The PrecisionStrike Digest

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

PRECISION STRIKE ASSOCIATION
Affiliate, National Defense Industrial Association

VISION STATEMENT

We aspire to be the premier association dedicated to advancing the art and science of precision engagement concepts and technology. To accomplish this, we will promote the development of systems and procedures in order to locate, fix, track, target, and attack fixed, moving, and relocatable targets. We recognize that battlespace management, the network within which it functions, and the adjunct command and control requirements are crucial to success of the battlefield. PSA has a global perspective and welcomes international participation.

Preparations Underway for Precision Strike Annual Programs Review

For years, DoD has challenged its senior military service leaders to share technology and truly leverage both commonality and interoperability within systems and target sets to realize both manpower and materiel savings.

As a result, Operations Iraqi Freedom and Enduring Freedom are demonstrating a level of interoperability heretofore unseen.

In keeping with our theme *Precision Strike– Interdependency Across the Services* this year's Annual Programs Review (APR), 19 - 20 April at the Hilton Crystal City Hotel, Arlington, VA, will examine the concepts of interoperability as it relates to precision strike and the reasons for the substantial progress that has been made.

General Benjamin S. Griffin, USA

Leading a distinguished list of presenters at this two-day unclassified event, will be General Benjamin S. Griffin, USA, Commanding General, U.S. Army Materiel Command, Lieutenant General Michael A. Hough, Deputy Commandant for Aviation, US Marine Corps, and David W. Duma, the OSD Acting Director for Operational Test and Evaluation (OT&E). We will also hear from Major General Joseph F. Peterson, USA,Vice Director for Operations, J-3, The Joint Staff.

Of special note for the Precision Strike Association's Annual Programs Review is the Warfighters' Strategy Panel, rescheduled from the 26 January Winter Roundtable. This panel features senior participants from each service's Quadrennial Defense Review (QDR) office to discuss policy implications for the future of precision strike.

Rounding out the APR will be an exceptional group of presenters from the Program Executive Officer (PEO) offices, OSD, the military services, the defense industry and the testing community. Military department technical chairs will ead sessions on strike capabilities. Another highlight is the popular Precision Strike Acquisition Panel.

In short, the Annual Programs Review focuses on precision strike weapons systems and capabilities—particularly those in development and being procured. This is another information packed event that you won't want to miss.

See page 15 for details regarding APR registration. ■

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Chairman's Column

Show Me the Money

I would like to thank all those that attended our Winter Roundtable 2005. I also extend a very special thanks to our corporate sponsors that supported the event. Our Program Committee could not have had a better lineup of speakers.

Gen. Richard Myers, chairman of the Joint Chiefs of Staff, wrote in a letter regretting that he could not attend –"Assembling such a venue to discuss precision engagement systems is commendable. Your advocacy for new concepts and technology investment and infusion to advance precision strike systems is important to our joint fighting capabilities."

Show me the money. It's that time of the year when DoD budget dollars abound. There are about 400 billion of them for the FY2006 budget request. It will certainly get a lot of scrutiny on Capitol Hill. The request creates some very thorny issues. Navy shipbuilding and F/A-22 Raptor procurement levels will certainly be two of the "high interest" items.

I have done a little digging into the area of precision weapons. I wanted to see if the vector for these areas was up, down or neutral. I only had time to hit the procurement accounts, but I think it is safe to say the vector is slightly up, just above the dollars numbers we have seen in the past several years. The Navy's procurement (Tomahawk, JSOW, laser-guided bombs, etc.) increased from $2.1B in FY05 to a request for $2.7B in FY06. The Air Force request has also increased by almost a billion dollars in missiles with most of the increase in the space arena. This procurement profile does show slight increases for Small Diameter Bomb, JSSAM and other precision weapons. The Army is starting to ramp up for the guided 155mm Excalibur round and in Guided MLRS. Bottom line: there still is a real requirement to continue building and using precision munitions. I am sure as we go through the budget request in detail we will find significant investments in targeting, decision aides, battle damage assessment and net centric work related to precision engagement.

Election of new members to your Board of Directors will occur prior to the Annual Programs Review (APR). We are in the process of providing you with a slate of very capable candidates. Please make your selections of the PSA's new leadership.

The APR will be held at the Hilton Crystal City, Arlington, VA, on 19-20 April. We changed the venue from Fort Belvoir to ease your attendance. We have a super lineup of speakers and we truly do need your support. You should soon see a "Call for Papers" announcement for our October symposium at JHU/APL. Also get involved in this premier PSA event.

I'd like to welcome Kaman Aerospace, our newest Gold Corporate Member, and Burdeshaw Associates, Ltd. and Marotta Controls, Inc., our two newest Silver Corporate Members. More information about corporate membership can be found on our website http://www.precisionstrike.org

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

Wayne F. Savage
Chairman of the Board
Precision Strike Association

Winter Roundtable 2005 Wrapup: The Way Ahead for QDR 06 and Precision Strike

The Precision Strike Association held its Winter Roundtable on January 26, 2005 at the Crystal Gateway Marriott, Arlington, VA.

Wayne Savage (PSA's Chairman of the Board) and Ginny Sniegon (PSA's Programs Chair) welcomed the 204 senior DoD and U.S. military officials and industry representatives to the popular unclassified forum, which this year examined the relationship of the upcoming Quadrennial Defense Review (QDR) on precision strike weapons development and acquisition.

Meanwhile, PSA took time out to bestow the ninth annual William J. Perry Award for superb contributions to precision strike systems to U.S. combat forces currently or previously engaged in Operation Euduring Freedom in Afghanistan and Operation Iraqi Freedom.

Congressman Curt Weldon—R-Pennsylvania, 7th District

Peter Huessy, president of GeoStrategic Analysis, led the day's slate of speakers, addressing how the second Bush presidential term and a new congressional session will impact national defense policy and strategies.

