizations and businesses that need to join the PSA family. If you are from a big organization, there may be other portions of it that don't know about PSA but are becoming involved in the kill chain. If you are from a small business, you may know of others that PSA should have as members.

To be certain, our goal is not to grow membership for the sake of numbers, but to increasingly grow our professional expertise about precision engagement operations and all that entails. That's how we provide better value to the government and industry team.

Please let PSA know of any such candidate members that can be brought on board, or suggest to them that they contact us directly at [www.precisionstrike.org](http://www.precisionstrike.org)



Bill Dalecky  
Chairman of the Board  
Precision Strike Association

# Annual Programs Review Roundup

The Precision Strike Association (PSA) held its 2007 Annual Programs Review (APR) on 24-25 April at Waterford Receptions, Springfield, VA. This year's APR considered *Precision Engagement—Adapting Technology to Meet Emerging Warfighter Needs*. Leading off the first day of the APR was USAF Brig.



Brig. Gen.  
Gregory A. Feest USAF

Gen. Gregory A. Feest, Deputy Director for Force Application, J-8 Force Structure, Resources & Assessment Directorate, The Joint Staff, who set the objectives for the annual PSA event. He outlined how the military leadership and industry partners are working to meet the needs of the warfighter today and where we need to go in the future.

“Over the next two days,” Feest said, “you will receive presentations on precision strike, precision attack, joint deep strike systems, sea and land strike systems as well as several briefings on the acquisition process.”

Feest said “Desert Storm brought into our living rooms video footage of the first major use of precision weapons. But we were actually limited in our ability to deliver these modern weapons. A significant number of aircraft lacked laser designation capability and none of our aircraft could deliver precision weapons through clouds. In fact, the vast majority of weapons dropped were dumb bombs,” he noted.

In contrast, today's Joint Direct Attack Munition (JDAM) “is truly an all-weather attack weapon that holds fixed targets at risk 24-7. Operations Iraqi Freedom and Enduring Freedom show that precision guided munitions are now the rule rather than the exception. Gone are the days that dumb bombs and cluster munitions perform the lion's share of our weapons requirements,” he added.

Feest believes unmanned air, ground and underwater vehicles “will continue to be a growing force component” and that GPS/INS is required for rockets, artillery shells and naval gunfire rounds. “Tri-mode seekers are being developed that one day will make all moving targets as vulnerable as JDAM has made fixed targets. And we must continue to develop the kinetic and non-kinetic means to produce both lethal and non-lethal effects,” he added.

“Technology has been critical to our recent military successes... We must continue to enable and support the

technology that will keep our military the pre-eminent fighting force in the world,” Feest said.

Attendees were then treated to a challenging keynote address from Lt. Gen. Stephen Speakes, USA, U.S. Army Deputy Chief of Staff, G-8 who discussed where the Army is evolving as regards the joint battlefield and joint concepts for precision strike. He said the Army is being transformed into a modular force with Future Combat Systems (FCS) being ‘spun out’ incrementally.



Lt. Gen. Stephen  
Speakes, USA

“The Army has the essential core capabilities to deliver fires even as we move to enhance new exciting ways to deliver fires in terms of more precision. As we modernize, we will continue to apply fires even though we will have far greater capabilities than those needed for non-traditional fights,” Speakes stated.

Douglas “Butch” Cassidy, Joint Integrated Fires Deputy Division Chief (J-8 Joint Force Development), U.S. Joint Forces Command, discussed critical joint initiatives for precision engagement. Cassidy believes command and control is “a critical enabler that allows the warfighter to use precision weapons.”



Douglas “Butch” Cassidy

He discussed net-enabled command and control in a precision engagement environment and improvements being developed for combat identification. Cassidy outlined several USJFCOM projects, including the Bold Quest Coalition ID ACTD, which is assessing the military utility of non-cooperative target identification technology for air to ground combat identification in coalition operations.

The **Precision Attack to Ensure Dominant Maneuvers Panel** was chaired by Lt. Col. Kenneth Britt, USA (Ret), who did double duty as the APR Event Chair. Panel members included: Col. Bob Cunningham, USA, Chief of Precision Strike Div., Army G-8; Lt. Col. Mark Pincoski, USA, ATACMS and Guided MLRS Program Manager; Roger “Doc” Savage, Cannon Ammunition



(Left to Right): LTC Ken Britt, USA (Ret); Russell Hill; COL Bob Cunningham, USA; COL Chuck Bush, USA; LTC Doc Savage, USA (Ret); LTC Mark Pincoski, USA.

Synchronization Officer for Army G-8 (discussing Excalibur); Col. Chuck Bush, USA, Chief of Force Development for FCS, updating NLOS-LS; and Russell Hill, Program Manager for Course Correcting Fuzes/Precision Guidance Kit, Combat Ammunitions Systems, U.S. Army ARDEC, Picatinny Arsenal.

Cunningham offered his perspective on maneuvers fire while the expert panel provided updates on their respective weapons programs.

Cunningham “firmly believes responsiveness, persistence, precision and low collateral damage will be requirements carried into the future. However, for someone who works in G-8 day-to-day and deals with Excel spread sheets and lots of numbers, I know the issue of affordability will also play in this and there will be competition both within the Army and among the U.S military services on the right mix of capabilities.

We will sort that out. I am not necessarily an advocate for Army systems, but I am an advocate for the maneuver commander who desires that set of checks in his battlespace,” he added.



General Paul J. Kern, USA (Ret)

**General Paul J. Kern, USA (Ret)**, a former Commanding General, U.S. Army Materiel Command and now a Senior Counselor with the Cohen Group, talked about ‘precision’ at the April 24 luncheon, recollecting on a number of weapons employed during his more than 40-year career in the U.S. Army.

