



APG NEWS

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inside

RESILIENCY

ATEC Soldiers and civilians collaborate to reach 'Individual Zones of Function' during recent resiliency training focused on energy management. **Clinic | A3**

VIETNAM

A Bel Air resident recalls serving in 'Nam as a nurse anesthetist and a later assignment to – and eventual evacuation from – Tehran, Iran during the Iranian revolution. **Army | A6**

INNOVATION

The Edgewood Chemical Biological Center is now one of only two labs in the country permitted to analyze biomedical samples recovered from suspected sites of chemical warfare agent use. **Gold Lab | B1**

newsbrief

Military Family Month

PROCLAMATION BY PRESIDENT BARACK OBAMA

For generations, brave Americans have stepped forward and answered our country's call to serve in our Armed Forces. With honor and distinction, our Soldiers, Sailors, Airmen, Marines, and Coast Guardsmen fight to defend the principles upon which our Republic was founded so that we might live in a freer and more prosperous world.

Behind these courageous Americans stand spouses, children, and parents who give up precious time with their loved ones, bearing the burden of long deployments and difficult moves, and oftentimes putting their careers on hold.

While our service members are fighting to secure the values we cherish and defend our homeland, their spouses keep their households running, sometimes through multiple deployments.

During Military Family Month, we salute the families of those who proudly are a part of our Nation's unbroken chain of patriots for their unwavering devotion, and we renew our sacred vow to uphold our promise to our troops, our veterans, and their families.

online

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ICE system http://ice.disa.mil/ Facebook, http://on.fb.me/HzQlow

A 'super' Saturday for APG's youngest heroes



U.S. ARMY PHOTO BY YVONNE JOHNSON, APG NEWS

Children lead the pack as the APG Superheroes Run, Walk & Stroll takes off at APG North (Aberdeen) Oct. 29. The first-time event was framed around the approaching trick-or-treat season and the Army Performance Triad of sleep, activity and nutrition.

"We wanted to do something different to reach and inspire our oldest to our youngest listeners," said Capt. Maritzabel Gonzalez, deputy chief of Preventive Medicine, Kirk U.S. Army Health Clinic. The event drew more than 200 participants.

Mentors help guide FCA youth

Volunteers call mentoring program 'rewarding'

BY RACHEL PONDER
APG News

People who volunteer as mentors with the Freestate ChalleNGe Academy play a vital role in helping cadets reach their potential.

The Maryland National Guard Freestate ChalleNGe Academy, or FCA, is a highly structured, military-style program that gives Maryland teens, ages 16 to 18, a second chance at an education. Located on APG South (Edgewood), the residential program teaches cadets valuable life skills and self-discipline, while they prepare for the GED exam.

During the five-month residential phase, each mentor maintains contact with their cadet to encourage them to stay the course in the pursuing their academic and personal goals.

According to FCA mentoring supervisor and case manager Karilynn Dunmeyer, mentors provide a support system to cadets during a See **MENTORS**, page 7



U.S. ARMY PHOTO BY RACHEL PONDER, APG NEWS

Freestate ChalleNGe Academy Mentor Tessa Ricketts (right) helps prepare FCA Cadet Dasia Williams for the GED exam during a tutoring session on APG South (Edgewood).

Obama names APG youth 'Kid Science Advisor'

BY LAUREN FINNEGAN
APG News

APG youth Khristian Ward, a fifth grader at Roye-Williams Elementary School, was recently selected as one of 11 children to be a part of President Barack Obama's first ever Meeting of Kid Science Advisors, held at the White House, Oct. 20.

The idea for the group was developed after Baltimore resident Jacob Leggette asked President Obama if he had a kid science advisor during the 2016 White House Science Fair.

The president was so impressed with America's budding scientists during that fair, that he thought Leggette might be on to something.

"One of the things I find so inspiring about these young thinkers is that they look at all these ... problems as something we can solve... They're not afraid to try things and ask tough questions," Obama said.

Obama tasked his science advisor, Dr. John Holdren, assistant to the president for Science and Technology, to ask young people to share their thoughts about what their generation feels is important for the future of science, technology, engineering, and mathematics, or the STEM, field through an online campaign.

Applicants were asked to share ideas that would

See **YOUTH**, page 7



OFFICIAL WHITE HOUSE PHOTO BY LAWRENCE JACKSON

Khristian Ward (front row, third from right) met with President Barack Obama and Astronauts Mark and Chip Kelly, during the Kids Science Advisor meeting at the White House Oct. 20. Ward was one of 11 children chosen from 2,500 applicants to share his ideas about science and technology.