Head of a Potomac, MD-based defense and national security consulting business since the early 1980s, Huessy said the 2005 strategic outlook must consider the lessons learned regarding precision guided munitions, regime changes, proliferation threats, the intelligence record, defense budgets and federal deficits.

He said the post Cold War world is characterized by less defined borders and frontiers with non-and counter proliferation of weapons of mass destruction rising as the most serious threat. Issues facing U.S. lawmakers this year include transfer of some advanced military technologies, such as high altitude airships and unmanned aerial vehicles for homeland security. Huessy commented on the relationship of the upcoming QDR on the proposed Fiscal year 2006 defense budget.

Nine-term U.S. Representative Curt Weldon (R-PA), a senior member of the House Armed Services Committee, "expects an extremely difficult budgetary battle this year. I see a budget with significant reductions in major weapons systems." But Rep. Weldon says U.S. lawmakers will look favorably on "transformational technologies offering significant bang for the buck…You will see the Congress supporting procurement of precision munitions."

The 2006 QDR will reflect the reality that potential threats against the United States remain uncertain and "we just can't predict, like we could during the Cold War, of what it is we've got to face," according to Ryan Henry, principal deputy under secretary of defense for policy.

Mr. Henry focused on the theme of the Winter Roundtable, offering insights on the process for the QDR.

The Sept. 11, 2001 terrorist attacks proved that asymmetrical threats are a clear and present danger to the United States. And because global terrorists continue to threaten Americans at home and abroad, Henry noted, the U.S. military has "to have capabilities across a broad spectrum."

Honorable Ryan Henry—Principal Deputy Under Secretary of Defense for Policy

Henry is among the senior defense policy experts working on the 2006 QDR, a formal review of DoD strategy that's conducted every four years. The review, he said, is just starting up. It is slated for completion in early February 2006.

"We believe that, post-9/11, we are starting to understand enough of the problem set that we're faced with right now," Henry explained. The new QDR, he said, consequently represents "a ripe opportunity" to re-evaluate strategic military planning and make necessary changes.

Henry said DoD would welcome QDR input from U.S. military allies, members of Congress, outside policy experts, the defense industry and the public-at-large. "We want to bring in all the ideas," Henry noted.

A key QDR task, Henry said, is to evaluate "the challenges out there, to have a strategy with which to meet those challenges, and then to have it appropriately resourced." Another fundamental QDR purpose, he added, involves "apportioning risk across the challenges that we see."

After evaluating near- and long-term challenges to national security,

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Henry said, the QDR sets "the right balance" in recommending necessary resources for the strategies chosen to confront those challenges.

The upcoming QDR, Henry noted, will incorporate lessons learned from U.S. military combat operations conducted against terrorists in Afghanistan and Iraq, as well as the humanitarian missions in Haiti and Rwanda.

"Operationally, there have been a lot of good lessons out there," Henry reported, such as battlefield successes that were leveraged by joint operations, network-centric communications, and the innovative deployment of special operations troops.

The 2006 QDR, Henry warned, will consider likely future defense budget reductions after years of funding boosts precipitated by the 9/11 attacks and follow-on U.S. military actions.

"We have to think about a constrained top line," Henry acknowledged. "Since the last QDR, there's been a remarkable increase in the top line, lots of weapons. But the next QDR will reflect stable, shrinking budgets."

CAPT Jeff Hesterman, USN, strategy division chief, J-5 Strategic Plans and Policy Directorate, The Joint Staff, outlined the National Military Strategy (NMS), discussing the context of national strategic guidance, the elements of the 2004 NMS, the major implications for the warfighter and considerations for future efforts. Hesterman described a NMS incorporating agility, decisiveness and integration. "These principles stress speed and support the concept of surging capabilities from widely dispersed locations," he said. Issues needing further development include strengthened alliances and partnerships and interagency integration.

On the other hand, USMC Colonel Ed Yarnell, Chief, Concepts Branch (J-7), The Joint Staff, discussed the role of future joint concepts in transforming the joint force. He offered insight into the Capabilities Based Approach, Family of Future Joint Concepts, joint experimentation, and the linkage to the Joint Capabilities Integration and Development System (JCIDS). Yarnell said the transformed joint force will be fully integrated, networked, adaptable, expeditionary decision superior, decentralized and lethal.

Ongoing work at the U.S. Joint Forces Command regarding experimentation was the topic of USN CAPT Mark Chicoine's presentation to Winter Roundtable 2005. As deputy director, Joint Experimentation Directorate (J-9), he supports the development of new joint concepts driving transformational changes aimed at achieving the optimal future joint forces capability. Included in his presentation was an overview and status report on the Joint Fires Initative-2, which will help reduce the joint force commander's kill chain for immediate targets, during rapid linear and non-linear operations. In other words, he said, "provide joint forces commanders the ability to employ the weapon of their choosing at the time and place of their choosing."

Those attending the afternoon session again heard from Tom "Stretch" MacKenzie, a professional staffer on the Senate Armed Services Committee, who presented the view from Capitol Hill regarding defense matters. On the republican-side, the former naval aviator focuses on naval weaponry. MacKenzie offered perspective on what he expects to happen with the congressional review of the FY06 defense budget request, a process that has just begun.

Dr. Glenn Lamartin, director, defense systems, OUSD (Acquisition, Technology & Logistics) used his time to discuss systems and mission integration. He said USD(AT&L) imperatives are to provide a context within which to make decisions about individual weapons programs; improve the acquisition and logistics support processes; and, help drive good systems engineering practice back into the way we do business. Systems and mission integration include development of roadmaps and fostering interoperability, joint and coalition capabilities.

Wrapping things up for the day was Pierre Chao, senior fellow and director of defense industrial initiatives, Center for Strategic and International Studies, who offered the view from Washington's K Street and New York's Wall Street on the evolving strategic environment.

