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THE PICATINNY VOICE



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December 2, 2016

Brig. Gen. Alfred F. Abramson III new senior commander

BY LAUREN POINDEXTER

Picatinny Arsenal Public Affairs

Brig. Gen. Patrick W. Burden, Deputy Program Executive Officer Ammunition and Senior Commander, Picatinny Arsenal relinquished his Picatinny Senior Commander responsibilities to Brig. Gen. Alfred F. Abramson III, incoming Deputy Program Executive Officer Ammunition and Senior Commander, during a Change of Leadership Ceremony at Picatinny Nov. 14.

Starting a new tradition Burden passed ceremonial "Keys to the Cannon Gates" to Abramson to signify the transfer of responsibility.

Burden was decorated with the Legion of Merit medal for his service.

"This will be one of the last times I'll get to say 'Team Picatinny' in front of a crowd as Picatinny's Senior Commander. I'm going to miss saying it," said Burden who is scheduled to become the PEO Enterprise Information Systems at Fort Belvoir, Virginia.

During Burden's tenure, the installation expanded fire safety by adding a third fire company; entered into a new privatization arrangement for

the ownership, operation and maintenance of the water and the wastewater systems at Picatinny; and yielded greater energy savings through the use of energy savings performance contracts. The installation also entered into a Memorandum of Understanding with Princeton University to collaborate on energy and environmental research.

"I do look forward to coming here and working with you all on the ammunition portfolio," said Abramson.

"What is most important to me in terms of working in portfolios and within the military is the importance of building relationships, and the importance of building a strong team foundation."

As the Deputy PEO Ammunition, Burden oversaw Better Buying Power efficiencies at PEO Ammunition, resulting in the transfer of over 100,000 serviceable munition items between services and realizing an estimated \$305 million cost avoidance.

He also provided direct guidance and oversight to develop and implement an innovative acquisition strategy that sources materials globally



Starting a new tradition Brig. Gen. Patrick W. Burden, Deputy Program Executive Officer Ammunition and Senior Commander, Picatinny Arsenal passes the "Keys to the Cannon Gates" to Brig. Gen. Alfred F. Abramson III, incoming Deputy Program Executive Officer Ammunition and Senior Commander to signify the change of responsibility during a Change of Leadership Ceremony at Picatinny Nov. 14. Photo by Todd Mozes.

and allows first deliveries of a legacy variant of 2,000-lb general purpose bombs in only 12 months, compared to a historical average of 36 months.

Prior to Picatinny, Abramson was

the Deputy of the Joint Program Executive Officer for Chemical and Biological Defense at Aberdeen Proving Ground, Maryland.

See SENIOR COMMANDER Page 10

PEO Ammo Chief Scientist wins 2016 Defense Acquisition Engineering Achievement Award

BY LAUREN POINDEXTER

Picatinny Arsenal Public Affairs

PEO Ammunition employee Paul Manz has won the Engineering category of the 2016 Defense Acquisition Workforce Individual Achievement Award for his outstanding contributions to the Department of Defense Tactical Warfare community while serving as the Program Executive Officer Ammunition Chief Scientist from July 1, 2015 to June 30, 2016.

"Just wow!" said Manz when asked about his reaction to winning this top DOD Engineer of the Year award. "I was humbled by this honor. I view this as a collective award and positive reflection of our Joint Center Picatinny community and the greater cadre of Army and DOD acquisition professionals who strive to provide excellence to the warfighter and taxpayer each and every day."

"Also, kudos to my PEO Ammo and Picatinny colleagues at Project



Paul Manz

Manager Maneuver Ammunition Systems who won the 2016 David Packard Excellence in Acquisition Award, as well as the other winners of this year's Under Secretary of Defense for Acquisition, Technology and Logistics Acquisition Awards," said Manz.

The Defense Acquisition Workforce Individual Achievement Award was

established as a result of the Weapon Systems Acquisition Reform Act of 2009. Its intent is to encourage and recognize individuals who demonstrate the highest levels of excellence and professionalism in the acquisition of products and services and those who support the warfighter and protect the taxpayer.

"As Chief Scientist and defacto Chief Technology Officer for PEO Ammunition, I oversee and facilitate the transition and insertion of enabling technologies across a munitions and armaments portfolio that is greater than \$3 billion as well as oversee PEO Ammo's annual Research, Development, Test, and Evaluation budget, totaling over \$160 million," said Manz.

An enabling technology is an innovation that rapidly drives the capability changes required by a user or customer community.

"I also support senior Army and

Office of the Secretary of Defense leadership on a variety of major critical armaments and lethality-related topics, harnessing the subject matter expertise and multi-disciplined acumen of my government colleagues and our industry and academia partners to solve challenging problems on behalf of the joint Warfighter. I definitely enjoy my job, the people, and the challenging subject matter as well as being trusted, empowered, and supported by Leadership who allow me to do "good things for the greater good" on behalf of the Army, DOD, and our Nation," said Manz.

Manz won the award in part because he accelerated the integration of improved GPS Anti-Jam/Anti-Spoof, Assured Precision, Navigation, and Timing (PNT) and M-Code GPS related technologies across DOD's precision armaments portfolio totaling over \$10 billion.

See CHIEF SCIENTIST, Page 2

Chief Scientist wins 2016 Defense Acquisition Award

continued from Page 1

Assured PNT technologies allows GPS technologies to perform as intended, even when adversaries attempt to defeat GPS signals.

