



Precision Strike Association
Affiliate, National Defense
Industrial Association

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"From Cruise Missiles Association to Precision Strike Association we have been dedicated to advancing the art and science of precision engagement concepts and technology for more than 25 years."

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.

PSTS-18 Will Address What Leaders Want Us To Know About

By Ginny Sniegou, PSA Programs Chair

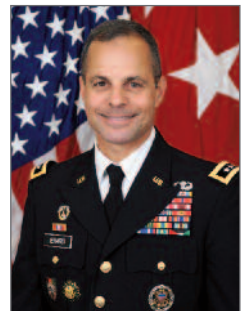
As the US Department of Defense (DoD) faces the realities of a changing world and pays full attention to its major competitors China and Russia, the precision strike community focus is on enhanced lethality and modernizing key precision engagement capabilities for aggressive execution of SECDEF's National Defense Strategy.

Plan to participate all three days in Not-to-Miss Sessions focused on critical topics including Threat and Posture, DoD Faster Response, Hi-Speed Technology Response, Autonomous Weapon Systems, Technologies Ahead, Strategic Readiness/ Nuclear Deterrence, and Strategic Program Technical Achievements and Challenges.

The precision strike community values your participation and looks forward to having you and your cleared colleagues join us to share in this demanding, stimulating and timely 28th annual SECRET//NOFORN Precision Strike Technology Symposium (PSTS-18) on 23-25 October 2018 at the JHU/APL Kossiakoff Center, at Laurel, MD. Please register NOW!

This year's theme *Sharpening America's Competitive Edge with High Speed Precision Engagement* allows us the opportunity to pursue many of the Administration's challenges and priorities by showcasing crucial topics including:

- Tactical Threat Challenges
- Regaining Overmatch with Enhanced Lethality
- Policy, Posture and Modernization Priorities to meet the Threat
- Delivering New Capabilities at the Speed of Technology



Lieutenant General
Anthony R. Ierardi, USA



General
James "Mike" Holmes, USAF



Honorable
James "Hondo" Geurts



Doctor
Steven H. Walker



Rear Admiral
Brian Corey, USN

See **PSTS-2018**, cont. on pg. 13

IN THIS ISSUE

PSTS-18 Preview.....1

PSAR-18 Wrapup.....3

Perry Award Wrapup.....6

PGM Power.....8

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Chairman's Column

In an effort to promote better communication between Government and Industry, the

Precision Strike Association (PSA) and the National Defense Industrial Association (NDIA) are providing venues and opportunities to exchange ideas to help close war fighting capability gaps and imbue the acquisition process with more speed and agility.

PSA in conjunction with NDIA is proud to sponsor Captains of Industry engagements and the annual Precision Strike Technology Symposium (PSTS-18).

Across the US Department of Defense (DoD) there is a realization that the Great Power Competition in the Pacific is making speed and responsiveness an imperative. Unfortunately, our acquisition process is built around reducing risk rather than timely application of technology.

In order to reverse the erosion of National Power, the Trump Administration has increased budget authority to the DoD while easing regulatory obstacles for Industry. These alone have been effective in helping to address readiness and manpower shortfalls. However, to really get at the capability gaps, a new approach to developing technology and transitioning it to the Warfighter must be adopted.

It is fortunate that US Defense Secretary James N. Mattis is a leading advocate for change and has strong leadership from Dr. Michael D. Griffin ASD(R&E) and across the Military Services in James "Hondo" Geurts, Assistant Secretary of the Navy for Research, Development, and Acquisition, Will Roper, Assistant Secretary of the

Air Force for Acquisition, Technology & Logistics, and Bruce D. Jette, Assistant Secretary of the Army (Acquisition, Logistics and Technology).

Secretary Mattis and his Military Service Leaders are refocusing on the threat and defeating it. As each Military Service responds to the growing challenge, they are increasingly looking to collaborate across the Government Laboratories, Industry and Academia divides to find the most appropriate technologies in the shortest time possible.

Much of this focus is manifesting itself in capability demonstration and prototyping efforts to get real capability to the Warfighter in the fastest possible manner.

Industry is in a unique position to provide timely insights into available technologies, materials and processes needed for rapid transition to Warfighting capability. NDIA and PSA are honored to be playing a part in this process.

The Captains of Industry events are intended to gain leadership focus and buy-in. Leadership from the Military, from Industry, and across Academia and the Government Laboratories are critical to energizing their respective organizations and placing a priority on collaboration.

NDIA and PSA — in providing classified roundtables, large-scale classified symposia and in-depth cross-Industry studies — are doing their part to provide the DoD leadership with the combined knowledge and expertise of the aerospace and defense industrial base on what is in the art of the possible today and how to focus on the key challenges of tomorrow.

To that end, PSA is pleased to be providing the Precision Strike
See **Chairman's Column**, cont. on pg. 9

PSAR-18: Strategic and Agile Acquisition Response to the Growing National Security Threat

The precision strike community conducted its one-day SECRET//NOFORN Precision Strike Annual Review (PSAR-18) at the Lockheed Martin Global Vision Center on 20 March 2018 with a maximum capacity audience.

PSAR-18 was orchestrated by the PSA Programs Leaders **Ginny Sniegon**, **Captain “Jumbo” Baird**, **USN**, **Chuck Kelly**, **Kurt Chankaya** and **Mark Converse** with assistance from numerous **PSA Board Members** and the **PSA Advisory Council**. Chairman of the Board **Ken Masson** welcomed the participants.

Then, **Kurt Chankaya**, PSAR-18 Event Chair, presented Opening Remarks that centered on the theme *Strategic and Agile Acquisition Response to the Growing National Security Threat*. With the current focus on re-emergence of Great-power Competition, PSA put together a compelling agenda for government, industry, and academia participants that addressed critical threats and challenges related to precision engagement.

PSAR-18 topics focused on strategy briefs on the new *National Security Strategy (NSS)*, *2018 National Defense Strategy (NDS)* and the *Nuclear Posture Review (NPR)* to support a more capable and lethal Joint Force for major combat in the new strategic environment.

Further, hot-topic sessions conducted included a Congressional Perspective on the Growing National Security Threat; Joint Staff briefing on Developing Agile Joint Requirements and Capabilities; keynote address on the U.S. Pacific Fleet Posture; and, a SCO presentation on Turning Existing Technologies

and Weapons into Surprising New Capabilities—Fast. Further, briefings on Conventional Prompt Strike Test Results, DARPA Operational Fires, F-35 Update, Special Tactics, Future Strike Technologies, Munitions Industrial Base Resiliency, and the Defense Industrial Base Optimization Model Concept were presented.