His thoughtful presentation considered the strategic issues, fiscal

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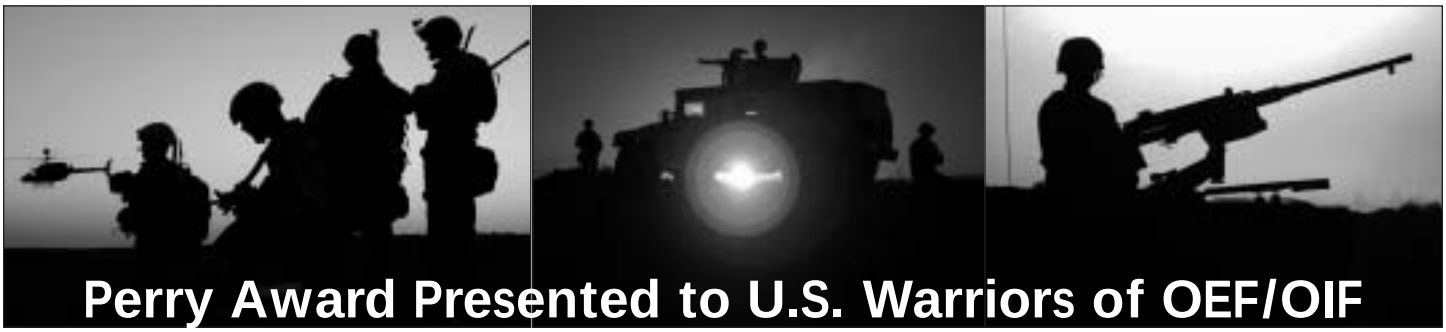
constraints and implications for the defense industry. In the face of defense budget cuts, Chao believes the industry needs to be more creative in reinventing itself. But "the barriers to reallocation of assets are high with structural disincentives (shorter production runs and unfunded R&D) and political pressures making life difficult," he stated. ■



Perry Award Presented to U.S. Warriors of OEF/OIF

A high point of Winter Roundtable 2005 was the presentation of the PSA's ninth annual William J. Perry Award to the U.S. military forces associated with Operations Enduring Freedom and Iraqi Freedom.

The award recognizes leadership or technical achievement that results in significant contributions to the development, introduction, or support of precision strike systems. Specifically, PSA honors U.S. warriors "for their continued extraordinary service, dedication and professionalism in a hostile combat environment."

PSA Chairman Wayne Savage said the selection committee this year decided to honor our troops. "I think we made the right decision to not bestow the award to general or flag officers. The consensus across the board was to give the award to enlisted troops there fighting the war today and those who will be there for awhile longer."

Robert Behler, JHU/APL's business area executive for precision strike, said he was "quite honored to talk about the great warriors doing the Lord's work day in and day out. We have introduced new precision strike capabilities during these conflicts. These warriors made it happen."

He thanked the U.S. military representatives on behalf of the Johns Hopkins University's Applied Physics Lab "for all the work you have done and all the sacrifices in the name of freedom. This is a fitting award for your work," added Behler.

According to the citation, "the dedication, adaptability, and courage under fire of our service men and women provided an unprecedented opportunity to use a variety of precision munitions across the battlefield during the initial stages of these conflicts and continuing today while combating the ongoing insurgency.

"The overwhelming success of these modern munitions in saving innocent lives and collateral minimizing damage validates the precision strike concept.

"All services —officers, enlisted and civilians—participated in this process. Service members assembled and loaded weapons, selected targets, performed intelligence functions, designated aim points with considerable personal risk, and performed post strike analysis."

Accepting the Perry Award were five senior enlisted men from U.S. military. (See page 6.) They were told that "the men and women you represent here today reflect the finest traditions of our armed forces and bring great credit to their respective service and this nation. The Precision Strike Association is proud to honor their professionalism."

Named after the former U.S. defense chief and precision strike weapons advocate, others to have received the prestigious Perry Award include: Dr. Perry, the first recipient (1977); former Vice President Dan Quayle (1998); RADM Walter M. Locke, USN (Ret.) (1999); The Johns Hopkins University, Applied Physics Laboratory (2000); the NAVSTAR Global Positioning System Joint Program Office (2001); Rep. James V. Hansen (R-UT) (2002); Terry Little, a well-respected acquisition reform pioneer (2003); and the USAF/USN/Boeing JDAM Program Team (2004). ■

1 *Wayne Savage—Chairman of the Board, Precision Strike Association*

2 *Peter Huessy—President, GeoStrategic Analysis*

3 *Tom MacKenzie—Professional Staff Member, Senate Armed Services Committee*

4 *Dr. Glenn Lamartin—Director, Defense Systems, OUSD (Acquisition, Technology, & Logistics)*

5 *Pierre Chao—Senior Fellow & Director of Defense Industrial Initiatives, Center for Strategic and International Studies*

6 *Robert Behler—Business Area Executive for Precision Strike, JHU/APL*

7 *CAPT Scott Swift, USN—PSA Board Member; Captain E. Mark Chicoine, USN—Deputy Director, Joint Experimentation Directorate (J-9), United States Joint Forces Command; Ginny Sniegon—PSA Programs Chair; Captain Jeff Hesterman, USN—Strategy Division Chief, J-5 Strategic Plans and Policy Directorate, The Joint Staff; Colonel Ed Yarnell, USMC—Chief, Concepts Branch (J-7), The Joint Staff*

8 *Precision Strike Association Recognizes America's Warfighters* Photo from left to right: *Wayne Savage, PSA Chairman; and then, accepting the 2005 William J. Perry Award for their respective services: MCPO Robert Carroll, USN-CNO Command Master Chief; Sgt Maj John L. Estrada, USMC-15th Sergeant Major of the Marine Corps; CMS Jeffrey L. Greer, USA-Command Sergeant Major, Military District of Washington; CMS Brye McMillon, USAF-89th Wing Command Chief Master Sergeant, Andrews AFB, MD; MCPO Jeffrey D. Smith, USCG-Master Chief of the Coast Guard Reserve Force*

9 *William J. Perry Awards Ceremony*

10 *Raytheon Exhibits at Winter Roundtable: Ginny Sniegon—PSA Programs Chair; Congressman Curt Weldon, Lilian Vayhinger—Raytheon-Deputy Product Line Manager and Wayne Savage—PSA Chairman*

Tac Air Controllers Take Charge

They are a unique breed of service member on the frontline – Air Force by service, but Army by trade.