Kern left his mark on the Army as he led the drive to digitize and transform its

warfighting capabilities. He won wide respect for his efforts to direct supply chain improvements, maintain field readiness, and modernize weapons systems throughout the Army while still controlling costs.

He discussed the need to make weapons more cost-effective, how to get the air and ground assets to work together and the need to work through the airspace management issues.

He challenged the group to make future weapons simpler to operate. “Work for the simplest solutions you can possibly come up with. I would ask all of you to think about how we can keep bringing in precision in the simplest ways, at the lowest cost and most effectiveness as we move forward,” added Kern.

Jim Pennock, MDBA Missile Systems, chaired the **International Perspective Panel**. He was joined by Royal Navy Commander Tony Rae, Directorate of Equipment Capability (Deep Target Attack), UK Ministry of Defence, who painted a picture of ongoing precision weapons procurements through 2025. “We need to come up with simple, straight forward solutions to straight forward old fashioned problems” he concluded.



LTC Ken Britt, USA (Ret), Commander Tony Rae, Royal Navy, Jim Pennock-Session Chair

Rae said the UK is seeking ‘smart’ weapons that are precise, suitable, timely, multi-platformed, flexible and most of all affordable, noting that the UK is going through a major re-equipping program, particularly on the airside. Combine the weapons procurements with the ongoing combat operations in Iraq and Afghanistan, and the UK MoD “is facing challenging times in making the financials add up. We will need to make some fairly difficult choices in the not too distant future,” he stated.



Dr. Ernest Seglie

**Dr. Ernest Seglie**, Science Advisor to Director, Operational Test & Evaluation, OSD, discussed the issues surrounding the reliability and sustainability of today’s weapons systems.

He provides scientific and technical guidance on the overall approach to DoD evaluation of the operational effectiveness and the suitability of major Pentagon weapons systems. Seglie said that contractors must be “motivated and rewarded for doing good systems engineering and paying attention to reliability.”

**USAF Col. Mark Sullivan**, Director, NATO Policy, OUSD (Policy), International Security Policy, OSD, offered his perspective on the health of NATO

and its future, providing a sense of where NATO is going and the challenges it faces.

“The alliance is only as good as the sum of its nations. A single nation can block progress... From a U.S. perspective, this can be a bit frustrating,” he stated. Sullivan said the challenges facing NATO include consensus-based decision making, resource constraints, different visions regarding NATO’s role and competing national and NATO interests.

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

**Dave Ahern**, Director, Portfolio Systems Acquisition, OUSD (Acquisition, Technology and Logistics) was first up to the podium on April 25. He discussed a new concept called “portfolio management” in which the

requirements, acquisition and program analysis staffs work collaboratively throughout the entire acquisition cycle to produce “bounded programs that are executable in a predicted period of time.”

The idea is “to get the three communities together up front to decrease the time between identification of a requirement, program kick-off and initial operational capability.” They would look at the project from the standpoint of technology maturity, requirements, acquisition and finance. “There have been too many programs that were initiated over the years where the technology was not ready for prime time,” he concluded.

The APR’s second day focused on sessions related to a review of current and future precision strike weapons systems, non-lethal weapons and sea and land strike systems.

The **Joint Deep Strike Systems Panel** was moderated by Colonel (S) Gary Mausolf, USAF, Chief, Air Force Weapon Requirements, AF/A5RW, who also updated APR attendees on the development of a Long-Range Strike capability. Panelists included: Major Greg “Spuddy” Jones, USAF, Chief, Spacelift Requirements Branch, A5RM, who discussed Prompt Global Strike and USAF Colonel (S) Ed Donaldson, Deputy Champion, Global Strike CONOPS, AF/A5X, who briefed on USSTRATCOM’s Global Strike Execution.



Dave Ahern



USAF Col. Mark Sullivan



Maj Greg Jones, USAF; Lt Col Ed Donaldson, USAF and Col Gary Mausolf, USAF

**Dr. Ronald C. Jost**, Deputy Asst. Secretary of Defense for C3, Space and Spectrum, OASD for Networks & Information Integration, offered a technical perspective of netcentric C-2. He discussed how information sharing in the GIG and C2 structure interact. Jost noted that C2 is being transformed and that enterprise services and data represent the key solutions for future C2 implementation.



Dr. Ronald C. Jost



USAF Lt. Col. Robert  
"Prince" Valin



Republican Bill Bolling  
Lieutenant Governor  
of Virginia

USAF Lt. Col. Robert "Prince" Valin, Weapons Branch Chief for Force Application, J-8 Force Structure, Resources & Assessment Directorate, The Joint Staff, mapped out the current Non-Lethal Weapons Capability Roadmap. He said there is no clear direction since "we don't know where we are going regarding the development and fielding of non-lethal weapons." He said promising technologies over the past several years have been dropped. The senior DoD leadership," he said, "has not been swayed by emotional appeal for projects lacking solid analysis and relevance."

Over lunch, Virginia Lieutenant Governor Bill Bolling outlined how his state is preparing for another terrorist attack and/or natural disaster. Initiated after the Sept. 11, 2001 events, the Secure Commonwealth Initiative was expanded four years later in the wake of Hurricane Katrina to become an all hazards approach to preparedness.

He said the Virginia Fusion Center for Intelligence and Information Sharing, a law

enforcement clearinghouse for data, was put to use after the Virginia Tech shootings.

Bolling also noted that a Virginia Emergency Response Team will participate in USJFCOM's upcoming Noble Resolve Exercise as part of a unique partnership with the DoD.