Unclassified highlights addressed at PSAR-18 are summarized below:

Following opening comments, **Representative Rob Wittman (VA-01)** noted the importance of the NDS and the NPR and addressed the challenge for DoD to ‘operationalize the budget.’ Then, the Congressman highlighted the importance of several major programs and focus areas including the Virginia Payload Module, Columbia Class Submarine, B-21, B-52 Upgrades, Hypersonics, Quantum Computing and Artificial Intelligence. Further, he addressed acquisition reform by focusing on three elements of successful programs—requirements stability, budget certainty from Congress and industry execution. Additionally, Congressman Wittman highlighted the importance of the Industrial Base for DoD by noting that in WWII we out-produced our adversaries to win. No such quick conversion to DoD production is available today. In conclusion, how do we win, he asked? He answered by noting more efficiency with our resources — deliver more

capability per unit of currency. Congressman Wittman closed by stating that we have the workforce and talent needed to win this great power competition.

Next, **Dr. Nadia Schadow**—Deputy National Security Advisor on the NSC at the time of PSAR-18—presented a clear-eyed view of competition and the contested environment. She focused on the four core national pillars of the NSS—homeland protection, promote US prosperity, preserve peace through strength, and advance American influence. Further, she engaged in the five themes—border security, compete to retain our advantage, cooperate with reciprocity, catalyst for our allies; and confidence in force for good. As the prime author of the NSS, Dr. Schadow mentioned that the NSS was written for the American people so they know what is at stake.

Mr. Elbridge Colby—DASD for Strategy and Force Development, USD Policy—followed Dr. Schadow by discussing the significant SECDEF personal effort on defining the problem and the ‘core challenge.’ He focused on peer competition and noted that gone are the days of ‘downtime’ in any domain. He highlighted A2/AD force employment—especially in the Pacific.



Rep. Rob Wittman (VA-01)



Dr. Nadia Schadow



Mr. Elbridge Colby



Major General
David Krumm, USAF



Colonel
David Buchanan, USAF



Major Amber Walker,
USA, Ph.D.



Admiral Scott Swift, USN

Most of Mr. Colby's presentation highlighted development priorities including Nuclear, Space and Cyber as warfighting domains, C4ISR, Missile Defense, Joint Lethality in Contested Environments, Forward Force Maneuver, and Advanced Autonomous Systems.

Next, **Major General David Krumm, USAF**—Joint Staff (J-8)—addressed **Developing Agile Joint Requirements and Capabilities** and emphasized the need to collaborate with industry. He noted that for the last 31 years our forces had qualitative overmatch—not realistic to rely on this anymore, based on the threats' capability and capacity. General Krumm outlined focus areas for change including space, speed, mass/quantity, range, cyber, AI, and multi-domain warfighting. Regarding the JCIDS, expect changes for more flexibility. Plus, the new JCIDS manual that was recently released includes a new word 'waiverable'. Further, he addressed forcing the threat to adjust to us at the pace of technology. Also, he discussed buying fewer systems, more often and with shorter life cycles. General Krumm closed by highlighting the importance of open architecture and Government-owned intellectual property.

Then, **Colonel David Buchanan, USAF**—DD for Space and Prompt Strike, USD(R&E)—shared **Conventional Prompt Strike Test Results**. He mentioned that Hypersonic Boost Glide is INF treaty

compliant and is currently an OSD Defense-wide program that will be led by the Navy Strategic Systems Program in FY20. Now being executed by the National Team—including Sandia, Draper and Livermore National Labs, transition to industry is planned. Booster is the pacing factor. Proposals were received in December 2017—currently in Source Selection.

Major Amber Walker, USA, Ph.D.—PM DARPA's Tactical Technology Office—followed by briefing DARPA Operational Fires. Major Walker stated that deep strike capability for Army is INF treaty compliant. She informed the precision strike community that mobile launch capability is a big driver for the Army. She discussed leveraging Tactical Boost Glide flight vehicle from DARPA to the Air Force and talked about payload modularity. Propulsion system and weapon system integration release timeframes were discussed as well.

Next, just prior to lunch, **Vincent Sabio**—PM, Advanced Technology Programs, Strategic Capabilities Office, OUSD(R&E)—addressed **Turning Existing Technologies and Weapons into Surprising New Capabilities—Fast**. He pointed out that SCO is focused on Pacific and European theaters only. He noted that primary approaches are to repurpose existing systems, improve cost exchange and introduce 'trick plays'—looking at 3-5 years total per project.

The noon keynote address **U.S. Pacific Fleet Posture for Precision Engagement** was presented by **Admiral Scott "Notso" Swift, USN**—Commander, U.S. Pacific Fleet—via video.

Admiral Swift—a long-time advocate and great friend of the precision strike community used the informal interview format to discuss what keeps him up at night. He noted that the strategic competition that the U.S. is in a contest of the rules based order versus regional control and instability desired by our adversaries. The Admiral exclaimed that we are innovators – our adversaries are replicators. He was proud to note that USPACFLT has improved our ability to fight the Fleet at the operational level. (See separate article that addresses presentation of the William J. Perry Award to Admiral Swift.)

Greg Weaver—DD Strategic Stability, Joint Staff (J-5)—followed with a briefing on the **Nuclear Posture Review**. Due to the overall classification of this briefing, no notes are available.

Then, **Vice Admiral Mat Winter**—Director, Joint Strike Fighter Program—presented an update on the **F-35 Program**. Admiral Winter stated that Block 4 (post-EMD/IOT&E) will be delivered via Continuous Capability Development and Delivery (C2D2). The plan is to leverage Agile/Scrum, Model Based Systems Engineering (MBSE), Capabilities Based Testing, and Live Virtual Constructive (LVC). He further stated that an "S&T Forum" will be established to include Small Business to feed into C2D2. Also, the Admiral noted that approximately 280 jets have been fielded to date across all variants. Additionally, he informed the precision strike community that the F-35A



Greg Weaver



Vice Admiral Mat Winter



Major Mike Smith, USAF



LtC Nate Pierpoint, USAF



Dr. Justin Lloyd



Julie Kelly

has 8 partners and 3 FMS cases (Israel, Japan and South Korea). F-3B is USMC plus UK and Italian Navy; F-35C is US only.