Air Force joint tactical-air controllers (JTAC) can be found throughout Afghanistan – planning, communicating and facilitating the execution of close air support for ground forces.

For the "Wolfhounds" of 2nd Battalion, 27th Infantry Regiment, operating in Paktika province, JTAC support comes from the 25th Air Support Operations Squadron, Wheeler Army Airfield, Hawaii. Located everywhere from tactical headquarters to operations with company-sized elements, JTAC personnel act as the liaison for all air support that comes from every service and all coalition partners.

"Because what we do can be applied to any air-support element, we have no problems working with anybody," said Air Force Staff Sgt. Mark Hiler, a JTAC with the 25th ASOS.

From helicopters to bombers, JTAC personnel and their leaders have a variety of weapons capabilities at their disposal to perform many different tasks. Choosing the right weapon for the task is just one part of their job. To be successful at calling in air support, they must master two vital skills: communication and planning, said Hiler.

USAF combat controllers on the ground

In the stages leading up to operations, JTACs are very important to planning because they pay constant attention to how close air support will be used and even advise leaders on the best ways to use air assets, said Air Force Staff Sgt. Robert Pena, another JTAC with the 25th ASOS. Planning is also important so that close air support can always operate safely on the battlefield with other indirect fire assets, such as artillery and mortars.

While communication goes hand in hand with the planning process, it is also one of the most important things the JTACs do. "If we can't talk, we can't do anything," said Hiler. "Communications is such an important aspect of our job."

To assist in their communication needs, the JTACs employ not only a complete array of equipment, but also the knowledge to operate, maintain and fix the equipment. "We have to know how to do everything with our (communication equipment)," said Pena. "We are away from our support elements so often, it is many times up to us to make sure we can continue on with the mission."

For the JTACs, being isolated away from not only support, but also other airmen, is something they say is just a part of the job – an aspect they not only enjoy, but one that also sets them apart from everyone else in their service.

Because every JTAC is a volunteer, Pena said the job creates its own identity and desire for a job well done.

JTAC is also one of the few jobs in the Air Force that is so far forward on the battlefield, he said. "We like to be out on the frontline with the Army," said Pena. "It is something that you want to do, and is very rewarding. It is almost like a brotherhood." ■

Airmen Give 'Warthogs' Bite

BAGRAM AB, Afghanistan – In a war zone, two elements make the A-10 Thunderbolt II, also known as the Warthog, unsurpassed in its close air support mission.

The first is speed. Its slow speed allows it to loiter in an area for long periods of time. The second is weaponry – A-10s pack a wide variety of munitions giving them a deadly bite.

The airmen who load those munitions and maintain the weapons system are well aware of how important their job is here.

"We're doing it for real here," said Airman 1st Class Jason Moreland, a 354th Expeditionary Aircraft Maintenance Squadron weapons load team member.

The job is more than just loading munitions on the aircraft, said Staff Sgt. Nathaniel Kibodeaux, another 354th EAMXS load team member. The team also maintains the aircraft's weapons systems, troubleshooting problems, performing function checks and rebuilding systems during phase maintenance.

"We make sure the munitions come off the aircraft correctly," Sergeant Kibodeaux said. "We make

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sure the release systems work."

The biggest difference between operations here and at home is the type of munitions loaded. "You don't load any munitions with blue stripes (indicating that it is a training munition)," Airman Moreland said. "Knowing you are loading live munitions definitely gets the blood pumping," Sergeant Kibodeaux said.

Safety is a key element of loading munitions. A big part of safety is ensuring the munitions are serviceable and ready to load on the aircraft. "We make sure all the hardware works and make sure the weapon is safe before loading," said Airman 1st Class Stacy Wilson, another 354th EAMXS weapons load team member.

"Once we start loading, it's important to stay grounded," Sergeant Kibodeaux said. "You don't want a static charge to affect the weapon."

The weapons load team's job does not stop once the weapons are loaded on the plane, he said. The airmen are part of the team who make sure the weapons are live just before the aircraft takes off.

Airman 1st Class Stacy Wilson safes a guided bomb after an A-10 mission.

"We go out and pull the pins on the aircraft at end of runway and put them back in when the aircraft returns," Sergeant Kibodeaux said. "That can be the scary part."

One of the most enjoyable parts of the job is loading the 30mm Avenger cannon – the key to the Warthog's lethality. "You are constantly on the move when loading the shells," Airman Moreland said.

On the other hand, when that cannon has maintenance problems, it can be "a pain in the butt," Sergeant Kibodeaux said. "It can be working well one minute and be broken the next."

The load crews here have replaced four A-10 cannons in their six-month tour – one time they had to replace the entire weapon, including the harness that makes the gun function. It took two crews a total of two days to make those repairs, Airman Wilson said.

No matter the hardships, though, the airmen said the best part of their job is the feeling they get when the plane comes back with no bombs on it.

"You know you are doing your job right," Airman Wilson said. "You feel like you're accomplishing something." ■

C-Model A-10 Takes First Flight

EGLIN AFB, FL— The newly designated C-model A-10 Thunderbolt II, modified with precision engagement technology, was flown for the first time recently by the 40th Flight Test Squadron.

Precision engagement technology allows the Air Force's premier close air support aircraft to also use smart weapons such as Joint Direct Attack Munitions (JDAM) and Wind-Corrected Munitions Dispensers (WCMD), incapable in the previous model, officials said.

"We have taken the world's greatest close air support platform and made it even better by adding a wide array of laser and Global Positioning System-aided munitions, the latest in targeting pods and the infrastructure to support data link," said USAF Major Michael Rawls, the pilot who made the flight.