LTC Ken Britt, USA (Ret), LTC Stephen Speakes, USA, Ginny Sniegon, Brig Gen Gregory Feest, USAF, CAPT Pete Murphy, USN, LtCol Chuck "Tooba" Kelly, USMC

The Sea and Land Strike Systems Panel was co-chaired by Captain Pete Murphy, USN, OUSD (AT&L), Portfolio Systems Acquisition (Air Warfare) and USN Captain Jeff Cathey, OPNAV, N880C. Discussing ship to objective maneuver enabling technologies were: USN CPT Ed Barfield, Deputy Director, Expeditionary Warfare Div. (N-85), USN CDR Kevin LaPointe, PEO/IWS 3, NAVSEA, USN CDR Robert Murphy, VTUAV Integrated Product Lead Team, USN CPT Donald "BD" Gaddis, PMA-265 (F/A-18 Program), and USMC Lt. Col. Albert Lagore, Artillery/Rockets Capability Integration Officer at the Marine Corps Combat Development Command.



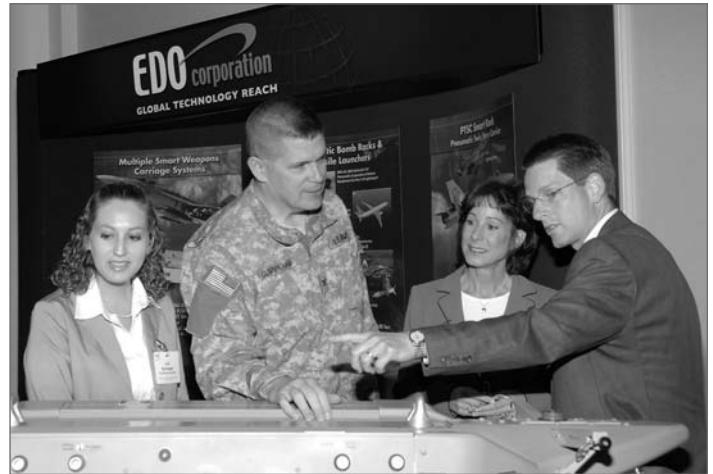
Eileen Giglio



CDR Kevin LaPointe, USN; Capt Donald "BD" Gaddis, USN; Capt Ed Barfield, USN; LTC Albert Lagore, USMC; CDR Robert Murphy and CAPT Pete Murphy, USN

The last speaker of the day was Eileen Giglio, Assistant DUSD for Strategic Plans and Initiative, who discussed the current initiatives for DoD weapons acquisition reform. "What we are trying to do is look at the process, compare it to the strategic goals and implement a plan to set the stage for change. Acquisition transformation is a continuous process. Transformation is an outlook, an attitude and a new way of thinking," she believes. ■

### Annual Programs Review Exhibitors




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Hamilton Sunstrand



Orbital Sciences Corporation



CHAIRMAN OF THE JOINT CHIEFS OF STAFF  
WASHINGTON, D. C. 20318-9999  
7 May 2007

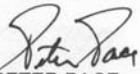
Ms. Ginny Sniegon  
Executive Board & Programs Chair  
Precision Strike Association  
Institute for Defense Analysis  
4850 Mark Center  
Alexandria, VA 22311-1882

Dear Ms. Sniegon,

Thank you for your kind note. I was pleased to learn that Brigadier General Gregory Feest, Deputy Director for Force Application, Joint Staff/J-8, attended and spoke during this event.

I continue to be encouraged by Precision Strike Association's commitment and support to bring together high-level thinkers and foster information sharing on these important topics. Our young men and women serving in the field deserve the very best our Nation has to offer, and events such as this one help achieve that objective.

Your continued efforts in this area are appreciated.

Sincerely,  
  
PETER PACE  
General, United States Marine Corps  
Chairman  
of the Joint Chiefs of Staff

### PRECISION STRIKE ASSOCIATION

**PSA offers a free 3-year membership to all government and military employees!**

To sign up for your free membership, please complete the form on the back page of this Digest, or visit our website to download a membership application.

**Tell a friend or colleague!**

## Attack Controllers Call in Air Strikes at Kansas Range

As F-16 Fighting Falcons circle overhead, joint terminal attack controllers from the 1st Air Support Operations Squadron keep an eye on a nearby village. Only this village isn't in Iraq or Afghanistan. It's Kansas and the Smoky Hill Air National Guard Range.

The joint terminal attack controllers, called JTACs, are training in the Smoky Hill ANG Range for future deployments in support of Operations Iraqi Freedom or Enduring Freedom.

Their job is critical since the days of carpet bombing are over. In today's military it's about surgical strikes and preventing unnecessary collateral damage.

JTACs provide air power to troops on the ground. "This is one of the few ranges in the states that is not pilot-centric. It's JTAC-centric," USAF Master Sgt. Scott Loescher said. "So we're able to get some really good training. The guys really learn a lot while they're out here."

"Downrange this is what we're going to run into," said USAF Tech. Sgt. John Strawn. "You're going to be in an urban environment. You're going to be working with

several different agencies. You're going to have lots of things going on around you (like improvised explosive device) strikes and troops in contact."

The experience levels vary for the five JTACs at the Smoky Hill Range for training. Some are in upgrade training, while others are battle-tested veterans of the wars in Afghanistan and Iraq. But all of them use this training to perfect the things that can mean life or death downrange.

"Time to have the bad day is out here," Strawn said. "You never want to have the bad day downrange. If you make the mistakes, you want to make them here."

That's why training at the Smoky Hill Range can be chaotic at times.

There are "things going on from the rear, from the front and sides," Strawn said. "You have things going on all around you. You may have other teams out there. You may have friendly positions out there. And they have to identify all these things and keep track of everything going on around them."