M-code GPS and DOD's Military GPS User Equipment (MGUE) program are managed by the United States Air Force (USAF) GPS Directorate at Los Angeles Air Force Base. MGUE Increment 1 is focused on providing M-Code GPS receivers for applications such as aircraft, combat vehicles, radios, etc. while things like tactical handhelds and Precision Guided Munitions (PGMs) will be addressed as part of the MGUE Increment 2 follow-on program.

In collaboration with OSD Acquisition, Technology and Logistics and multiple Joint PGM Programs of Record (PoRs), PEO Ammo has been leading a "coalition of the willing" to inform senior Leadership and see if MGUE Increment 1 technology can be used by none/some/all PGMs prior to MGUE Increment 2.

"PEO Ammo has also been collaborating with USA Direct Report PM PNT on things like GPS Anti-Jam antennas and Pseudolites to insure the combat effectiveness of the Indirect Fires system-of-systems in peer/near-peer threat environments," said Manz.

"This system-of-systems solution covers things like targeting, communications, command and control, weapons, munitions launch/flight/guidance, and final target engagement."

JOINT "COALITION OF THE WILLING"

Manz developed a joint "coalition of the willing" program investment strategy and led a coordinated \$30 million initiative to assess the maturity

of USAF M-Code GPS technology for subsequent use by multiple Joint programs of record and his efforts avoided an estimated \$170 million in potential duplicative activities.

"All systems in development and production after FY17 must implement M-Code GPS or need to obtain a waiver from the SECDEF Public Law 111-383," said Manz.

"Each PoR across DOD has to make a determination on whether to implement MGUE Increment 1 technology now or wait until MGUE Increment 2 and obtain a SECDEF (Secretary of Defense) waiver," Manz continued.

"Within the Joint Lethality community there are numerous PGM PoRs that were facing this exact problem and needed facts to make an informed decision," Manz said. "Without PEO Ammo's "Joint coalition of the willing," each such PoR across DOD would have had to independently invest a significant amount of resources to assess and determine if MGUE Increment 1 technology was ready for them."

"PEO Ammo proposed and, with the support of OSD and Congress, successfully championed our current approach of testing and evaluating the things that are common and important to all PGMs as well as the specific superset of requirements that are unique to these same use-case groupings.

"By having a unified coordinated approach to this MGUE Increment 1 technology maturity assessment for PGMs, we leveraged the existing capabilities of DOD's Defense Laboratories and were able to avoid

potential duplicative assessment efforts by multiple PoRs and reduce the overall costs borne by the US taxpayer," said Manz.

In addition to Assured PNT and M-Code GPS, Manz successfully championed the critical threat-driven need for cluster munitions replacement and advanced armament technologies, as well as developing Defense Exportability Features based fuze technology under Better Buying Power.

"Similar to the deadline for M-Code GPS, DOD is facing the pending US policy-driven loss of most of its existing inventory of Cluster Munitions on Jan 1, 2019," said Manz.

"The resulting capability gaps need to be addressed by a variety of mitigation solutions, including the development of cluster munitions replacement and advanced armament technologies such as next generation fuzing technology."

"In order to keep these solutions affordable, where possible we wanted to insure these solutions were also exportable," said Manz.

OVERCOMING CHALLENGES

"There are many challenging requirements across multiple Use-Cases needed to make Assured PNT and M-Code GPS work across the Tactical Warfare environment for the Joint Armaments community," said Manz.

"For example, think about how you would "fight" using Assured PNT capabilities across a system-of-systems environment in multi-Unit, multi-Service, and multi-National combat operations. By proactively collaborating with the USAF GPS Directorate, USA Direct-Reporting Program Manager PNT, and the

collective set of Joint stakeholders early in the process and insuring the right Subject Matter Experts were/are engaged, we've successfully identified and are mitigating numerous risk areas as well as solving problems before they become an issue to better define and expedite essential capabilities to the Field. By always trying to do the right thing, we've been able to maintain forward progress via the previously mentioned "Joint coalition of the willing" within a resource constrained environment until OSD and Services collectively agree on a coordinated official Assured PNT modernization path-forward," said Manz.

MANZ THE "GO-TO" PROBLEM SOLVER

Manz also served as the "go-to" technical authority and problem solver for senior Army leaders, OSD leaders and political appointees.

"Over my 30 plus year career as a DOD civilian and acquisition professional, I have been fortunate enough to be exposed to a variety of multidisciplinary subject matter across the entire materiel development life cycle from science and technology through production and deployment," said Manz.

Manz noteworthy career has spanned numerous diverse areas such as Joint Munitions and Armaments, Battle Command, Fire Support, Software and Information Technology, Enterprise Architecture and Interoperability, Systems Engineering, and Electronic Devices.

"This knowledge and experience now comes in handy as I advise senior leaders on program systems engineering and program management related topics and issues," he said.

Award winners will be recognized at a Pentagon awards ceremony.

THE PICATINNY VOICE



Senior Commander Picatinny Arsenal and Deputy Program Executive Officer Ammunition

Brig. Gen. Alfred F. Abramson III

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<http://www.pica.army.mil/Picatinny/voice/voice.pdf>

Burden known as approachable, mentor and coach

BY CASSANDRA MAINIERO

Picatinny Arsenal Public Affairs

As Picatinny Arsenal's senior commander Brig. Gen. Patrick W. Burden prepares for a new assignment at Fort Belvoir, he shares two personal goals throughout his leadership: have a positive attitude and maintain a team spirit.