The increased capability also allows for the A-10C to accept more high-value target missions. Despite some speculation into whether to retire the A-10 in full or in part in years past, its performance in recent conflicts and its program enhancements make it an invaluable part of the Air Force fleet, officials added.

"The A-10 provides a ground commander with a capability no other platform can in terms of survivability, loiter time and array of weapons," Major Rawls said. "Bottom line: It is here for awhile."

For those who have seen an A-10, the new model looks identical from the outside because the modifications are largely in the software and cockpit hardware. The appearance would be different, though, when loaded with a new array of munitions. The new capability will enable the A-10C to carry six smart munitions, with a standard load of four, Maj. Rawls said.

Although it has not yet flown with a new payload including smart munitions, Maj. Rawls said he felt that the modifications had not affected the performance of the aircraft.

The estimated $300 million program has been a joint Air Force and industry effort, moving the A-10 into the 21st century with the capability to deliver the latest precision guided weapons to the battlefield. ■

News Briefs

Airborne Laser Team Achieves First Flight

The Boeing Airborne Laser (ABL) team flew an aircraft equipped with the integrated battle management and Beam Control/Fire Control (BC/FC) systems for the first time at Edwards AFB, CA, on Dec. 3.

Boeing is the prime contractor and systems integrator for the ABL weapon system, which places a megawatt-class, high-energy Chemical Oxygen Iodine Laser on a Boeing 747-400F aircraft to detect, track and destroy ballistic missiles in the boost phase of flight. ABL also can pass information on launch site, target track and predicted impact to other layers of the global ballistic missile defense system.

"This is a significant technological achievement in the ABL program and demonstrates the continued steady flow of progress we've been making." said Jim Evatt, vice president and general manager of Boeing Missile Defense Systems.

The ABL aircraft conducted initial airworthiness and battle management testing in 2002 after extensive modification from a civil freighter to the first airborne platform to house a megawatt-class directed energy weapon system. Following those successful tests, it was delivered to Edwards AFB in late 2002 to begin further weapon systems installation.

The Boeing Airborne Laser (ABL)

"We will continue flight tests to validate the integrated operation of the battle management and beam control segments and to ensure our expectations regarding vibration and its effect on the system are within the acceptable tolerances," Evatt said.

ABL is a key component of the government's overall ballistic missile defense architecture. In an operational scenario, the ABL's sensor system will detect and track an enemy's boosting missile, determine its position and destroy it with the high energy laser. The ABL's sensor system also identifies the launch location and predicts the impact location, which is communicated to other assets in the missile defense architecture.

Boeing is the weapon system integrator for ABL and provides the modified aircraft and battle management segments. Other ABL partners include Northrop Grumman, which provides the laser segment and Lockheed Martin, which provides the BC/FC segment. ■

Precision Seeker for Mortar Rounds

BAE Systems recently received a $6.6 million contract from the Defense Advanced Research Projects Agency (DARPA) to design, develop and demonstrate technologies that support the Radio Frequency Guided Munitions (RFGM) program.

RFGM is planned as a passive, all-weather, and inexpensive precision Radio Frequency (RF) seeker for use

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PEOPLE

President Bush has nominated **John D. Negroponte**, the U.S. Ambassador to Iraq, to serve as the nation's first director of national intelligence. Bush also nominated USAF Lt. Gen. **Michael V. Hayden**—currently Director of the National Security Agency—as Negroponte's deputy.

James A. Tegnelia has been appointed the new director, Defense Threat Reduction Agency. He is currently the vice president, DoD programs at Sandia National Laboratories. Undersecretary of Defense for Policy **Douglas J. Feith** will leave his position this summer.

Adm. **Vern Clark** will retire this summer after five years as Chief of Naval Operations. Adm. **Michael G. Mullen** has been nominated for assignment as CNO. Adm. **John B. Nathman**, who served as Vice Chief of Naval Operations, has become Commander, U.S. Fleet Forces Command. Vice Adm. **Robert F. Willard** will get his fourth star with assignment as Vice Chief of Naval Operations. He is currently serving as Director, Force Structure, Resources and Assessment, J-8, Joint Staff.

Navy Adm. **William J. Fallon** has taken over as Commander, U.S.Pacific Command. Rear Adm. (selectee) **Robert B. Murrett** is the Director of Naval Intelligence while USN Rear Adm. (lower half) **Allen G. Myers** is the Senior Military Assistant to the Secretary of the Navy.

Steven R. Loranger, ITT Industries president and chief executive, has been elected to the position of board chairman. **Dain Hancock** has retired as head of the aeronautics division of Lockheed Martin, replaced by **Ralph Heath**, who had been general manager of the firm's F/A-22 fighter program.

Sue Baumgarten has been named deputy general manager at Raytheon Technical Services Company with **Torkel Patterson** replacing her as president, Raytheon International. Boeing recently named **John Sams Jr.** as a vice president in the Air Force Systems business unit, with primary responsibility for shaping the precision engagement market.

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on a number of different weapons. The system will be able to home on and destroy an enemy's radio communications or jamming device. The RFGM will be able to seek targets operating in a range from 30 megahertz to three gigahertz.

During the nine-month Phase 1 effort, BAE Systems' Information & Electronic Warfare Systems (IEWS) in Nashua, NH, will design and develop the Radio Frequency antenna and receiver hardware, and signal processing software to detect, discriminate, and geolocate an RF emitter.

The BAE Systems team includes Draper Laboratories and BAE Systems Land Systems.

At the end of Phase 1, BAE Systems will test and demonstrate the system's performance against multiple emitter types.

DARPA's goal is to demonstrate that an 81mm mortar round is capable of receiving RF communications signals, determining the location of the emitter, and maneuvering in flight to impact near the target emitter. ■

JDAM Scores Direct Hit

Boeing recently conducted a guided flight test of the Boeing laser-guided Joint Direct Attack Munition at Eglin AFB, FL.