Those are the challenges these JTACs face on the plains of Kansas, and the same challenges they'll face when it comes time to deploy to fight the war on terrorism.

There are about 1,100 officer and enlisted JTACs who provide final clearance for aircraft to drop their weapons during close-air support operations. ■



JTACs in contact with an A-10 during a recent training exercise.

## U.S. Joint Forces Command to Assess ISR Concepts

Northrop Grumman and the U.S. Joint Forces Command have agreed to work together to improve how military forces conduct intelligence, surveillance and reconnaissance (ISR) missions.

The goal of the three-year cooperative research agreement is to identify ways to shorten the military commander's cycle of tasking sensors to collect intelligence, analyzing the information and disseminating it to warfighters. Shortening that cycle would enhance warfighters' situational awareness and increase the chance of mission success.

Northrop Grumman will provide its extensive modeling and simulation capabilities and its Cyber Warfare

Integration Network (CWIN), which can generate an operationally based, virtual battlefield environment. Running operational scenarios in the CWIN environment will allow USJFCOM to better evaluate weapon systems and tactics.

One of the research team's challenges is how to integrate different types of sensor platforms (for example, radar/infrared, airborne/space-based, strategic/tactical) into existing and future ISR architectures. Another challenge is to develop processes that reduce the human workload by allowing computers to handle more of the routine activities. ■



## Dragon Phase Team Provides Key Link in 'Kill Chain'

**E**very successful hit of a target by the USAF comes at the end of a long line of events commonly referred to as the "kill chain." The team members of 380th Air Expeditionary Wing play various roles as part of nearly all kill chains in this area of responsibility.

One critical link in the kill chain: intelligence photos provided by the U-2. Without these photos, targets could not be identified and, ultimately, destroyed.

Also along this chain is another critical link that allows the U-2 aircraft to fly without major airframe failures. This critical link is the wing's U-2 phase flight. The flight includes 19 Lockheed contractors permanently stationed here, serving beside their military comrades daily.

The Lockheed technicians have been completing phase inspections on U-2 aircraft for nearly two years. The Air Force contracted this work out to Lockheed starting in January 2005.

To date, the team has completed 26 successful phase inspections. The successful phasing has provided better than 10,400 flying hours for the assigned 99th Expeditionary Reconnaissance Squadron, equating to about 1,040 U-2 combat missions.

So, what happens in a U-2 phase?

"After every 400 hours of flying, we systematically take a U-2

airplane apart and go through it with a fine-toothed comb," said Bill Bonnichsen, dock chief for Lockheed's U-2 phase operation at this Southwest Asia location. "We're looking for certain things such as cracks, leaks, system failures or wear patterns, especially on any part of the airplane that is known to suffer wear over time."

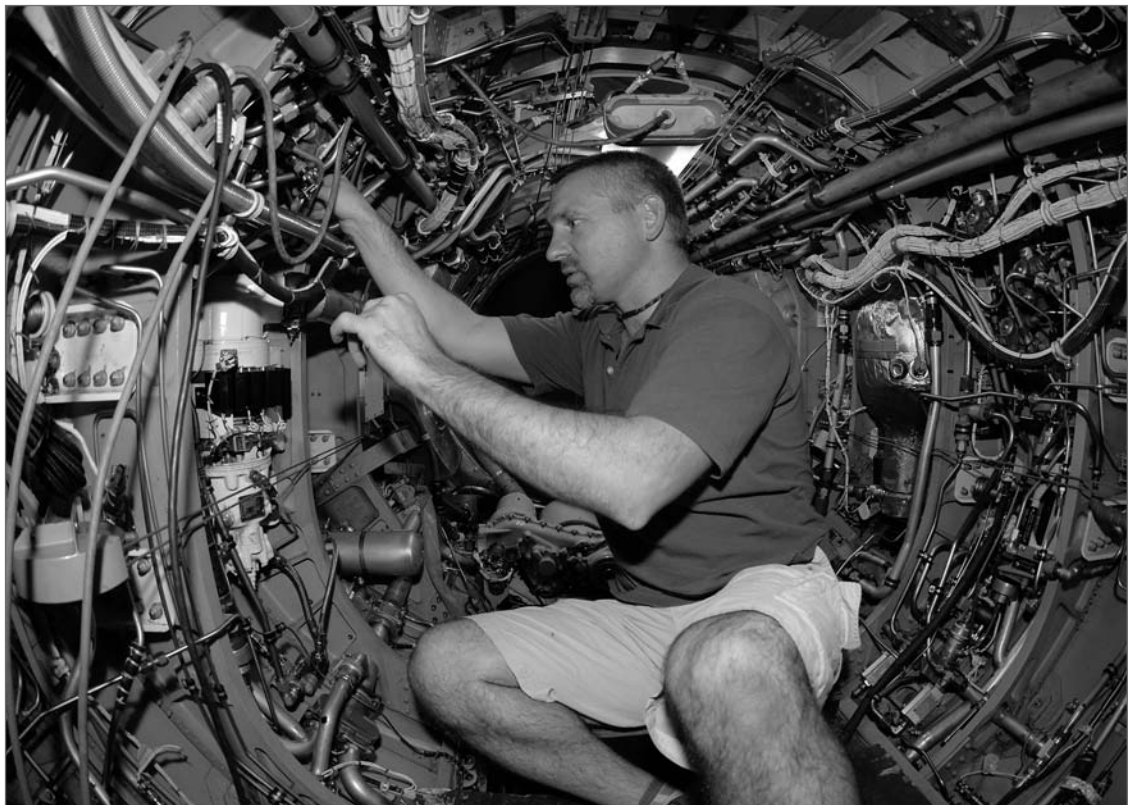
Mr. Bonnichsen said his team pays attention to details. "We are looking for anything out of the ordinary that might indicate any sort of problem for the airplane and any such things we find, we fix and then test thoroughly to make sure the fix is good."