Then, **Major Mike Smith, USAF**—Chief of Weapons and Tactics, 720th Special Tactics Group, AFSOC—addressed his three missions—Global Access; Precision Strike; Personnel Recovery—of **Precision Strike Effects**.

Lieutenant Colonel Nate Pierpoint, USAF—492nd Special Operations Wing, Chief of Tactics Development and Innovation, AFSOC—followed Major Smith and focused on the GBU-69 Small Glide Munition and AGM-176 Griffin. He noted that their future weapons upgrades will likely include adding datalink (FY19) and a low collateral damage warhead. Their Hellfire variant, AGM-114R9, has an extremely low collateral damage warhead. Future

areas of interest discussed by Nate Pierpoint included High Energy Laser (HEL); Tactical off-board sensing (TOBS); Video SAR (ViSAR) with DARPA; SOF Mobility with SCO; and A-PNT.

Next, **Eric Chewning (SES)**—DASD for Manufacturing and Industrial Base Policy. OUSD(A&S)—noted that the FY 17 Industrial Base (IB) report was published in March 2018. However, the release date of the numerous recommendations did not occur until 4 SEP 2018. Mr. Chewning discussed key causes of IB issues: Sequester/USG Funding Instability; U.S. Manufacturing Decline; USG Business practices; and, Industrial Policies of our Allies and Adversaries.

Dr. Justin Lloyd and Julie Kelly — Institute for Defense Analyses

Research Analysts—provided PSAR-18 participants with an update of the Industrial Base Optimization Model Concept.

Ken Masson—Chairman of PSA’s Board of Directors—provided the closing remarks for PSAR-18. This included requesting that all attendees mark their calendars for the 3-day SECRET//NOFORN Precision Strike Technology Symposium (PSTS-18) scheduled for 23-25 October 2018 at the JHU/APL Kossiakoff Center, Laurel, MD.

Speakers and participants again expressed their appreciation to PSA for providing the opportunity to display the enormous government and industry teamwork that is taking place. Many were grateful to PSA once again for conducting a very beneficial Precision Strike Annual Review. ■



Perry Award Presented to Admiral Scott “Notso” Swift, USN

The Precision Strike Association (PSA) presented Admiral Scott Swift, Commander, U.S. Navy Pacific Fleet, with the 22nd Annual William J. Perry Award at the Precision Strike Annual Review (PSAR-18) on March 20, 2018 in Crystal City, Virginia.



Admiral Scott Swift, USN

The award is named in honor of former Secretary of Defense Dr. William J. Perry and recognizes exceptional contributions to precision strike systems in the private or public sector by an individual or team.

The award honors the immediate and long-term impact that Admiral Swift has had on our nation’s precision strike combat advantage. The breadth of his contributions to the U.S. Pacific Fleet, and to the precision strike community writ large, is staggering and is in keeping with the highest Department of Defense standards set forth by Dr. William Perry.

“We are honored to recognize Admiral Swift’s career-wide contributions to our nation – both as a warrior and as a visionary leader,” said Ken Masson, Precision Strike Association Chairman. “Taking stock of Notso’s career is a revelation; Pacific Fleet’s Attack Aviator of the Year and Pacific Fleet’s LSO of the Year...he has excelled as a warrior and led with the confidence of example The US Navy, our country and the Precision Strike community has benefited from his service and will continue to feel Notso’s impact for years to come. Notso has stood at the gate protecting our nation from the rising tide in the Great Power Competition. It is an honor to recognize a true warrior, leader, and naval legend.”

As the Commander, U.S. Pacific Fleet, Admiral Swift was responsible for all Pacific Fleet operational forces. He was active in precision strike his entire career and has amplified the necessity and criticality of precision strike through his tireless advocacy and support,

especially as the Pacific Fleet Commander. His whole of government, to include industry, approach to the high-end warfighting needs has reshaped the Pacific Theater and significantly advanced precision strike. His ability to integrate innovative solutions and warfighting concepts into current systems to rapidly advance precision strike capabilities has kept the United States ahead of potential near-peer competitors.

Displaying influential leadership, Admiral Swift focused the Pacific team on updating and upgrading maritime fires in PACFLT resulting in a streamlined and more effective fires process for the entire Pacific Fleet. His integrated systems approach garnered extremely wide support from the community and made fundamental improvements in how fires are integrated into war fighting. His leadership and emphasis on this critical capability streamlined the processes and have resulted in sweeping, lasting changes to maritime fires that will keep our forces ahead of competitors now and in the future.

Specifically, Admiral Swift directed continuing process improvements to identify and correct deficiencies in the Pacific Fleet Maritime Fires Cell organization, tactics, techniques and procedures. He also directed the integration of joint fires, to include

non-conventional uses of Navy and joint force precision ordnance, to maximize the efficiency and effectiveness of their employment under the direction of the Joint Forces Maritime Component Commander as a supported command.

Admiral Swift brought the entire theater’s warfighting team together to get the most out of joint fires and precision strike resulting in improved communication, teamwork and cooperation between US Navy, Marine Corps, US Air Force, US Army and Allied forces. Admiral Swift’s warfighting instructions and SWIFT signals for the U.S. Pacific Fleet have resulted in the precision strike community’s deeper understanding and renewed focus on the maritime capabilities required to remain ahead of our potential adversaries in the Pacific Fleet Area of Responsibility.

His leadership in promoting precision strike, and his drive for increasing strike warfare innovation with the integrated government/industry team, have continually and consistently improved our nation’s precision strike capabilities. He focused the Navy’s requirements and acquisition program office teams on the unique issues faced by current and future weapon systems in a maritime environment leading to a re-prioritization to prepare for a potential high-end fight in the Pacific theater.

Admiral Swift was responsible for significant increases in weapons’ capability and precision targeting for critical weapon systems, which are key to our nation’s ability to win in combat operations. This includes several new precision strike joint fires solutions and strike warfare concepts of operations that were introduced and proven out in 2017.

As an example, the introduction and integration of the F-35B and F-35C Joint Strike Fighter into the Pacific theater in 2017 and 2018 will continue to accelerate the precision strike warfighting capability and capacity of the United States Marine Corps and US Navy.