"I believe that organizations take on the personalities of their leaders," explained Burden. "So, I try to have a positive attitude every day. Some days may be harder than others, but if you start and end the day with the right attitude, it will frame the attitude of your subordinates."

"I also try to emphasize the importance of working together because this is a people-business," added Burden. "We have to work together to accomplish our goals. If only one person is working, then that person will have a hard time trying to do things by themselves. This line of work is a team effort, a team sport."

While these principles are evident in Burden's leadership at Picatinny, they have also been demonstrated throughout his career, which transverses more than 20 years and involves military duty, as well as firsthand experience in Department of Defense (DOD) acquisition programs. Acquisition programs refer to teams that manage the entire lifecycle of a program or project, tackling objectives such as costs, performance, and schedule.

A DUAL-HATTED POSITION

Since 2014, Burden has served a "dual-hatted position" as the Arsenal's senior commander and the Deputy Program Executive Officer Ammunition (Deputy of PEO Ammo).

As senior commander, Burden oversees the entire arsenal and ensures the 24 tenant organizations are resourced to accomplish their assigned missions, which collectively provide almost 90 percent of the U.S. Army's lethality.

Picatinny is home to 6000 Soldiers, Sailors, Marines, Airman, DOD civilians and contracted employees. The Arsenal spans nearly 6,500 acres, houses 64 laboratories, and uses more than 1,100 permanent structures.

"Few people realize the scope and breadth of his additional responsibilities as the senior mission commander, but I do," Chris Grassano, PEO Ammo Chief of Staff, said about Burden.

Grassano was reading a letter by James Shield, PEO Ammunition, at Burden's change of leadership ceremony.

"...I take a look around Picatinny, not just the installation, but its people, its mission, our reputation across the Army and across the local community and it has all grown significantly



Brig. Gen. Patrick W. Burden, the former Senior Commander at Picatinny Arsenal, has been re-assigned to Fort Belvoir, Virginia. He recalls a meeting with Battle of the Bulge veterans as one of the highlights of his time at Picatinny. Photo by Todd Mozes.

under his leadership.

"He's approachable, treats people with respect, genuinely cares for their wellbeing, and takes the time to mentor and coach anyone who seeks his counsel—and even some people who don't seek his counsel," said Grassano. "Because that's what he does. He helps people grow. He builds relationships and finds ways to improve on everything that we do."

As Deputy of PEO Ammo, Burden is also responsible for an organization that focuses on the procurement and life cycle management of military equipment.

The offices within PEO Ammo support the lifecycle of military weapons, such as the Excalibur, Bradley Fighting Vehicle, 120mm Advanced Multi-Purpose Round, improvised explosive devices, and many more.

"When I head off to Fort Belvoir, I'll be a PEO. I won't have the additional duty of being a senior commander," said Burden.

"But, I am going to miss it [functioning as senior commander] because it has allowed me to interact with the other entities throughout the installation.

"I've been able to see all the tenants here, and see the whole team, which helped me make sure that we're doing our part to get our missions done," said Burden.

"If I hadn't served at that capacity, there would be some folks that I would have never met. Those interactions are what made me a better leader."

Some of his key achievements as Picatinny's Deputy of PEO Ammo are:

- Overseeing the development and implementation of a new acquisition strategy for General Purpose Bombs. This new strategy reduced the time to

develop these bombs from 48 months to 12 months, and resulted in a \$375 million contract for 40,000 2,000-pound General Purpose Bomb Kits.

- Guiding the effort to upgrade a manufacturing facility, train an entire workforce, and deliver more than 13,000 5"/54 Caliber Propelling Charges to the U.S. Navy.

- Managing conventional ammunition demilitarization efforts that produced savings and cost avoidance of \$30 million across all services. To accomplish this, his team reduced the stockpile by more than 70,000 tons and improved the efficiencies associated with receiving, storing and recycling stockpiled items.

- Ensuring that the DOD's "Better Buying Power" initiatives were accepted and finalized into the Arsenal's efficiencies, resulting in the transfer of more than 100,000 serviceable munition items between services and realizing an estimated \$305 million cost avoidance.

- Improving the dialogue with Single Manager for Conventional Ammunition (SMCA) stakeholders to de-conflict and improve the management processes.

- Supervising the Non-Standard Ammunition acquisition programs where PEO Ammo supported the train and equip missions throughout Afghanistan, Iraq and Syria.

- Modernizing government owned contractor operated ammunition facilities (in Radford, Holston, Lake City, Scranton, Iowa/Milan, Quad Cities) that provide munitions to all U.S. military services.

"This has been a unique experience for me," said Burden.

"I don't know if there is another entity or installation like Picatinny Arsenal. It is unique, and it is a jewel. I'm so blessed to have experienced this

particular assignment and serve with all the employees here."

Still, rather than cite these successes, Burden states that the best part about his positions at the Arsenal has been working alongside its employees.

Unlike larger Army installations, organizations, Picatinny has more civilians than active-duty military members.

One-third of these civilians are scientists and engineers that provide the innovative research, technology, and engineering to develop military equipment.

"In the defense-acquisition business, the majority of the workforce is civilian and I've been working in this environment for more than 20 years" explained Burden.

"Sometimes, working with civilians, you have to do things differently because what motivates a tactical unit of Soldiers differs from what motivates a civilian," said Burden.

ESPIRIT DE CORPS RUN

"For example, in the military, we give out awards, ribbons, medals. Some civilians may be motivated by that, sometimes they're not."