A USAF F-16 successfully launched the 500-pound GBU-38 weapon from 25,000 feet and approximately six miles from its target. The weapon detected the target, illuminated by a ground-based laser, and scored a direct hit within five feet of the designated aimpoint.

"The beauty of Laser JDAM is that it provides a highly affordable, highly desirable capability that can be installed on existing JDAMs without having to modify the aircraft's software," said Rick Heerdt, Boeing JDAM program manager. "When you consider that JDAM is operational on virtually every U.S. Air Force and Navy aircraft, including bombers, Laser-JDAM will be a huge benefit to the military and Boeing."

JDAM and F16 make lethal team

The laser-guided JDAM combines the combat proven GPS/INS adverse weather feature of standard JDAM with the clear-weather targeting laser-guided bombs offer. Testing of the system will continue against both fixed and moving targets. ■

100,000th JDAM Tail Kit Delivered

Boeing has delivered the 100,000th tail kit for the Joint Direct Attack Munition (JDAM) weapon to the U.S. military.

U.S. Air Force Major General Robert Chedister, commander of the Air Armament Center at Eglin AFB, FL, praised the Boeing team responsible for producing the JDAM tail kit.

Boeing began producing the JDAM tail kits in 1998, which provide near precision capability to Mk 80 series bombs through GPS satellite-aided navigation. Initial production was 900 tail kits per year, but following the September 11, 2001 attack; tail kit production skyrocketed to 3,000 tail kits per month.

The U.S Air Force was the first JDAM customer and in six years, has received more than half of all JDAMs produced. The U.S Navy has received more than 37,000 JDAMs, with the remaining produced for international customers.

The JDAM is a satellite-controlled, near-precision weapon ranging in size from 500 to 2,000 pounds. The 500-pound variant is the newest member of the JDAM family and is being used extensively in operations in Iraq and Afghanistan. ■

A BONUS for United Defense

United Defense has been awarded a contract to deliver cannon-fired 155mm BONUS precision munition systems for testing by the U.S. Army.

BONUS, developed by Bofors Defence of Sweden and GIAT Industries of France, consists of a 155mm spin-stabilized projectile that enhances cannon artillery precision by dispensing two Sensor Fuzed Munition submunitions that are designed to attack and destroy tanks and other armored combat vehicles. It brings to cannon artillery a precise, cost-effective munition for destroying enemy armored and hard targets.

Under the terms of the contract, which will be managed by the U.S. Army's Program Manager -Combat Ammunition Systems at Picatinny Arsenal, United Defense will deliver ammunition in both test and tactical configurations in 2005. This hardware will be used to evaluate and qualify the BONUS munition for employment with U.S. 155mm cannon artillery platforms.

Munition firings and testing, as well as captive flight testing of the BONUS Mk II dual-mode sensor suite, will be conducted at the Army's Yuma Proving Ground near Yuma, AZ.

The BONUS system is in serial production in both Sweden and

France under multi-year production contracts. BONUS is the only cannon-fired precision munition currently in full rate production.

Last December, United Defense teamed with Bofors Defence AB and GIAT Industries to lead the 155mm BONUS precision munitions program for the U.S. artillery munitions market.

Under a teaming agreement signed with Bofors, of Karlskoga Sweden, and GIAT, of Versailles France, United Defense will serve as the prime contractor for the U.S.155mm BONUS. ■

New Targeting Pod for F-15E

An F-15E Strike Eagle aircrew from the 494th Fighter Squadron took part in a flight that marked an evolution in weapons technology, using a Sniper Advanced Targeting Pod on the aircraft in January.

An F-15E weapons system officer can now independently launch satellite-guided weapons on targets. Previously, such launches required ground support coordinates.

"The pod has been a long time coming," said USAF Capt. Sean Lowe, the weapon system officer who tested the pod during the flight. "It enhances the WSO's skills and the Strike Eagle's capabilities."

The sniper pod also enhances the F-15E's capability by decreasing the time it takes to hit a target after identification, said Col. Kent Laughbaum, 48th Operations Group commander. The sniper pod receives target coordinates directly from a satellite and communicates the information to the munition.

A 494th Fighter Squadron F-15E Strike Eagle equipped with the new Sniper Advanced Targeting Pod

Pilots tested the sniper pod's abilities against stationary and moving targets. They worked with a team of joint terminal attack controllers from the 4th Air Support Operations Group at Heidelberg, Germany, in simulated conditions that resembled weather in Southwest Asia.

The flight also marked the first time an F-15E carried a GBU-38 Joint Direct Attack Munition, a 500-pound "smart" bomb.

"It's a perfect combination," Colonel Laughbaum said. "The precision of the sniper pod with the accuracy of the GBU-38 limits collateral damage and enhances the mission of our aircraft." ■

ERGM Guides into Success

Raytheon successfully fired two tactical ERGM (Extended Range Guided Munition) rounds at White Sands Missile Range, NM, Feb. 16.

Both rounds exited the gun after transferring through a severe gun environment; additionally the tails erected and the rocket motor ignited. Moreover, both rounds achieved stable flight, acquired and tracked GPS satellites, developed in-flight navigational solutions, and guided to the target area more than 40 nautical miles away. The first round flew into the target arena and detonated the warhead.

"Meeting today's objectives with tactically configured rounds validate our technical advancements in the component structure and set the stage for the land based test flight series to begin," says David Martin, Raytheon Projectiles product line vice president. "With the performance we saw today, we've completed the final engineering flight test, gained valuable total system performance data, and demonstrated a revolutionary capability that will fill the gap in naval surface fires as soon as possible with one of the first precision guided munitions to be fired from a gun."