Admiral Swift has been a career-long proponent and consumer of precision strike capabilities and has championed the community at every turn. As the Senior Aviator in the US Navy, he consistently encouraged tactical excellence, especially in precision strike warfare. As Commander, U.S. Pacific Fleet, his superlative leadership and team approach integrating the US Navy and Marine Corps with his joint and allied partners fundamentally improved the warfighting capabilities of the Pacific Fleet Forces including the conduct of precision strike.

Admiral Swift attended San Diego State University and received his commission in 1979 through the Aviation Reserve Officer Candidate program. He received his master's degree from the Naval War College in Newport, Rhode Island.

His operational assignments included Attack Squadron (VA) 94; VA-97; Carrier Air Wing 11 staff; Commander, Strike Fighter Attack Squadron (VFA) 97; Commander, Carrier Air Wing 14; Deputy Commander, Naval Forces, U.S. Central Command; Commander, Carrier Strike Group (CSG) 9; and



ADM Scott Swift, USN

Commander, U.S. 7th Fleet. During those tours he participated in combat Operations Praying Mantis, Southern Watch, Enduring Freedom and Iraqi Freedom.

His shore tour assignments included VA-122; Naval War College; Commander of Strike Fighter Weapons School, Pacific; F/A-18 requirements officer, OPNAV; Commander, VFA-122; Officer of the Under Secretary of Defense for Acquisition, Technology and Logistics staff; and Director of Operations, U.S. Pacific Command. Prior to assuming command of the U.S. Pacific Fleet in May 2015, Admiral Swift was assigned to the Pentagon as the Director of the Navy Staff.

Admiral Swift retired from the U.S. Navy in July 2018 after 39 years of active duty. He is now the Robert E. Wilhelm Fellow at MIT's Center for International Studies in Massachusetts.

Admiral Swift participated in PSAR-18 via a video that was recorded in his Hawaii headquarters during PACFLT's Sea of Dreams Conference earlier in March. In the video, PSA Chairman Ken Masson and PSA Secretary Mark Converse presented Admiral Swift with the Perry Award.

Admiral Swift's acceptance remarks included recalling when PSA's Chair for Programs, Ginny Sniegon, first approached him over a decade ago to participate in PSA events. He also thanked PSA for persistence in executing its critical mission of advancing the art and science of precision engagement concepts and technology.

Named after the former U.S. defense chief and precision strike weapons advocate, the other winners of the prestigious Perry Award include: Dr. Perry, the first recipient (1997); former Vice President Dan Quayle (1998); RADM Walter M.

Locke, USN (Ret.) (1999); The Johns Hopkins University, Applied Physics Laboratory (2000); NAVSTAR Global Positioning System Joint Program Office (2001); Rep. James V. Hansen (R-UT) (2002); Terry Little, a well-respected acquisition reform pioneer (2003); USAF/USN/Boeing JDAM Program Team (2004); U.S. Warriors of Operation Enduring Freedom and Operation Iraqi Freedom (2005); The Tactical Tomahawk Team (2006); The Small Diameter Bomb Team (2007); Guided Multiple Launch Rocket & High Mobility Artillery Rocket System Team (2008); U.S. Special Operations Command Stand-Off Precision Guided Munitions (SOPGM) Quick Reaction Team (2009); Sniper Advanced Targeting Pod (2010); Project Dragon Spear Joint Acquisition Task Force (2011); Massive Ordnance Penetrator (MOP) Team (2012), JAMS/Lockheed Martin Hellfire II Team (2013); BLU-129/B Team (2014); Dr. Paul Kaminski (2015); James "Hondo" Geurts (2016), and Charles "Tooba" Kelly (2017). ■



PSA Chairman Ken Masson

Advanced Precision Weapons Pound Syria

The massive April 14, 2018 coalition strike against the Syrian military included use of the Lockheed Martin Joint Air-to-Surface Standoff Munition (JASSM).

Nineteen AGM-158A missiles were fired from US Air Force B-1B Lancer bombers as US Navy, British and French combat aircraft and warships, also pounded targets in Syria.

Twenty-two missiles impacted the Him Shinshar Chemical Weapons Storage Facility west of Homs, including nine TLAMs (all from USN combatants), eight Storm Shadow air-launched cruise missiles from UK aircraft, three cruise missiles from French frigates, and two SCALP air-launched cruise missiles from French aircraft.

The Pentagon said a total of 57 USN Raytheon Tomahawk missiles were used in the joint attack. USMC Lieutenant General Kenneth McKenzie, the Director of the Joint Staff, said all the missiles reached their targets. He said the attacks may have set the Syrian chemical

weapons programs back for years.

The JASSM advanced air-launched cruise missiles were fired outside Syrian airspace by two B-1Bs against the Barzah Research and Development Center located on the outskirts of Damascus.

The long-range, stealthy weapon is designed to destroy hostile air defenses and high value, well defended, fixed and re-locatable targets while keeping aircraft safely out of range from hostile air defense systems, according to Lockheed Martin.

The coalition show of force was in response to the Assad regime's continued use of chemical weapons. An April 7 suspected chemical attack on the town of Douma east of Damascus reportedly killed at least 40 and sickened more than 500.



In a multinational strike against chemical weapons targets in Syria, April 14, 2018, two Air Force B-1B Lancer bombers operating from Al Udeid Air Base, Qatar, released 19 Joint Air-to-Surface Standoff Missile weapons during the operation.

This is the second time the United States struck Assad's chemical network. In April 2017, Trump ordered an attack against the Shayrat air base after Syrian aircraft at the base dropped bombs containing the nerve agent sarin. Some 58 missiles hit the aircraft and chemical weapons facilities at the base.

President Trump ordered the strikes to stop the regime from using such inhumane weapons again. US Defense Secretary James N. Mattis said stopping the atrocities is in the vital national interests of the United States. "Obviously, the Assad regime did not get the message last year," he said. ■



The guided missile cruiser USS Monterey fires a Tomahawk missile in the Red Sea.



A Tomahawk missile launches from the guided missile destroyer USS Laboon in the Red Sea.



Defense Secretary James N. Mattis and Marine Corps Gen. Joe Dunford, chairman of the Joint Chiefs of Staff, brief reporters on US airstrikes during the operation.

Carl Avila Wins PSA Technical Achievement Award



Carl Avila

Carl Avila, previously Director of Advanced Weapons and Missile Systems within Boeing's Phantom Works division, will receive the Precision Strike Association's 2018 Richard H. Johnson Technical Achievement Award.