One way that Burden has aimed to motivate Picatinny employees is through the Arsenal's "esprit de corps run," or commander's run, an early-morning 5K that is offered to everyone on the installation every few months.

"I want to use that [the esprit de corps run] as a venue for employees to get to know each other and build the 'esprit de corps' amongst the military members throughout the installation," said Burden.

"And I want the employees that aren't running to see us participating in a team event together, hoping to spread that idea of camaraderie across the installations."

For Burden, another benefit of his position is meeting the local communities and veteran organizations, such as the American Legion.

In fact, Burden identifies meeting veterans from the Battle of the Bulge as his most memorable moment at Picatinny.

The Battle of the Bulge was a major German offensive from Dec. 16, 1944 to Jan. 25, 1945 in the Ardennes region of Wallonia throughout Belgium, France, and Luxembourg.

Picatinny is where most munitions that were used against our enemy 70 years ago were designed and refined.

To thank them their service and gain some insights into how to equip future Soldiers, Picatinny invited seven Battle of the Bulge veterans to tour the arsenal in July 2015.

"It was very memorable that we got to interact with them and listen to

See BURDEN, Page 7

PM Soldier Weapons developing first integrated fire control for small arms weapons

BY PETER ROWLAND

PEO Soldier

What does it take for an Army sniper to accurately hit a person-size target at extreme ranges?

The Army thinks it may have the answer to this challenge in a new integrated fire control sighting system for military sniper weapons called the Ballistically Optimized Sniper Scope or BOSS.

“To improve sniper effectiveness, especially at extended distances, we need to find a way to increase accuracy by reducing aiming errors, and minimize the time for the shooter to figure out where to correctly aim his weapon,” said Regina Stonitsch, Assistant Product Manager for BOSS at Project Manager Soldier Weapons. “We believe the answer could be the BOSS Project.”

“Since sniper rifle and ammunition technologies are unlikely to change considerably in the foreseeable future, we’re concentrating our efforts on developing a revolutionary fire control system that will provide a leap in shooter performance and likewise a big return on investment,” she said.

The BOSS is a fully integrated, rifle-mounted (using the Picatinny Rail) automated, full-solution fire-control system for sniper weapons. It has a variable power (6-22x magnification) direct view optic coupled with a precision, eye-safe laser range finder. The system also contains an internal environmental sensor suite, platform orientation inclinometers, and sophisticated ballistic calculator.

The ballistic calculator uses range, environmental and weapon orientation data to compute a ballistic solution based on weapon and ammunition. It provides an adjusted aim point in the scope, which the shooter then places on target and fires.

The entire time, the shooter never removes his eye from the scope nor loses his sight picture of the

target. This allows the shooter to maintain better situational awareness and avoids extra time and effort in reacquiring the target.

BOSS also provides fail-safe sniper operations in case its power source or electronics fail.

The Army acquired a number of advanced technology demonstrator BOSS prototypes and evaluated them over the past year at numerous military bases and Army test centers.

According to Stonitsch, the BOSS prototypes were sniper vetted against personnel-size targets out to the maximum effective range limits of our current sniper systems.

However, the system is capable of accurately ranging and calculating the required ballistic reticle for those type targets at a comfortable distance, well beyond effective weapon system (rifle/ammo) engagement constraints.

Collected data shows the BOSS will progressively increase the probability of hit, as a function of range, by nearly an order of magnitude at the most extreme range and can reduce engagement times by 50 percent across all ranges.

The system ballistically supports a variety of weapon and ammunition combinations. Shooters can customize it based on observed firing characteristics, such as measured muzzle velocities and pre-transonic zone zeroing or, in other words, just before the bullet starts transitioning to subsonic speeds.

Soldier load is important, and the BOSS is lightweight, weighing 3.5 pounds.

It eliminates the need for the discrete sniper accessory kit items currently carried by snipers that perform the same ballistic computation tasks but weigh twice as much.

The system is part of the Army’s overall effort to



invest in new, sophisticated small arms fire control systems to enhance Soldier lethality while reducing cognitive burdens under battlefield stress.

“The BOSS is currently designed for snipers, but its technologies can be easily adapted to other small arms weapon systems,” Stonitsch said. “It could be a game-changer for our Warfighters by taking the guesswork out of aiming and making virtually anyone a marksman with the touch of a button.”

If the Army decides to develop, produce and field the BOSS, it could be available to Soldiers as soon as 2020, she said.



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Picatinny ensures software reliability for advanced precision airdrop system

BY ED LOPEZ

Picatinny Arsenal Public Affairs

Engineers at Picatinny Arsenal are applying their expertise in software reliability to an advanced precision airdrop system designed to deliver vital supplies to the warfighter on time and in challenging terrain with minimum damage to cargo.

The Joint Precision Airdrop System, or JPADS, is intended to provide increased tactical maneuverability and enable a sustainment capability to support total Army, multi-service, and multi-national ground forces.

Moreover, JPADS meets a sustaining combat power requirement to provide high altitude, precision airdrop as a direct and theater delivery method into dynamic, dispersed, and unsecured battle scenarios.

The JPADS Air Vehicles are a family of high altitude systems offering weight capabilities of 500, 2,400 and 10,000 pounds.

The JPADS systems provide precision-guided capability for the accurate delivery of Container Delivery System (CDS) loads on to small drop zones from U.S. Air Force C-130 and C-17 aircraft flying at high altitudes and stand-off distances.