Each member of the Lockheed team brings their own unique U-2 expertise to the phase operation. That expertise spans many systems that make up the Dragon.

The team works round the clock completing each U-2 Phase in just 14 days start to finish. Once the team has completed fixing any and all problems discovered with the airplane, it re-assembles and thoroughly tests all the U-2's systems.

"This includes an extensive engine run-up and culminates with a functional check flight," Mr. Bonnichsen said. "A specially qualified U-2 pilot takes the airplane through its paces at various altitudes making sure it's fit for flight and combat missions."

Once the pilot completes the functional check and declares the aircraft combat-ready, the phase clock is reset. It will be another 400 hours of flying time until the next phase inspection is due. ■



Jay Gardner, one of 19 Lockheed employees assigned to a forward-operating base in Southwest Asia, inspects hydraulic tubing in a U-2 fuselage.

# Strike Eagles ‘Rain Thunder’ on Enemy

When an F-15E Strike Eagle goes by low and fast, the ground shakes and even crew chiefs with years of experience with the aircraft can be surprised.

With its advanced sensors and wide array of weapons, enemy forces don’t have to see or hear the F-15E for it to strike them.

The F-15E is uniquely suited to the close air support mission the 391st EFS is responsible for, with the ability to drop bombs on targets as small as windows or individual people.

Normally relegated to the role of air-to-air fighter or air-to-ground interdictor, the fighter squadron spent the past year training for their mission at Bagram Airfield, Afghanistan.

One of the unique abilities the 391st brings to the fight is the Strike Eagle’s speed. Another advantage is the sheer number of weapons the F-15E can carry.

The largest weapon a crew can drop is the 4,500-pound bunker buster, designed for deep penetration into the ground before the explosion—good for caves or underground bunkers.

The smallest bomb approved for the F-15E is also the Air Force’s newest – the 250-pound GBU-39 Small



A USAF weapons load crew chief inspects a GBU-39 Small Diameter Bomb on an F-15E Strike Eagle at Bagram Airfield, Afghanistan.

Diameter Bomb. Designed for pinpoint air strikes, this satellite-guided bomb is well suited for close air support missions with a low probability of collateral damage.

Couple that with a 20mm gun that fires high-explosive incendiary rounds, and the odds of the target surviving an encounter with a Strike Eagle go down drastically. ■

## Constant Peg Declassified

After decades of secrecy, the USAF now acknowledges that it flew Communist-built fighters at the Tonopah Test Range northwest of Las Vegas.

From 1977 through 1988, the program, known as Constant Peg, saw USAF, Navy, and Marine aircrews flying against Soviet-designed MiG fighters as part of a training program where American pilots could better learn how to defeat or evade the communist bloc's fighters of the day.

Constant Peg afforded pilots an opportunity to learn how to fight enemy aircraft in a controlled, safe environment, without having to endure the risks of actual air combat. Typically a pilot would start with a basic familiarization flight to observe the enemy airplane and study its characteristics, practicing one-on-one defensive and offensive maneuvers against it, and finally, experience multi-bogey engagements high over the desert scrubland of the Nellis AFB ranges.

Constant Peg complemented other training programs such as Red Flag, Top Gun and the Air Force and Navy-Marine aggressor squadrons. The program also was intended to eliminate the “buck fever” or nervous excitement many pilots experience on their first few combat missions. Historical

experience indicated that pilots who survived their first 10 missions were much more likely to survive a complete combat tour, and Constant Peg was intended to teach them the right “moves” to enable them to come out on top of any engagement.

The end of Constant Peg nearly coincided with the end of the Cold War, by which time some of its “graduates” had already proven themselves in actual air combat.

Threat aircraft flown by the Red Eagles spanned several decades and technical generations of capability. There was the MiG-17 Fresco, a small, agile single-seat transonic fighter placed in service just after the Korean War and used extensively over Vietnam and the Middle East; the MiG-21 Fishbed, a high supersonic fighter used worldwide in large numbers; and the swing-wing MiG-23 Flogger, likewise in global service, an attempt by the Soviets to match the sophisticated capabilities of the F-4 Phantom.

Constant Peg training greatly influenced the success of American airmen in Operation Desert Storm, who shot down 40 Iraqi fighters, many of which were Fishbeds and Floggers. ■

## News Briefs

### ASIP in Flight Test

Northrop Grumman's Airborne Signals Intelligence Payload (ASIP), a next generation signals intelligence sensor for the USAF, has successfully completed the engineering checkout and calibration testing phase of the ASIP U-2 flight test program and has successfully embarked on the performance testing phase.

ASIP delivers enhanced signals intelligence capabilities to the warfighter. It detects, identifies and locates radar and other types of electronic and modern communication signals.

The ASIP sensor is scheduled to complete flight test on the U-2 in the first quarter of 2008 with operational fielding expected in late 2008. The Global Hawk variant of the ASIP sensor is expected to complete flight testing in 2008 and begin production in 2009 with operational fielding in 2012. ■

### Airborne Laser Fires Tracking Laser, Hits Target

The YAL-1A Airborne Laser, a modified Boeing 747-400F, successfully test fired its target illuminator laser March 15 during a five-hour test flight.



The YAL-1A Airborne Laser, a modified Boeing 747-400F, takes off from Edwards AFB, CA on March 15 for a five-hour test mission. During the flight, the aircraft's target illuminator laser fired for the first time.