He will be honored on Wednesday, October 24, 2018 at an award luncheon highlighting the organization's three-day Precision Strike Technology Symposium (PSTS-18) in Laurel, MD.

"We are honored to recognize Mr. Avila for his many contributions to our nation across his storied precision weapons career – ensuring warfighters always have the right precision munitions for the fight," said Ken Masson, Chairman of the Precision Strike Association, an affiliate of the National Defense Industrial Association.

During his distinguished career at Boeing, Carl helped change precision strike from rare, expensive and isolated to affordable, available and networked.

The Jury noted the wide breath of Carl's contributions, which included roles as Chief Engineer for Bradley Linebacker, Chief Engineer for Avenger Air Defense System, Program manager for ALCM/CALCM,

Affordability manager for F/A-18 and JDAM Program manager. His Boeing career was capped off by his assignment as the Director of Advanced Weapons and Missiles Systems.

He holds a Bachelor of Science degree in Electrical and Computer Engineering from the University of Massachusetts, and an Executive Masters in International Business at Saint Louis University.

In selecting Carl, the Johnson Award Jury also noted his long association with PSA and NDIA as well as his influence and connections across the precision strike community, including his role as an early champion of networked weapons.

Masson credited Avila's work as having a strong and enduring impact on the precision strike community "providing a solid continuity of focus and unwavering support for our nation's warfighters. Scott exemplifies the spirit and contributions of Dick Johnson."

The Richard H. Johnson Technical Achievement Award is named after the first recipient and is presented annually to recognize an individual from public or private sector for outstanding personal technical

achievements resulting in significant contribution to precision strike systems.

The trophy is awarded based on nominations received and the deliberations of a distinguished jury of industry, government and military members of the PSA Johnson Award Selection Committee. Nominations for the Johnson Trophy are open to any US or allied individual.

During his career, Richard H. Johnson worked as an aircraft and missile designer for Temco Aircraft, Texas Instruments, Raytheon and other defense companies. Johnson received the first Johnson Trophy posthumously for leading the design or redesign of more precision strike airframes than any contemporary designer.

The other winners of the prestigious Richard H. Johnson Technical Achievement Award include: Robert J. Whalen (2010); Robert H. Widmer (2011); Keith Sanders (2012); Gary Polansky (2013); Chris E. Geswender (2014); Wade Dyer and Paul Manz (2015) and James 'Frank' Robbins (2016) and Scott O'Neil (2017). ■

Chairman's Column, cont. from pg. 2

Technology Symposium, the premier technology event at Johns Hopkins Applied Physics Laboratory this October 23-25. Join us to hear from OSD, Military, Laboratory and Industry leaders on *Sharpening America's Competitive Edge with High Speed Precision Engagement*.

PSTS-18 is your opportunity to participate in the discussion about the challenges facing our Nation and how the Precision Strike

Community can band together to solve them.

We look forward to your participation in PSA activities. When the whole of Industry contributes to rejuvenating America's might, we revitalize that uniquely American trait rising to the challenge with out-of-the-box thinking, creativity, and ambition.

I encourage you to bring your ideas to the PSA, to participate in PSA events and consider becoming

a PSA sponsor. Sponsorship opportunities for PSTS-18 are available. Click the link below to download the sponsorship and exhibitor forms: <http://www.precisionstrike.org/Events/PSTS Sponsorship>.

Thank you for your involvement in the Precision Strike Association. We look forward to seeing you at PSTS-18 and at our Captains of Industry events!

Ken Masson
Precision Strike Association

USN Awards Boeing \$805M MQ-25 Contract

Carrier-based Unmanned Aerial Refueler to Extend Range of Fighters

Boeing will build the U.S. Navy's first operational carrier-based unmanned aircraft, the MQ-25 aerial refueler, through an \$805 million contract.

Boeing was awarded the engineering and manufacturing development (EMD) contract to provide four aircraft.

"As a company, we made an investment in both our team and in an unmanned aircraft system that meets the U.S. Navy's refueling requirements," said Leanne Caret, president and CEO, Boeing Defense, Space & Security. "The fact that we're already preparing for first flight is thanks to an outstanding team who understands the Navy and their need to have this important asset on carrier decks around the world."

MQ-25 is designed to provide the U.S. Navy with a much-needed refueling capability.

According to the U.S. Navy, the MQ-25 Stingray will allow for better use of combat strike fighters by extending the range of deployed Boeing F/A-18 Super Hornet, Boeing EA-18G Growler, and



Boeing's MQ-25 unmanned aerial refueler, known as T1, is currently being tested at Boeing's St. Louis site. T1 has completed engine runs and deck handling demonstrations designed to prove the agility and ability of the aircraft to move around within the tight confines of a carrier deck.

Lockheed Martin F-35C aircraft. MQ-25 will also seamlessly integrate with a carrier's catapult and launch and recovery systems.

The Navy said it expected the contract to be completed in 2024. Boeing won the deal over Lockheed Martin and General Atomics. The program could cost about \$13 billion overall for 72 aircraft.

"MQ-25A is a hallmark acquisition program," said Assistant Secretary of the Navy for Research, Development, and Acquisition James F. Geurts. "This program is a great example of how the acquisition and requirements communities work hand in hand to rapidly deliver capabilities to our Sailors and Marines in the fleet."

When operational, MQ-25 will improve the performance, efficiency, and safety of the carrier air wing and provide longer range and greater persistence tanking capability to execute missions that otherwise could not be performed.

MQ-25 is an accelerated acquisition program that expedites decisions that will enable rapid actions with less overhead. The intent is to significantly reduce development timelines from contract award to initial operational capability by five to six years. By reducing the number of key performance parameters to mission tanking and carrier suitability, industry has increased flexibility to rapidly design a system that meets those requirements.

Chief of Naval Operations Adm. John Richardson said the MQ-25 project "represents a dramatic shift in the way we define warfighting requirements, work with industry, integrate unmanned and manned aircraft, and improve the lethality of the air wing." ■

USAF Awards Hypersonic Weapon Contract

Lockheed Martin is designing a second hypersonic weapon prototype for the U.S. Air Force.

The expected \$480 million contract will fund the critical design review, test and production readiness support for the Air-Launched Rapid Response Weapon (ARRW).