JPADS is especially helpful to Special Forces, but also has wider military applicability. The overall program has been a joint effort by the Army, Air Force and Marine Corps since 1997.

“We have worked with program partners to provide software engineering for challenging technologies used by the airdrop systems, resulting in an overall reduced cost and schedule for the program,” said Judy Mazeski, Precision Control Unit Software Branch Chief, Armament Software Engineering Center.

The software support at Picatinny is performed by the Armament Software Engineering Center, which is part of the larger Weapons and Software Engineering Center.

Both organizations in turn belong to the Armament Research, Development and Engineering Center, or ARDEC.



The Joint Precision Airdrop System, or JPADS, is intended to provide increased tactical maneuverability and enable a sustainment capability to support total Army, multi-service, and multi-national ground forces. The JPADS Air Vehicles are a family of high altitude systems offering weight capabilities of 500, 2,400 and 10,000 pounds.

ARDEC’s software expertise is in support of the Product Manager Force Sustainment Systems (PM (O-5) FSS) program office, part of the Program Executive Office for Combat Support and Combat Service Support.

The office encompasses the management of airdrop equipment for personnel, supplies and equipment in support of mass airborne assaults, resupply, special operations, deep strike concepts, and humanitarian relief.

The software engineering center at Picatinny focuses its support on the PM (O-5) FSS goals for improved accuracy and reliability of parachutes, increased payloads, improved safety, and increased operational flexibility.

The JPADS leverages and reuses the software application code and, to meet future upgrades, a common software

architecture is used across all the JPADS variants.

“Software engineering requires the right solution is designed-in early in the development process,” said Deborah Burger, Team Lead, Armament Software Engineering Center. “It’s not effective to ‘bolt-on’ engineering solutions at the end of system development. Software engineering requires the right solution is designed-in early in the development process.”

JPADS provides Guidance, Navigation and Control (GN&C) capabilities unattainable by simpler airdrop technologies. These modernization efforts encompassed within JPADS include improving the accuracy and performance of JPADS in numerous challenging weather and terrain conditions.

SOFTWARE CREATION CHALLENGES

Some of the challenges of creating this software are:

- Weather conditions: The software must be sophisticated enough to make significant real-time adjustments to its guidance strategy to compensate for high or changing winds.
- Collision Avoidance: The system needs to be able to prevent collisions mid-air such as when multiple bundles are dropped in a single pass.
- Combination Drops: In the case where JPADS is dropped with jumpers in the same pass, the system must fly in a predictable manner, so the jumper can follow it to the point of impact.
- Terrain Avoidance: The software must account for variable terrain conditions. Dropping in a mountainous area is more difficult than dropping in a flat ground.
- Hazard Avoidance and airdrop estimation: The software must be able to



determine the level of likelihood of a successful drop with hazardous conditions such as rivers and buildings. Also, the software must be able to adjust its flight path to avoid hitting any hazards within the drop zone.

- GPS-denied environments: Delivering payloads in an area where there is no GPS data available.

JPADS increases aircraft and payload survivability and enables delivery of multiple loads to single or multiple drop zones in a single aircraft pass with an accuracy better than 150 meters for the JPADS 2K system and accuracy better than 250 meters for the JPADS 10K system.

The JPADS airdrop vehicles include an air parafoil, with a glide ratio of 3:1, coupled with a military GPS-based Autonomous Guidance Unit (AGU).

The onboard Guidance, Navigation and Control (GN&C) software in the AGU autonomously steers the parafoil to the designated Impact Point (IP).

Onboard the aircraft, the JPADS 2K AGU is wirelessly integrated with the United States Air Force Mission Planner, which is used to monitor the health of the systems before flight and to determine an appropriate Launch Acceptability Region.

Just prior to landing, the AGU commands the parafoil to perform a flare maneuver and slow the system down for landing to increase load survivability.

The JPADS keeps warfighters and vehicles off the roads for resupply by utilizing Military GPS based, Autonomously Guided Navigation and Control systems, Steerable Parachute Decelerators, and Autonomous Operation and Waypoint Navigation.

WHAT THE SOFTWARE DOES

The JPADS Autonomous Guidance Unit (AGU) houses the battery power pack; GPS receiver; guidance, navigation and control (GN&C) software package; and the hardware required to operate the steering lines.

Prior to deployment, the AGU is programmed with a point of impact (PI), gross rigged weight of the system, Digital Terrain Elevation Data (DTED), canopy type as well as the elevation of the PI. The system uses these inputs to calculate a projected trajectory.

The JPADS 2K AGU continues to calculate its position via the GPS throughout

Article continues on next page

AT A GLANCE CMMI Certification

What is it? The Armament Software Engineering Center at Picatinny Arsenal is the only U.S. Army organization to reappraise at CMMI Maturity Level 5. The letters stand for Capability Maturity Model Integration.

- CMMI Level 5 appraisal means we are focused on optimizing our process performance.
- Software defects are captured early in the software development life-cycle, resulting in highest quality software with the lowest cost, schedule and performance risk.
- There are five levels of maturity (Level 1 - Initial, Level 2 - Managed, Level 3 - Defined, Level 4 - Quantitatively Managed, Level 5 - Optimizing).
- Results showed 100 percent compliance in all CMMI practices.
- The software engineering center is part of the larger Weapons and Software Engineering Center. Both organizations in turn are part of the U.S. Armament, Research and Engineering Center, or ARDEC.