The mission and test firing represented the Airborne Laser's first in-flight external laser firing, and used the NC-135E "Big Crow" test aircraft to verify the ABL's ability to track an airborne target and measure atmospheric turbulence. The test firing was performed multiple times off the California coast.

Current testing of the ABL is in preparation for the integration later this year of the chemical oxygen iodine laser, or COIL, a missile-killing, high-energy chemical laser.

The COIL is composed of six interconnected modules, each as large as a sport-utility vehicle turned on end. Each module weighs about 6,500 pounds and has 3,600 separate parts. When fired through a window in the aircraft's nose turret, it produces enough energy in a 5-second burst to power a typical household for more than one hour.

The COIL is a megawatt-class laser, as opposed to the less-powerful kilowatt-class targeting laser test fired on the March 15 mission.

The Missile Defense Agency is testing and developing the Airborne Laser as part of the boost phase defense segment of the Ballistic Missile Defense System. The ABL, designed to identify, track and intercept enemy ballistic missiles shortly after missile launch, would operate at altitudes above the clouds to locate and track missiles in their boost flight phase, and then accurately point and fire the high-energy laser to intercept enemy missiles near their launch areas. ■

### First MQ-9 Reaper on Nevada flightline

The General Atomics ASI MQ-9 Reaper unmanned aerial system

arrived March 13 at its new home at Creech AFB, NV.

"I am truly honored to be the commander of the USAF's first MQ-9 attack squadron," said Lt. Col. Jon Greene, 42nd Attack



MQ-9 Reaper

Squadron Commander. "Our mission is to train MQ-9 crews and fly combat missions.. Bringing the MQ-9 on line is going to take a fresh view on how we, as airmen, train and employ."

The MQ-9 Reaper is able to run at 250 knots, can fly up to 40,000 feet and is able to stay in the air for more than 20 hours.

The Reaper's predecessor, the Predator UAS, can only carry about 200 pounds of ordnance. The Reaper, on the other hand, can carry one and a half tons, and on top of carrying Hellfire missiles, can carry multiple GBU-12 laser-guided bombs.

By 2009, the 42nd ATKS should have 18 Reapers assigned for training and deployment purposes.

"My squadron is excited about the opportunity of molding new pilots and sensor operators into razor-sharp, combat-ready aircrews. We will also develop the first-ever MQ-9 tactics, techniques and procedures to use in the current fight as well as any potential future conflicts," Greene added. ■

### Better Intel Boosts Combat Ops

In 2006, the USAF dropped more than 1,700 munitions in support of Operation Enduring Freedom.

A year earlier, the Air Force dropped only 176 munitions as part of that same operation. The increase is due to better intelligence, said Lt. Gen. Gary L. North, the U.S. Central Command Air Forces commander.

“Our capability to gather intelligence on the enemy’s intentions continues to increase. We have got better intelligence, we are finding the enemy, the enemy is presenting

himself, and we are able to take the fight to him,” said North.

Cooperation between U.S. military, local militaries and civilian populations is one of the reasons for better U.S. intelligence about insurgents in the region, he added.

North said the Air Force is looking for improved capability to provide full motion to further intelligence operations in the region.

“Full motion video and the ability to download full motion video is very important to our current fight and will be to future fights,” he said. “The ability to take from a platform, whether a bomber or fighter, and be able to transmit what the pilot or sensor operator or offensive or defensive systems operator is seeing and put that into the hands of the ground commander, so you have a complete common picture — that is an incredible capacity. We are working to integrate full motion video and downlink capability into our targeting pod so we can put that picture — basically, the ‘John Madden view’ — from the ground to the air and the air back to the ground.” ■

### PGM Reprogramming Equipment

Alliant Techsystems has received a \$10.5 million contract from Headquarters Aeronautical Systems Center, Wright-Patterson AFB, OH to produce an advanced version of the company’s Common Munitions Built-in-Test Reprogramming Equipment (CMBRE).

The CMBRE system will allow USAF and USN personnel to test and update software on numerous munitions such as the Joint Direct Attack Munition, the Advanced Medium Range Air-to-Air Missile as well as next-generation weapon systems such as the Small Diameter Bomb. Advanced precision-guided munitions require complex processors that need high-speed reprogramming equipment. ■

### Enhancing Weapon Aiming and Imaging on the Tornado GR4

QinetiQ has successfully integrated a LITENING III pod onto the Tornado GR4 to provide enhanced target designation for weapon aiming and effectiveness.

## PEOPLE

Defense Secretary Robert M. Gates has recommended that President Bush nominate Chief of Naval Operations Adm. **Michael G. Mullen** to replace Marine Gen. **Peter Pace** as Chairman of the Joint Chiefs of Staff. Pace will continue to serve until his term ends Sept. 30.

Gates has recommended Marine Gen. **James E. Cartwright** for the position of Vice Chairman. Cartwright is the Commander of U.S. Strategic Command. Navy Adm. **Edmund P. Giambastiani Jr.**, the current vice chairman, will retire.

Undersecretary of Defense (AT&L) **Kenneth Krieg** will leave his Pentagon post on July 20 or on the Senate confirmation of his successor, whichever comes first.

Air Force Lt. Gen. **Carol H. Chandler** has been nominated for appointment to the grade of general with assignment as commander, Pacific Air Forces; air component commander for U.S. Pacific Command; and executive director, Pacific Air Combat Operations Staff, Hickam AFB, HI.

Army Maj. Gen. **Francis H. Kearney III**, has been nominated for appointment to the grade of lieutenant general and assignment as deputy commander, U.S. Special Operations Command, MacDill AFB, FL.

Navy Rear Adm. **David L. Philman** (former PSA Board Member) is being assigned as commander, Strike Force Training Pacific. Philman is currently serving as deputy commander, Joint Functional Component Command for Space and Global Strike, USSTRATCOM. Another PSA Board Member, Marine Lt.Col. **Chuck Kelly**, is retiring from active duty on 30 June.