"We are going to go fast and leverage the best technology available to get hypersonic capability to the warfighter as soon as possible," said Secretary of the Air Force Heather A. Wilson.

The ARRW effort is one of two hypersonic weapon prototyping efforts being pursued by the Air Force to accelerate hypersonic research and development. The Air Force's other hypersonic weapon rapid prototyping effort is called the Hypersonic Conventional Strike Weapon (HCSW).

The Department of Defense, Missile Defense Agency, Air Force, Navy and Army signed a memorandum of agreement June 28 to work cooperatively on hypersonic boost glide technology development.

The ARRW and HCSW efforts are developing unique capabilities for the warfighter and each has different technical approaches. The ARRW effort is "pushing the art-of-the-possible" by leveraging the technical base established by an Air Force/DARPA partnership. The HCSW effort is using mature technologies that have not been integrated for an air-launched delivery system.

The Air Force wants to move both ARRW and the HCSW to a flying prototype as soon as possible, with 2021 cited as the goal date. ■

News Briefs

Griffin Missile for US Special Ops

Raytheon Company Missile Systems has been awarded a \$315 million contract to produce the Griffin missile for U.S. Special Operations Command. The deal enables the company to produce the missile and provides support for product improvements, operations and sustainment. Work will be performed at contractor facilities in Tucson, Ariz.

Allies to Receive PGMs

The NATO Support and Procurement Agency (NSPA) recently received the first lot of Precision Guided Munitions (PGMs), acquired through a NATO project involving 11 Allies and one NATO partner.

The PGMs produced in the United States will be delivered to their final recipients, Belgium and Denmark. The value of this initial acquisition is around \$20 million.

The delivery is part of a cooperation effort, launched in 2014 at the NATO Summit in Wales, which offers Allies a framework to acquire air-to-ground PGMs in a cost-effective and flexible way.

Working through this NATO initiative, rather than individually, allows Allies to draw upon each other's PGM stocks in case of need: during air operations or in a possible crisis. This will also help NATO and Allies to reduce dependence on the US for air missions.

The project is managed by the NSPA on behalf of the Allies. So far, 11 NATO members have joined this effort: Belgium, the Czech Republic, Denmark, Greece, Hungary, the Netherlands, Norway,

Poland, Portugal, Spain, and the United Kingdom. NATO partner Finland is also a participant.

While continuing to expand this cooperation in the air domain, NATO has started to build similar frameworks for the acquisition of land and maritime munitions. This is part of NATO's effort to increase joint investments in the critical capabilities that the Alliance needs.

LCS Over-the-Horizon Anti-Surface Weapon

The Norwegian-designed Naval Strike Missile has been officially selected to serve as the Littoral Combat Ship's over-the-horizon anti-ship weapon.

The \$14.8 million contract awarded to Raytheon will purchase the first round of missiles that will be incorporated on to LCS. The value could grow to \$847.6 million if all contract options are exercised.

The subsonic NSM has been in service with the Royal Norwegian Navy since 2012. The weapon has a range of about 100 nautical miles. Raytheon and Kongsberg announced in 2015 they would pair to compete for new U.S. anti-ship missile contracts.

The award to the Raytheon-Kongsberg Gruppen team comes as little surprise as the Naval Strike Missile was the only competitor for the OTH contract.

100 KW-Class Laser System

The U.S. Army recently awarded Dynetics and Lockheed Martin a \$10 million contract for the next phase of the High Energy Laser Tactical Vehicle Demonstrator (HEL TVD) program, a 100-kilowatt class laser weapon system.

Laser weapons are ideally suited to address high volume, low cost threats because of their inexpensive

cost per shot and deep magazine. The next step in the program will be the preliminary design review in January 2019.

Lockheed Martin provides the laser subsystem, as well as other key subsystems. The spectral beam-combined fiber laser subsystem strongly leverages Lockheed Martin's experience from ground vehicle integration gained as part of the Army's Robust Electric Laser Initiative (RELI) program.

Team Dynetics is one of two remaining contractors competing to build the demonstrator that will be tested in 2022.

The winning contractor will be awarded a contract option to finish the design, build and integrate the laser weapon system onto an Army FMTV platform and conduct field-testing at White Sands Missile Range in New Mexico.

Extreme Range JASSM Variant

Lockheed Martin is developing an ultra long-range version of the AGM-158 Joint Air-to-Surface Stand-off Missile (JASSM). Known as the JASSM-Extreme Range (JASSM-XR), the new variant will evolve the existing AGM-158B JASSM-ER extended range weapon.

Lockheed Martin was awarded a \$51 million USAF contract to start development of JASSM-XR. This contract effort includes all all-up round level systems engineering and programmatic activities to align and phase the work necessary to design, develop, integrate, test, and verify component and subsystem design changes to the JASSM-XR baseline electronics, hardware, firmware, and operational flight software.

The work will also include prepa-

ration for system-level ground and flight testing. This effort will concurrently mature a new missile control unit and necessary hardware and infrastructure to support future JASSM-XR production cut in.

JAGM in LRIP

Lockheed Martin's Joint Air-to-Ground Missile (JAGM) system has now entered into Low-Rate Initial Production (LRIP). The company will deliver 2,631 missiles under the LRIP contract.

JAGM is a multi-sensor air-to-ground missile that is the successor

to the HELLFIRE and HELLFIRE Longbow missiles. JAGM employs a multi-mode guidance section that offers enhanced performance on the battlefield.

The multimode seeker combines improved Semi-Active Laser and millimeter wave radar sensors providing precision strike and fire-and-forget capability against stationary and moving land and maritime targets in adverse weather and obscured battlefield conditions.

The LRIP decision comes after a 24-month engineering and manufacturing development phase program where JAGM was tested and qualified on the AH-64E Apache and the AH-1Z Viper attack helicopters. JAGM will ultimately be qualified to fire from a wide variety of platforms including unmanned aircraft.

developed for Norway's navy, and offered by Raytheon and Kongsberg for the U.S. Navy's over-the-horizon weapon system acquired by the Navy.

MALD-X Project Completes Free Flight Demonstration

The Office of the Under Secretary of Defense for Research and Engineering's Strategic Capabilities Office (SCO), with Air Force Miniature Air Launch Decoy (MALD) Program Office, and Naval Air Warfare Center Point Mugu, successfully completed a series of free flight demonstrations of the MALD-X in August.