PICATINNY ENSURES SOFTWARE RELIABILITY

continued from previous page

descent, landing near the PI with an accuracy better than 150 meters with an 80 percent confidence.

The steerable parafoil is called a “decelerator,” and gives the JPADS system directional control throughout its descent by means of decelerator control lines attached to the MAGU.

They create drag on either side of the decelerator, which turns the parachute, thus achieving directional control and allows the JPADS system to land near the PI, even though it is released at a high standoff distance.

The Mission Planner software gives the aircrew the ability to plan the mission, in flight if necessary, as well as providing a Computed Air Release Point (CARP), where the load is released.

CONTINUOUS IMPROVEMENTS

JPADS software has been improved throughout the time that ARDEC has supported the program.

In addition to accuracy improvements, the software has been updated to include user selectable flight software navigation strategies.

These strategies allow for normal operations, landing on an IP in a mountainous area, as well as a predictable flight strategy for combination drops when jumpers are going to be following the bundle.

Additionally, the software has helped reduce the chance of collision between bundles and increased payload survivability.

Future research may include camera-based navigation, which can be potentially be extended for use on an autonomous vehicle, manned aircraft, and unmanned aircraft. Vision-based software



ABOVE: The Joint Precision Airdrop System has various weight capabilities. Shown here is a demonstration of the 10,000 pound capability. **RIGHT:** The air vehicle uses a 2,000 pound capability to deliver its cargo. Engineers at Picatinny Arsenal are applying their expertise in software reliability so that the advanced precision airdrop system can perform reliably under a variety of conditions.

technologies compares what the camera sees with the latest satellite images of the ground target area to determine the drop zone.

That means a vision-based JPADS could provide a capability that autonomously steers the cargo delivery to the target without requiring outside signals or information, such as GPS.

ARDEC's Precision Control Unit Software Branch will ensure that every armament solution delivered to the warfighter is designed from the start with the most effective, adaptive and maintainable solutions.

ARDEC expects growth in the Precision Guided Engineering competency due to emerging and evolving threats.

The U.S. Army Armament Research,



Development and Engineering Center is part of the U.S. Army Research, Development and Engineering Command, whose mission is to provide innovative research, development and engineering to produce

capabilities that provide decisive overmatch to the Army against the complexities of the current and future operating environments in support of the joint warfighter and the nation.

Burden duties as senior commander wide in scope

Continued from Page 3

their experiences,” said Burden.

“I really just enjoyed listening to some of things that they were engaged with throughout World War II.

“Many of them served in units that are still in existence today and some of them fought in units that don't exist today, like the Third Armored Division,” continued Burden.

“To actually have the chance to give one of my patches from my uniform to a veteran from the Third Armored Division in World War II—it was great.”

COPING WITH COLD WEATHER

As the son of a Vietnam veteran, Burden was born at Fort Campbell. He gained interest in the military by observing his father as well as his brother who enlisted in the Army and later was commissioned from the Reserve Officer Training Corps or ROTC.

“I like the structure, discipline, teamwork, and the culture,” said

Burden about the military. “It's a reflection of our country and we are a leader in trends and doing the right things. The culture is one of the many reasons that I decided to serve.”

Following in his brother's footsteps, Burden joined ROTC while in high school.

He was later commissioned in the U.S. Army Field Artillery from Alabama A&M University.

After he entered active duty in 1987, his military career involved a number of tactical assignments.

These assignments were located across the world, such as Germany and eventually Saudi Arabia, where Burden participated in Operations Desert Shield/Storm.

Since 1994, though, Burden primarily has held acquisition assignments, project officer and project manager roles, and program analyst duties.

For instance, prior to Picatinny, Burden served as the Deputy to the Deputy for Acquisition and Systems

Management for the Assistant Secretary of the Army for Acquisition, Logistics and Technology - Pentagon.

On October 20, 2014, Burden became Picatinny Arsenal's senior commander and Deputy PEO Ammo, moving from Virginia to Northern New Jersey, where he and his family unloaded their moving truck on New Year's Eve.

“I was in the acquisition workforce for years, so I knew about Picatinny, but I've never been fond of cold weather, and northern New Jersey just sounded cold,” laughed Burden.

“But, being an artillery officer, I did have a desire to work with artillery systems. So, I was a little concerned about the area, but when I got here—I visited a few weeks before I moved here—I found out that it was very beautiful.”

NEW ASSIGNMENT

Two years later, Burden is now ending his tour at Picatinny Arsenal and has been reassigned to Fort

Belvoir, Virginia, where he'll serve as the Program Executive Officer for Enterprise Information Systems.

Given this wealth of knowledge and hands-on experience, one might assume that Burden's idea of “hard skills” may be learning products, improving programs, or perfecting a tactical mission.

However, Burden believes that the “hard skills” are more people-based, such as developing patience and refining the art of successful communication.

“If you don't have the skill to communicate with different types of people, in different environments, then you're going to really struggle,” said Burden. “And, communication is not just speaking. A lot of it is also receiving and listening too.”

Burden said these skills make leaders successful, and have allowed him to strive for two goals—a positive attitude and a team spirit—and what ultimately makes Picatinny Arsenal a military “jewel.”

EOD Soldier receives medal for heroic actions

BY ERIC KOWAL

Picatinny Arsenal Public Affairs

Before Brig. Gen. Patrick Burden handed over the keys to the Picatinny Arsenal Cannon Gate as a symbol of the official transfer of management as the installation's Senior Commander to the incoming commander, Brig. Gen. Alfred Abramson III, Burden held his final installation town hall, where he and key staff members addressed upcoming events, issues, and concerns to the Picatinny community.