Army Maj. Gen. **David P. Fridovich** has been nominated for appointment to the grade of lieutenant general and assignment as director, Center for Special Operations, U.S. Special Operations Command, MacDill AFB, FL.

Army Maj. Gen. **Richard P. Zahner** has been nominated for appointment to the grade of lieutenant general and assignment as deputy under secretary of defense for intelligence, intelligence and warfighting support, Office of the Under Secretary of Defense for Intelligence.

Army Lt. Gen. **Ronald L. Burgess Jr.** becomes director of the Intelligence Staff, Office of the Director of National Intelligence. Army Lt. Gen. **Douglas E. Lute** becomes the assistant to the president/deputy national security advisor for Iraq and Afghanistan.

Rear Adm. (selectee) **Dan W. Davenport** is being assigned as director of joint innovation and experimentation, J9, U.S. Joint Forces Command, Suffolk, VA. Rear Adm. **Allen G. Myers IV** is being assigned as director, Air Warfare Division, N88, Office of the Chief of Naval Operations. Rear Adm. (lower half) **Kenneth E. Floyd** is being assigned as deputy director, Air Warfare Division, N88B, Office of the Chief of Naval Operations.

Rear Adm. (lower half) (selectee) **Kevin M. Donegan** is being assigned as director, Strategy and Policy Division, N51, Office of the Chief of Naval Operations.

The work commenced in September 2006 and the resulting operational capability was delivered in theater at the end of January 2007. QinetiQ, in partnership with the RAF Joint Test & Evaluation Group, under contract from the



Litening III Tornado

Tornado IPT, carried out an extensive series of rig, ground and eventual UK based flight trials at MOD Boscombe Down.

This involved working closely with 41(R) Squadron Fast Jet & Weapons Operational Evaluation Unit and integrating the modified LITENING III pod onto an in-service Tornado GR4 and with the main on-board computer software provided by the RAF Tornado In-Service Software Maintenance Team (TISMT). In addition, QinetiQ also ensured that the pod was fully qualified for flight and cleared for use with all onboard systems and in service weapons.

The LITENING III is the latest generation of targeting and navigation pod that delivers laser spot detection and tracking, and long-range data and video downlink. ■

### PGMM Goes Three-for-Three in Guided Flight Tests

Alliant Techsystems' Precision Guided Mortar Munition (PGMM) recently went three-for-three in a series of guided flight tests. Each of the projectiles flew approximately 2.5 miles to the target, demonstrat-

ing in-flight maneuverability, repeatability and precision strike capability.

In December 2004, ATK received the initial \$80 million System Design and Development (SDD) contract to give the U.S. Army an unmatched precision advantage in 120mm mortars. Since commencing work under the SDD contract, ATK has achieved a number of key milestones, including a successful preliminary design review, guided flight tests and a successful critical design review. ■

### \$30 Million Contract to Upgrade B-52s

Boeing has been awarded a \$30 million USAF contract to upgrade the B-52 fleet's Integrated Weapons Interface Units (IWIU), providing flight crews with enhanced smart weapon visibility and control.

Boeing will replace the current, three-piece interface units with a single, state-of-the-art IWIU. The new IWIU also can be used in future modifications that could double the platform's smart weapons capacity.

Boeing will deliver the first kit in October 2008. The Air Force will perform the modifications using contract field teams at the main B-52 operating bases in Barksdale, LA, and Minot, ND. The modifications are expected to be completed by late 2011. ■

### Industry Team Tests Extended-Range, Precision-Guided Artillery Projectiles

The Raytheon Missile Systems and BAE Systems Bofors Excalibur team successfully test fired Excalibur Block IA-2 precision-guided artillery projectiles at the White Sands Missile Range, NM, testing range in April.

The primary test objectives were to demonstrate the navigational function throughout the flight with live base bleed and to verify Excalibur's Modular Artillery Charge System Zone 5 maximum-range performance with base bleed. Base bleed is a solid fuel that burns in the base of the projectile, expelling gas to reduce drag and extend range. The test shots were fired from an M109 series self-propelled howitzer using Modular Artillery Charge System Zone 5.

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

## CALENDAR OF EVENTS

### Precision Strike Summer Forum

**Date:** July 10-11 2007

**Theme:** "Joint Perspectives on Precision Engagement"

**Location:** Virginia Beach Resort Hotel, Virginia Beach, VA

### Precision Strike Technology Symposium (PSTS-07)

(To be conducted at the SECRET/NOFORN level)

**Date:** October 23-25, 2007

**Theme:** "Required Precision Strike Capabilities and Technologies for the Long War"

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

### Precision Strike Winter Roundtable

**Date:** January 30, 2008 (date tentative)

### Precision Strike Annual Programs Review

**Date:** April 17-18, 2008

**Location:** Waterford Receptions, Springfield, VA

### Precision Strike Technology Symposium (PSTS-08)

(To be conducted at the SECRET/NOFORN level)

**Date:** October 28-30, 2008

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

Sponsorship and exhibition opportunities are available for all events. For more information, please visit our website: [www.precisionstrike.org](http://www.precisionstrike.org).

## News Briefs, Continued from page 13

Two of the test projectiles were fired to a target range of 40.8 kilometers (25.4 miles), impacting approximately 6.7 meters (22 feet) and 2.2 meters (7.2 feet) from the target center. Three shots were fired to 35 kilometers (21.8 miles) – one of which was fired at 5 degrees off axis – that impacted between 2.8 meters (9.2 feet) and 6.1 meters (20 feet) from the target center. The demonstrated range and accuracy exceed the Excalibur Block I objective requirements.