Raytheon Missile Systems is the leading developer of guided projectiles with Excalibur (155mm) and ERGM (5 inch) that will provide the precision U.S. forces need on the battlefield as soon as possible. This family of precision- guided munitions delivers rounds with great accuracy and avoids high incidents of collateral damage while destroying an enemy in the complex urban or mountainous environment. Excalibur and ERGM leverage many common components and partner with suppliers to produce two low cost and reliable weapon systems that meet or exceed all customer-defined requirements. ■

Tools to Handle IEDs

An improvised explosive device (IED), often rigged to detonate from a distance, may be the most common casualty-producing weapon in Iraq, but if it uses a radio receiver, it could also be one of the easiest to override, say researchers at the University of Missouri-Rolla.

Radio receivers, such as those found in remote-controlled toys, wireless phones, cell phones, and wireless doorbells, are cheap, readily available devices that are often used to initiate the explosion in an IED, says Dr. Todd Hubing, professor of electrical engineering at UMR.

"At Fort Leonard Wood, Missouri, we viewed IED training tapes and

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saw there are a lot of cases where command-initiated IEDs are placed on the side of the road in a very remote area," says Dr. Daryl Beetner, assistant professor of electrical engineering at UMR. "If a military convoy was able to detect the presence of a radio receiver on the side of the road up ahead, they would be able to react accordingly before it could pose a threat."

Hubing, Beetner and other researchers in the UMR Electromagnetic Compatibility Laboratory are internationally recognized for their ability to track down the sources of unintentional noise in electronic systems for the purpose of minimizing radio frequency emissions.

They are now using some of those same tools to detect and identify radio receivers. One of the techniques involves capturing the electromagnetic radiation from various radio receivers and slowing it down to make audio signals. Filtering, or pre-processing of the signals, is key to enhancing the sound of a particular receiver.

"It would be relatively easy to override these radio receivers if we could recognize them," Hubing says. "If we could identify the receiver, we could prevent an IED from ever receiving the initiation signal. In many cases, it would also be possible to send a signal that would set off the explosives before they could pose a threat."

Initially the researchers plan to develop a device that a passenger in the first vehicle of a military convoy could use to listen to, identify and locate radio receivers. "This would be similar to sonar detection on submarines, where you have a person who is listening to the sounds that are out in the ocean," Beetner says. Ultimately both researchers would like to provide the military with automated detection using an artificial neural network or other technique to recognize unusual sounds.

"There's way too much information to play it back in real time," Hubing says. "Right now we're capturing 100 milliseconds of data and we're taking 10 seconds to play it back. But we are also looking at other ways of presenting the signal. For example, we could intelligently change the size of the sample by having the computer listen and only play back what it decides is interesting for us to hear."

The researchers believe that in a year, with funding, they could

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Follow-on Contract for Joint Programmable Fuze

Kaman Aerospace Corporation's Kaman Dayron unit has received a follow on order from the U.S. Air Force for production of the FMU-152 Joint Programmable Fuze (JPF).

The JPF system was developed in response to operational requirements for use in most of the guided weapon inventories of the USAF, U.S. Navy and selected allies.

For example, the fuze is key to the Boeing Joint Direct Attack Munition (JDAM), which is an accurate, all weather inertial navigation system/Global Positioning System guidance kit for the MK-80 series warheads and penetrating warheads such as the BLU-109. The JPF, in conjunction with JDAM, allows aircrews to change fuze settings in-flight (prior to weapons release) and very effectively neutralize a wide variety of targets.

In addition, the JPF will work with almost every mainstream guided and unguided air to surface bomb in the USAF and USN inventory. The JPF can work as a delay fuze for hardened buried targets, as a surface impact fuze for surface targets, and as an altitude burst fuze when used with a proximity sensor to attack area targets.

Being able to select operational directed fuze modes in-flight significantly increases the flexibility and effectiveness of the weapon. The FMU-152 JPF is designed to be compatible with the same warheads and systems that employ all versions of the FMU-143 and FMU-139, allowing users to purchase one fuze to perform a variety of missions superceding the many different types of fuzes currently inventoried around the world. ■

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develop a system for soldiers to identify and locate radio receivers in remote areas.

"Presumably we'd be able to hear anything electronic, particularly if it had a processor in it and there was a lot of electrical activity," Hubing says. "This project started as an effort to identify automobiles based on their radio frequency emissions. This turned out to be much easier than we anticipated. We shifted our focus to radio receivers when we learned of the urgent need in this area." ■

SLAM-ER Weapon Shows Moving Target Capability

Boeing successfully conducted its first captive-carry test of a Standoff Land Attack Missile Expanded Response (SLAM-ER) missile enhanced with moving-target, network-centric software at the Naval Air Warfare Center Weapons Division Range, China Lake, CA.

Carried on an F/A-18 aircraft, the SLAM-ER received real-time data via standard Link-16 messages that originated from an orbiting Joint STARS aircraft. Once the information was relayed automatically through the F/A-18 controlling the missile, the SLAM-ER trained its seeker on the moving target and gauged its velocity. The F/A-18 pilot then used "Stop Motion Aimpoint Update" technology to designate the precise impact point and simulate attacking and destroying a truck traveling in traffic between 40-50 mph.

"SLAM-ER will provide naval warfighters with the first network-centric weapon capable of tracking down and eliminating moving targets," says Boeing's Mike Marks. "This is a significant step forward in weapons development."

The SLAM-ER production software with moving target capability was to be delivered to the U.S. Navy in October 2004, followed by flight tests in mid-2005, and fleet deployment in October 2005. ■

Lockheed Martin Receives $532M Contract for PAC-3 Missiles

Lockheed Martin recently received a $532 million contract for 156 PAC-3 Missiles for the U.S. Army, The Netherlands and Japan. This represents the first international sales of the battle-proven PAC-3 Missiles.

The contract also includes launcher modification kits as well as kits of spares and other ancillary ground equipment. The PAC-3 Missile is currently the world's only fielded hit-to-kill, pure kinetic energy air defense missile.