The Nov. 14 event was held in the Lindner Conference Center before the official Change of Management Ceremony.

AWARDS

The first item on the agenda was for Burden to present his last awards to the workforce.

The awardees included runners that made up the team that represented Picatinny during the Army Ten-Miler, and Maj. Michael Palisak and Maj. Torrence Moore for their exceptional support to the Emergency Operations Center during the installation's last force protection exercise in September.

Staff Sgt. Tyler Bickston was presented with an Army Commendation Medal for heroic actions after he helped a motorist who was struck during a hit-and-run, placing himself in danger on the highway during inclement weather and less than favorable driving conditions.



During his last installation town hall, Brig. Gen. Patrick Burden presented the Army Commendation Medal to Staff Sgt. Tyler Bickston for heroic actions after he helped a motorist who was struck during a hit-and-run.

Burden also announced that Chief Warrant Officer 3 Michael Tyler had been selected for promotion and will receive his new rank in the coming months.

INTRODUCTIONS

New personnel were introduced to the Picatinny community. First was Steven Cooper, the new Director of Human Resources, who replaced Anthony Jones after he retired earlier this year.

Also, the new garrison command sergeant major, Command Sgt. Maj. Sheila Royal was welcomed by the audience.

WINTER SAFETY

Larry Taylor, from the U.S. Army Armament Research,

Development and Engineering Center's safety office, announced that the Army has recognized, "slips, trips, and falls as the leading cause for workplace injury."

Taylor advised attendees to ensure they wear proper footwear and take special care to observe where they are stepping, not only during the icy winter conditions, but throughout the year.

ECOMP

All employees must register on the United States Department of Labor, Employees Compensation Operations and Management Portal.

The website is for federal employees and contractors who have sustained work

related injuries or illnesses to report incidents to their supervisors in order to begin the claims process.

Employees should register at <http://ecomp.dol.gov>

OTHER ANNOUNCEMENTS

Several upcoming Family and Morale, Welfare and

Recreation events as well as holiday celebrations and activities were announced. Visit the MWR website for more information at <https://picatinny.armymwr.com/us/picatinny>

The town hall was then turned over to the garrison commander, Lt. Col. Jeffrey Ivey, and his staff for questions and comments.

Lastly, before parting Burden, and his wife, Veorah, each made closing remarks.

"It has been a great two years," Burden said. "I leave with mixed emotions. Let there be no doubt, you are making a difference. Every mission is important here, and you do it, and you do it well," the outgoing senior commander told the workforce.

Veorah Burden said, "I cannot say thank you enough to everyone. I have a different role and you helped make that easier for me. I'm the general in my house. I wear my emotions on my sleeve. I don't wear a uniform. I'm going to miss this great community. I truly will."



SERGEANT MAJOR VISIT

Command Sgt. Maj. James P. Snyder, the command sergeant major for the Research, Development and Engineering Command (RDECOM) in Aberdeen, Maryland, visited Picatinny Arsenal on Nov. 17 for a series of tours and meetings. Snyder said non-commissioned officers assigned to RDECOM organizations can offer their operational expertise to scientists and engineers who are developing systems that support Soldiers in the field. Photo by Erin Usawicz



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Pumpkin Flinging attracts students, media interest



The Pumpkin Flinging competition at Picatinny Arsenal on Nov. 18 was sponsored by the Picatinny Arsenal STEM office. The event attracted more than 100 area students who got a chance to test their engineering skills by developing catapults that would hurl a pumpkin the farthest distance. Photos by Todd Mozes.



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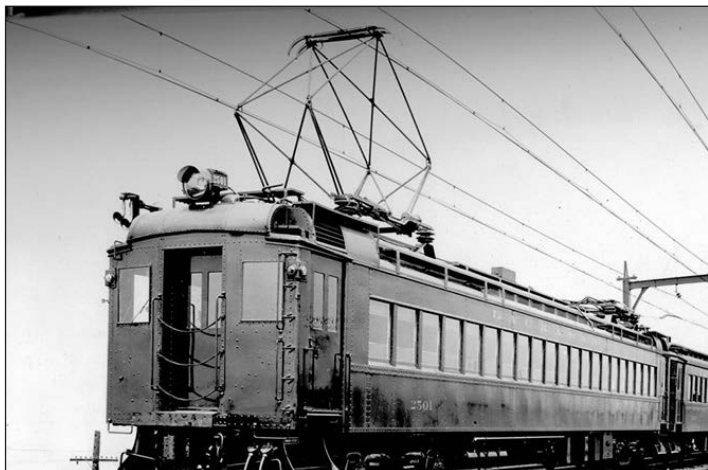
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FLAG FOOTBALL CHAMPS -- Bad Newz beat the Navy Destroyers 21-6 on Nov. 8 to become the Picatinny Arsenal 2016 Flag Football Champions. Front row from left : John Thomas, Jacob McAfee, Gerard Strein, John Smyth. Standing from left to right on second row: Scott Jurewicz, Bob Stephan, Anthony Hawthorne, Chris Awesome, Kushan Patel, and Maj. Kenneth Fowler. Standing from left to right on third row: Matt Walters, Michael Broz.