This innovative and collaborative project builds upon the successful MALD platform and seeks to demonstrate the operational effectiveness and tactical advantage provided by large numbers of collaborative, expendable platforms highlighted with the completion of a complex free flight demonstration of advanced electronic warfare techniques.

MALD-X's modularity allows the Navy to rapidly inject adaptive payloads and capabilities into as yet unknown future mission sets.

"MALD-X gives future warfighters the ability to focus on the nature of the emerging threats rather than being encumbered by the burden associated with making a system interact with mission elements and mission supporting actions," said Matthew O'Connell, MALD-X Program Manager.

The MALD-X program is continuing to pursue multiple enhancements for the vehicle that would provide additional mission sets that will be demonstrated next year.

Raytheon recently received a \$96.1 million contract to produce 250 MALD missiles.

CALENDAR OF EVENTS

Precision Strike Technology Symposium (PSTS-18)

Date: October 23-25, 2018

Theme: Sharpening America's Competitive Edge with High Speed Precision Engagement

Location: Johns Hopkins University/Applied Physics Laboratory—Laurel, MD

This symposium will be conducted at the SECRET//NOFORN level on all three days.

Precision Strike Annual Review (PSAR-19)

Date: March 26-27, 2019

Theme: Our Nation's Security Demands Lethal Precision Strike Capabilities

Location: Lockheed Martin Global Vision Center, 2121 Crystal Drive, Arlington, VA

Sponsorships and exhibit opportunities are available—for more information email info@precisionstrike.org or visit our website: www.precisionstrike.org

Joint Strike Missile Scores

Norway's Ministry of Defense successfully test fired a Joint Strike Missile from an F-16 Fighting Falcon, demonstrating the weapon's ability to change course to avoid hitting a decoy target, and fly at low, radar-evading altitudes.

Raytheon Company and Norway's Kongsberg Gruppen are teaming to develop JSM for the F-35 Joint Strike Fighter, beginning with F-16 integration. JSM is a long-distance, anti-ship missile designed to take on high-value, heavily defended land targets.

In the latest test conducted at the Utah Test and Training Range, an F-16 fired the missile that flew toward a pre-programmed target location, covering varied terrain and altitudes. JSM's seeker scanned the target area and instead of homing in on a dummy target, the missile diverted to hit the actual target.

JSM is an evolution of the Naval Strike Missile that was originally

The U.S. Air Force award occurred just prior to Raytheon marking its 2,000th MALD system delivery, and 10th year of on-time customer deliveries.

The MALD-J decoy is the jammer variant of the basic decoy, and the first ever stand-in jammer to enter production.

The MALD system is an air-launched missile with both decoy and jamming capabilities that can electronically stimulate and then neutralize enemy air defense systems. Raytheon produces the MALD-J jamming variant, and is also developing a system for the U.S. Navy.

The Air Force has completed aircraft integration and the Navy is planning to integrate the missile onto their fleet aircraft.

OT for StormBreaker

Raytheon Company's StormBreaker bomb, formerly called the Small Diameter Bomb II, or SDB II bomb, has entered operational testing. OT follows completion of a successful Operational Test Readiness Review in Spring 2018.

StormBreaker's tri-mode seeker gives pilots the ability to destroy moving targets on the battlefield in adverse weather. The StormBreaker tri-mode seeker uses imaging infrared, millimeter wave and semi-active laser, giving pilots the ability

to destroy moving targets on the battlefield in adverse weather from standoff ranges.

OT flights are slated to begin in 2018. StormBreaker will be fielded first on the F-15E Strike Eagle, and is planned to be integrated onto the F-35 Joint Strike Fighter by 2022.

The StormBreaker bomb's tri-mode seeker can also peer through battlefield dust and debris, giving the warfighter a capability that's unaffected by conditions on the ground or in the air.

The weapon can fly more than 45 miles to strike mobile targets, reducing the amount of time that aircrews' spend in harm's way. Its small size enables the use of fewer aircraft to take out the same number of targets as previous, larger weapons that required multiple jets.

Focus on Russia and China

The 2018 National Defense Strategy focuses on the need to maintain a competitive advantage over our principal rivals Russia and China.

The new strategy calls for a move away from the large and vulnerable ships, the fixed bases, and the short-range aircraft and munitions upon which the United States has long relied.

"Today, we are emerging from a period of strategic atrophy, aware that our competitive military advan-

tage has been eroding... We must make difficult choices and prioritize what is most important to field a lethal, resilient, and rapidly adapting Joint Force, according to US Defense Secretary Jim Mattis.

The 2018 National Defense Strategy articulates a strategy to compete, deter, and win.

A more lethal, resilient, and rapidly innovating Joint Force, combined with a robust constellation of allies and partners, will sustain American influence and ensure favorable balances of power that safeguard the free and open international order, the strategy entails.

It says the surest way to prevent war is to be prepared to win one. Doing so requires a competitive approach to force development and consistent multiyear investment to restore warfighting readiness and field a lethal force.

"We cannot expect success fighting tomorrow's conflicts with yesterday's weapons or equipment. To address the scope and pace of our competitors' and adversaries' ambitions and capabilities, we must invest in modernization of key capabilities through sustained, predictable budgets. Our backlog of deferred readiness, procurement, and modernization requirements has grown in the last decade and a half and can no longer be ignored," it has concluded. ■

PSTS-2018, cont. from pg 1

- U.S. Hypersonics Landscape
- F-35 Joint Strike Fighter Program
- Strategic Readiness/Nuclear Deterrence

Don't miss out on this extraordinary 3-day classified symposium that

will feature powerful military and civilian leaders including Lieutenant General Tony Ierardi—J-8, The Joint Staff; General Mike Holmes—Commander, Air Combat Command; Honorable Hondo Geurts—ASN, RD&A; Dr. Steve Walker—Director, DARPA; and Rear Admiral Brian Corey—new PEO for Unmanned Aviation and

Strike Weapons; and, a host of 42+ additional dynamic visionaries, intelligence and engineering experts, technologists, and tactical operators who will enlighten you on strike challenges and warfare changes. Please review page 15 of this issue for a full list of topics that will be addressed.