“Excalibur’s maximum range will provide extended coverage, increased tactical reach and greater mutual support for more dispersed ground forces,” said Col. John Tanzi, Training and Doctrine Command systems manager for cannons. ■

### Massive Ordnance Penetrator in Test

The Boeing developed Massive Ordnance Penetrator (MOP) successfully completed a static tunnel



Massive Ordnance Penetrator

lethality test March 14 at the Defense Threat Reduction Agency’s (DTRA) weapons tunnel complex at White Sands Missile Range, NM.

The MOP is a technology demonstration program funded by DTRA to develop a 30,000-pound conventional penetrating weapon that will defeat a specialized set of hard and

deeply buried targets. Designed to be carried aboard B-2 and B-52 bombers and deployed at high altitudes, the MOP’s innovative design features include a Global Positioning System navigation system and more than 5,300 pounds of explosives. Measuring 20 feet long, the MOP is designed specifically to attack hardened concrete bunkers and tunnel. ■

### HELLFIRE-Compatible Guided Rocket Able to Defeat Targets in Urban Operations

Lockheed Martin recently unveiled DAGR, a weapon developed with company funding to defeat targets in urban operations, while minimizing collateral damage. DAGR is a 2.75-inch guided rocket system that is fully compatible with the fielded and combat-proven HELLFIRE II missile.

In its 2.75-inch frame, DAGR is the first semi-active guided rocket to provide full HELLFIRE functionality, including lock-on-before-launch, lock-on-after-launch, target location handoff, enhanced built-in test, programmable laser coding, and flexible fly-out modes. It is plug-and-play compatible with HELLFIRE, able to launch from any platform that currently supports the HELLFIRE weapon system.

Rick Edwards, vice president – Tactical Missiles at Lockheed Martin Missiles and Fire Control, said “we’ve leveraged existing HELLFIRE and Joint Common Missile technology to bring to market a precision weapon system that will dramatically assist in the global war on terrorism.”

DAGR–Direct Attack Guided Rocket–fills the capability gap between unguided rockets and the HELLFIRE weapon system. DAGR increases M299 smart launcher load-out by up to four times. Its off-axis capability also provides an increased engagement envelope by supporting launch from

unmanned aerial vehicle platforms.

“Coupling experience and mature technology with the combat-proven Hydra 70 rocket, DAGR provides a low-cost, low-risk precision munition for air-to-ground engagements in the urban environments our warfighters currently face,” said Bob Harnish, DAGR program manager at Lockheed Martin Missiles and Fire Control.

The February 2007 flight tests of the DAGR demonstrated objective maneuverability capability for minimum range engagements. Later this year, Lockheed Martin will complete a full test flight matrix for unmanned aerial vehicles and helicopters, as well as perform platform launch. ■

### Joint STARS exceeds 23,000 flight hours

The 128<sup>th</sup> Expeditionary Airborne Command and Control Squadron, one of three operational Joint Surveillance Target Attacks Radar System squadrons, recently reached a milestone of 23,000 flight-hours by flying missions in support of Operation Iraqi Freedom.

Flying more than a dozen command and control, intelligence, surveillance and reconnaissance missions per week, with an average of 10-12 hours per mission, the JSTARS have maintained a constant presence in the skies over Iraq.

The JSTARS primary mission is to provide theater ground and air component commanders with ground surveillance to support attack operations and targeting that contributes to the delay, disruption and destruction of enemy forces.

The unit flies seventeen E-8Cs, which are modified Boeing 707-300 series commercial airframes extensively remanufactured and modified to perform its operational mission. ■

Schedule at a Glance

**PRECISION STRIKE SUMMER FORUM 2007**  
**10-11 JULY 2007**

**VIRGINIA BEACH RESORT HOTEL & CONVENTION CENTER**

*Joint Perspectives on Precision Engagement*

— **Summer Forum Highlights** —

Congressional Perspective—House Armed Services Committee

Joint Perspective on Precision Engagement

Army Precision Engagement

State of Precision Engagement in the USAF

Precision Weapons from the OSD Perspective

An Industry Perspective

Armed Unmanned Systems—A Perspective on Navy Needs, Challenges and Vision

Unmanned Aerial Systems Roadmap

Army’s Precision Strike Weapons, Developing Systems & Lessons Learned

Air Force Precision Munitions Programs

**PRECISION STRIKE TECHNOLOGY SYMPOSIUM (PSTS-07)**  
**23-25 OCTOBER 2007**

**JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LAB KOSSIAKOFF CENTER**

*Required Precision Strike Capabilities and Technologies for the Long War*

— **PSTS-07 Highlights (confirmed to date)** —

Technical Sessions—Targeting, C4ISR, Weapons, & Effects

The Iraqi Perspectives Project—The History We Don't Know

(Adaptation to Precision—Iraq 1991-2003)

Air Force’s Role in “Return of the Bomber”

Electronic Warfare Roadmap

Capabilities for Strategic Global Strike

The Way Ahead for Sensor Platforms

Panel—Armed Unmanned Systems

Threat Assessment Briefing

Precision Strike Intelligence Capabilities—Technology Improvements

Missile Defense and Space Highlights

Improvised Explosive Devices (IED) Defeat—JIEDDO Activity in Theater

Expeditionary Warfare & Coalition Integration

(Numerous additional key topics should soon be confirmed)

**PSTS-07 will be conducted at the SECRET/NOFORN level all 3 days**

Details and Registration Information are available at [www.precisionstrike.org](http://www.precisionstrike.org)

**IN THE NEXT ISSUE**

*Wrapup on PSA’s Summer Forum 2007*

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