Looking Back ... At Picatinny



BY PATRICK J. OWENS, ARDEC HISTORIAN

During the holiday season, many Picatinnyans will head into New York to enjoy assorted amusements, including next week's trip to Radio City. Over the years, Picatinny has repeatedly touted proximity to the city in its attempts to draw professionals to work here.

Seen here is a photo from an early 1950s arsenal brochure showing a New York bus at a stop in downtown Dover. Note it is a Greyhound bus. Today, it would be a Lakeland vehicle. Greyhound is no longer running a route from Dover to New York.

Railroad tracks paralleled the highway the buses traversed and Delaware, Lackawanna, and Western Railroad electric trains, including the one in the second photo, also took arsenal dwellers to the bright lights of Manhattan. In addition, the road's coast-to-coast steam train, the Phoebe Snow, regularly stopped in Dover.

The Lackawanna reacted to the threat from trucks on superhighways by merging with the Erie Railroad in 1960. Erie Lackawanna became part of Conrail in 1976.

Former ARDEC Commander, Brig. Gen. William R. Holmes, passes away

Picatinny Arsenal Public Affairs

Retired Army Brig. Gen. William R. Holmes, passed away at age 75 on Nov. 7, 2016, at his home in Vass, North Carolina. He was the fourth commander of the U.S. Army Armament Research, Development and Engineering Center, or ARDEC, the largest organization on Picatinny Arsenal.

Holmes was assigned to Picatinny Arsenal before he was named ARDEC commander, serving as project manager for ammunition logistics. He became the ARDEC commander in November 1989, and was promoted to the rank of brigadier general on Feb 4, 1991.

During his tenure as commander, he led ARDEC in support of Operation Desert Storm and had to cope with command-wide hiring freezes.

He was a bachelor, but that changed when he married his fiancée, Camilla, the daughter of former Secretary of State Cyrus Vance, who served during the Carter administration.

Holmes was active in the local community, participating in numerous engagements in support of the deployed troops.

He hosted the annual Picatinny Arsenal Armed Forces Day parade, which featured Soldiers, Marines and Airmen returning from Operation Desert Storm.

Born in Sandersville, Georgia, on March 1, 1941,



William R. Holmes, is pictured here when he still held the rank of colonel.

he graduated Georgia Tech in 1963, and earned his commission as a second lieutenant through the Reserve Officer Training Corp. He was in the Army for 32 years and served in Vietnam as an Ordnance Officer.

His decorations and awards include the Defense Distinguished Service Medal, Army Distinguished Service Medal, Army Distinguished Service Medal, four awards of the Legion of Merit and the Bronze Star Medal with "V" device for valor and Meritorious Service Medal.

ABRAMSON IS NEW ARSENAL SENIOR COMMANDER

continued from Page 1

New Deputy Program Executive Officer Ammunition brings a wide range of experience to his new position at Picatinny Arsenal.

Abramson was commissioned a second lieutenant in the Chemical Corps after graduating from Virginia State University where he received a Bachelor of Science degree in Chemistry.

Abramson served in a variety of positions overseas as well as the contiguous United States to include:

Battalion Chemical Officer, 6-37th Field Artillery; SMOKE Platoon Leader, 172nd Chemical Company; Company Commander, 266th Quartermaster Battalion; Chemical Staff Officer, Project Manager's Office for Nuclear, Biological, & Chemical (NBC) Defense; Aide-De-Camp, Soldier Biological Chemical Command; Assistant Product Manager, NBC Point Detection, Project Office for NBC Defense; Program Executive Office Liaison Officer, Coalition Forces Land Component Command; Assistant Product Manager, NBC Reconnaissance, and Joint Project Office NBC Contamination Avoidance.

Other assignments include Budget Team Chief, Office of the Assistant Secretary of the Army (Acquisition, Logistics and Technology); Joint Product Manager, Biological Detection Systems, Joint Program Executive Office for Chemical and Biological Defense; Military Assistant to the Under Secretary of the Army; Joint Project Manager for NBC Contamination Avoidance; and most recently the Executive Officer for the Principle Military Deputy Assistant Secretary of the Army (Acquisition Logistics, and Technology).

CIVILIAN EDUCATION

His civilian education includes a Master's degree in Chemistry from Johns Hopkins University, a Master's degree in National

Security and Strategic Studies from the Naval War College, and a Master's degree in Strategic Studies from the Army War College.

MILITARY EDUCATION

His military education includes the Chemical Officer Basic and Advanced Courses, the Support Operations Course, the Combined Arms and Services Staff School, Command and General Staff College, the Advanced Program Management Course, the Senior Service College and Senior Leaders Course.

Abramson's awards include the Defense Superior Service Medal; the Defense Meritorious Service Medal, 1st Oak Leaf Cluster; the Army Meritorious Service Medal, 1st Oak Leaf Cluster; the Joint Service Commendation Medal, the Army Commendation Medal, 2nd Oak Leaf Cluster; the Army Achievement Medal, 1st Oak Leaf Cluster; and various other awards.

They also include the Air Assault Badge; Parachutist Badge; and the Army Staff Identification Badge.

ARSENAL OVERVIEW

Picatinny Arsenal is the Department of Defense's Joint Center of Excellence for Guns and Ammunition, providing products and services to all branches of the U.S. military.

The center's 5,000-plus employees specialize in research, development, acquisition and life cycle management of advanced conventional weapon systems and advanced ammunition.

More than 90 percent of the Army's armaments and ammunition including warheads, explosives, all sizes of firearms, battlefield sensors, and howitzers are developed at Picatinny.

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