See **PSTS-2018**, cont. on pg. 14

PSTS-2018, cont. from pg 13

Highlights of five featured leadership speakers are captured below:

- **Lieutenant General Ierardi**, who serves as a member of the Joint Chiefs of Staff as the Director, Force Structure, Resources and Assessment (J-8), is scheduled as the PSTS-18 Opening Day keynote speaker to address Sharpening America's Competitive Edge. As the J-8, General Ierardi has worked closely with Secretary Mattis to make our Force more lethal and will highlight key precision engagement areas that are aggressively being executed as mandated in our National Defense Strategy. Prior to his current assignment, General Ierardi served as the Deputy Chief of Staff, G-8 Headquarters, Department of the Army.

- **General Holmes**, who is the Commander, Air Combat Command, Joint Base Langley-Eustis, will join us on the 2nd day for the Government-Industry Panel (to be moderated by General Hawk Carlisle, USAF (Ret)) to focus on Industry's Role in "Speed to the Warfighter". General Holmes' role for training, equipping and maintaining combat-ready air, space, cyber and intelligence forces for rapid deployment and employment while ensuring strategic air defense forces are ready to meet the challenges of peacetime air sovereignty and wartime defense makes him a leader in high demand to focus on "Speed to the Warfighter". Prior to his current position, he served as the Deputy Chief of Staff for Strategic Plans and Requirements, Headquarters U.S. Air Force.

- **Honorable Geurts** (better known as Hondo), a very long-time friend of the precision strike community, who is the Assistant Secretary of the

Navy for Research, Development, and Acquisition, will join us during the afternoon of Opening Day to address the Navy's Policy and Posture to meet the Threat with a focus on Faster Acquisition Cycle to Close Speed and Range Deficit. Mr. Geurts' previous assignment as the Acquisition Executive, U.S. Special Operations Command (USSOCOM), afforded him the unique opportunity to use his innovative leadership style and technological ingenuity to provide rapid and affordable acquisition that positively impacted the USSOCOM acquisition work force and the special operations forces capability on the battlefield. He has over 30 years of extensive joint acquisition experience.

- **Dr. Walker**, who serves as the Director, Defense Advanced Research Projects Agency, is scheduled as the Keynote Speaker early in the morning on the 2nd day. Dr. Walker will focus on Regaining Overmatch with Enhanced Lethality. He is expected to highlight numerous technology challenges for the precision strike community to pursue that are critical for precision engagement as we rebuild and strengthen our military in executing the National Defense Strategy. Dr. Walker began his engineering career in the Air Force Research Laboratory's Air Vehicles Directorate in Dayton developing airplane exhaust system thrust-vectoring concepts and aero-acoustic prediction methodologies.

- **Rear Admiral Corey**, the new PEO for Unmanned Aviation and Strike weapons, will brief during the morning of the Second Day. He will present his perspective on Technologies for High Speed Precision Engagement and highlight weapons that must be able to strike

diverse targets from all domains. Prior to his current position, Corey served as Commander, Naval Air Warfare Center Weapons Division, and as Assistant Commander for Test and Evaluation, Naval Air Systems Command. He has logged hours in more than 20 aircraft, including the F/A-18 A-F, MiG-29, AV-8B, F-15 and F-16.

Additional not to miss topics of discussion at PSTS-18 will focus on riveting technologies, innovations, requirements, challenges, and special operations and tactics that are the focus of today's national security initiatives on Capitol Hill, at the Pentagon, in the Middle East, and the South China Sea, as well as North Korea.

Further, a unique luncheon video by Alaska's Senator Lisa Murkowski and address on The Arctic Strategy by the Arctic Security Initiative Lead CDR David Slayton, USN (Ret)—Research Fellow, Hoover Institution, Stanford University—is expected to be of high interest, especially since Secretary Mattis recently mentioned that the Defense Department must engage in the development of the Arctic.

If you represent the U.S. Government (Civilian and Active Duty), Industry, Small Business or Academia, you definitely should be engaged in this symposium. You are guaranteed to gain valuable insights that will prove to be very valuable.

Again, the precision strike community is honored to be host for a great educational experience to numerous Midshipmen from the U.S. Naval Academy's Weapons & Systems Engineering Department and other departments.

And, please be aware that the 10th Richard H. Johnson Technical Achievement Award will be presented during the Luncheon Ceremony on 24 October. ■

Please Join Us for the Best Technology Symposiums of Its Kind!

PRECISION STRIKE TECHNOLOGY SYMPOSIUM (PSTS-18)

*Sharpening America's Competitive Edge with
High Speed Precision Engagement*

23-25 October 2018

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Engage in Keynotes & Participate in Not-to-Miss Sessions

- ~ Sharpening America's Competitive Edge ~
- ~ Regaining Overmatch with Enhanced Lethality ~
- ~ AFSOC & SOCCENT Insights into the Kill Chain~
- ~ Autonomous Weapon Systems Panel—Sensing & Dissemination ~
- ~ Government-Industry Panel—Industry's Role in "Speed to the Warfighter ~
- ~ Services' Laboratories Session—Emerging Technologies ~
- ~ Speedy Defeat of Relocatable WMD Targets ~
- ~Strategic Programs Technical Achievements and Challenges ~

Join in Showcasing Critical Focus Areas

- Tactical Threat Challenges—China & Russia
- Meeting Major Treats and Gaps
- Air Force Hypersonic Programs—HAWC, HCSW, & ARRW
- F-35 Joint Strike Fighter Program
- The Arctic Strategy
- Rapid and Urgent Acquisition
- Navy/Air Force—Policy and Posture to meet the Threat
- Army Futures Command—Tomorrow's Technologies and Concepts
- Multi-Domain Operations / Over-the-Horizon Targeting
- Assault Breaker II Initiative Overview
- Contested Environment Operations and Challenges
- Integrated Allied Capabilities Enabled Through Technology
- Enhanced Electronic Warfare Capabilities to support the Warfighter
- Artificial Intelligence on the Edge—Implications for Precision Strike
- PEO Perspective—Technologies for High-Speed Precision Engagement
- Conventional Prompt Strike for the Future Fight
- Advantages of High Capacity Precision Weapons Carriage on Bombers
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10th Richard H. Johnson Technical Achievement Award

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The Precision Strike Digest is an important vehicle for the Precision Strike Association to share information and to engage in discussion. You have an opportunity to share your passion about a particular Precision Strike topic. The Precision Digest is published three times a year. Please contact PSA Chair for Communication John Sordyl (jsordyl@williams-int.com), if you would like to have an article included in The Precision Strike Digest.

Membership Application – Precision Strike Association

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