Under the contract, Lockheed Martin will deliver 156 PAC-3 Missiles to the U.S. Army, 32 of which will then be delivered to The Netherlands and 16 missiles to Japan. The Netherlands and Japan are receiving their respective interceptors under Foreign Military Sale (FMS) agreements.

The U.S. Army Aviation and Missile Command, Huntsville, AL, is the contracting agency. Delivery of all missiles and equipment should be completed during 2006. Work will take place at Lockheed Martin facilities in Dallas and Lufkin, TX, and Camden, AR.

Steve Graham, Lockheed Martin's vice president – PAC-3 Missile Program, said "all Patriot-using nations have expressed interest in improving their defensive capabilities by upgrading to the PAC-3 system, and we want to put this vital capability into their hands as soon as possible."

Lockheed Martin is prime contractor on the PAC-3 Missile Segment upgrade to the Patriot air defense system. The PAC-3 Missile Segment upgrade consists of the PAC-3 Missile, a highly agile hit-to-kill interceptor, the PAC-3 Missile canister (which holds four PAC-3 missiles), a Fire Solution Computer and an Enhanced Launcher Electronics System. These elements are being integrated into the Patriot system, a high to medium altitude, long-range air defense missile system providing air defense of ground combat forces and high-value assets.

The PAC-3 Missile has been selected as the primary interceptor for the multi-national Medium Extended Air Defense System (MEADS). MEADS is a transatlantic development program for the next generation of air and missile defense.

PAC-3 Missiles will act in conjunction with Terminal High Altitude Area Defense (THAAD) Missiles to provide a layered coverage. PAC-3 supplies the lower-tier defense against air and missile threats while THAAD provides upper- tier coverage against ballistic missiles. ■

Northrop Grumman Demos Moving Target Engagement Capability

Northrop Grumman recently performed successful high-speed captive flight tests of its multi-mode air-to-ground terminal guidance seeker during moving target engagement exercises at Eglin AFB, FL.

The exercises, conducted by the USAF Research Laboratory in cooperation with Northrop Grumman, Boeing and Rockwell Collins demonstrated the seeker's capability to find, fix, track, target, engage and

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assess tactical moving targets based upon targeting information provided by ground forward air controllers through a weapon data link.

The demonstration featured a Boeing weapon pod simulating the Small Diameter Bomb. This pod contained the multi-mode seeker, a Boeing weapon mission computer and a Rockwell Collins Link-16 data link.

The seeker's ability to find, track, and engage single and multiple moving targets versus varying target speed, aspect, and Link-16 data link update rates was evaluated. The tests were conducted in varying weather conditions, including low ceilings and limited visibility. The Northrop Grumman multi-mode seeker successfully acquired and tracked targets with greater than a 97 percent success rate at tactically useful ranges.

The tests also evaluated the ability to use target position updates data linked to the seeker from ground forward air controllers to accurately acquire the correct target. The target position data was obtained using Northrop Grumman's Lightweight Laser Designator Rangefinder.

"The demonstration's success provides a preview of future network-centric warfare," said Jock McKinley, director of strike programs for Northrop Grumman's Systems Development & Technology Division. "The successful demonstration supports the Air Force's requirements to field smart weapons that are interoperable with today's platforms and to enhance mission effectiveness by utilizing network-centric and joint operations." ■

JSOW-C in Full-Rate Production

Raytheon is working under a $55.7 million full-rate production contract to provide the newest version of the Joint Standoff Weapon (JSOW-C) to the U.S. Navy.

Raytheon Missile Systems will provide 189 AGM-154C JSOW-C weapons, logistics support and ancillary hardware under the contract. Work is expected to be completed in February 2007.

The USN approved full-rate production after the weapon completed a highly successful series of Navy operational tests. The tests included a wide array of targets ranging from radar sites to caves and hardened bunkers and upon completion the JSOW-C was graded as "operationally effective and suitable" for military use.

JSOW-C incorporates a Raytheon-developed uncooled, long-wave infrared seeker with automatic target acquisition algorithms, providing the Navy a launch-and-leave weapon with a long-range standoff precision strike capability.

JSOW-C is the first U.S. weapon to incorporate the two-stage broach blast fragmentation/penetration warhead, developed by the United Kingdom's BAE Systems. Thales provides the fuze. JSOW-C has a unique capability for a glide weapon in its ability to attack a hardened target in a near-horizontal mode. ■

Precision Strike Annual Programs Review

Hilton Crystal City Hotel
Arlington, VA
April 19-20, 2005

Precision Strike—Interdependency Across the Services is the theme of the Annual Programs Review sponsored by the Precision Strike Association (PSA).

Two years ago all services committed to becoming more interoperable and transforming toward mutual interdependence. Operations Iraqi Freedom and Enduring Freedom demonstrated a level of interoperability heretofore unseen. Senior leaders in each service are now challenged to share technology and truly leverage commonality within systems and target sets to realize both manpower and materiel savings.

Prominent military leaders will keynote this two-day unclassified review. Other exceptional presenters will come from the Program Executive Officer (PEO) offices, OSD, the military services, the defense industry and the testing community. Military Department technical chairs will lead sessions on precision strike capabilities. Additional highlights include the popular Precision Strike Acquisition Panel.

For further information or to register,
contact PSA by phone at 703-247-2590

CALENDAR OF EVENTS

Annual Programs Review

Date: April 19-20, 2005

Theme: *"Precision Strike—Interdependency Across the Services"*

Location: The Hilton Crystal City at Ronald Reagan National Airport, Arlington, VA

Summer PEO Forum

Date: July 27-28, 2005

Theme: *"Precision Strike Capabilities For The Future Battlefield"*

Location: Emerald Coast Conference Center, Ft. Walton Beach, FL

Precision Strike Technologies Synposium

Date: October 18-20, 2005

Theme: *"Accelerating Precision Strike Technology for Stability Operations and Protection of Coalition Forces"*

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

Call for Papers available on PSA website

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

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In the next Issue

Wrapup on PSA's Annual Programs Review 2005

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