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STREET TALK

COMMENTARY

Here's some place like home

What would you change about the electoral process?

There needs to be not just Democrats and Republicans, but independents and whoever else.



Andrea Davis
Family Member

I would have each individual's vote count more, and not the electoral vote.



Dawn Fischer
Family Member

A shorter length of time to get the time done... term limits.



Deborah Edmonds
Retired Military

The popular vote could get more bearing. More substantive debates, more civility, and more respect for the President when he's in his last term as far as appointing Supreme Court justices.



Sallie Scott
Family Member

The way they count the votes. The electoral college, I would change that. I think it would be more fair.



Wanda Saffer
Family Member

If someone had asked me 10 years ago where my home was, I would have immediately said New Jersey. For 22 years, except for my time at college, I lived in the same town, resided in the same house, and slept in the same room.

So many things in my life have changed since I became a military spouse. While I will always consider myself a Jersey girl, if someone asked me today where home is, I don't think I would be able to name only one place.

The little condo in Hawaii — where I got married on a beach in Honolulu and enjoyed Skype sessions with my husband at all hours of the night — was definitely home. Tucked neatly on a winding hill in the center of Oahu, that condo was also the place where I struggled to hang a "Welcome Home" banner in the perfect place, stocked the refrigerator with my husband's favorite foods, and cleaned the place spotless for our long-awaited reunion after one of his deployments. A few months after that it was also the place where we learned we were expecting our first child.

We brought our infant son home to a townhouse in Fort Polk, Louisiana. It's also the place where we made all the mistakes



Lauren Finnegan
APG News

new parents make and the sight of another "see you later" as my husband left on another year-long deployment.

When he came back, we moved into our second home on Fort Polk, and enjoyed our first Thanksgiving with the three of us together. And it's where we eagerly prepared to welcome a little girl into the family. Strong-willed like her mother, she arrived a few days late, but brought even more wonder and joy into an already happy home.

In 2013, after another deployment, and several weeks of training, our next home became a wonderful little house in Harford County, Maryland. Life has been good here. Together, we have jumped in leaf piles, snuggled on the sofa with cookies and hot cocoa, watched every night of the "Twenty-five Days of Christmas," and had crazy dance parties in the living room.

Home has been many places. I hadn't yet ridden in an airplane when I was 6 years old, my son's current age, but both of my children are seasoned travelers. They've seen and experienced things I never knew existed at their age.

While I'm happy to know they'll be able to tell their children about their adventures as a military family, I struggle with other

aspects of this life as I'm sure other military families do.

Every time we move, I worry about my children making friends. I wonder, if they will ever feel like they're a part of a place and not just passing through, and I question if they would struggle to answer should someone ask them where they're from. Most of all, I worry that they might resent us for choosing this life for them.

Whenever my husband is away, I try to fill the two roles we would normally share. I admit that sometimes I flounder. It can be overwhelming to try to be everything to your children while also trying to take care of yourself.

Over time, I learned to let go of things that might have driven me crazy like leaving dirty dishes in the sink, or toys on the floor at the end of the day. For my family to stay sane while Daddy is away, we make it a point to step outside the box. For example, we might have breakfast for dinner instead of a meticulously planned meal in the evening, or find other oddball but fun ways to "goof off." It's something I'm sure all military families can relate to.

When our children are all grown up and out of the house, I hope, that no matter what they thought of this crazy military life, they believe that we tried our best, and that they can tell their children they always knew they were loved.

Prescription Take Back Campaign concludes

ASAP

Plenty of APG Soldiers, civilians, contractor, retirees and family took the opportunity to turn in expired, unused or unwanted prescription drugs (RX) and Over-the-Counter (OTC) medicines during the annual Prescription Take Back Campaign, hosted by the Army Substance Abuse Program.

Combined collections at the APG North (Aberdeen) police station and drop-offs sites at the U.S. Army Test and Evaluation Command; Communications-Electronics Command; and the APG South (Edgewood) Express totaled 105.5 pounds. That is a 34.5 pound increase over the 71 pounds collected

during the April 2016 campaign, according to Cindy Scott, ASAP prevention coordinator.

"The dedication of the APG Investigative Services Branch, ATEC, CECOM, the Express, the APG Plans, Analysis, Integration Office and ASAP continues to result in increased resiliency, wellness, and safety at home, work, and throughout the military and civilian communities," Scott said.

She added that those who missed the APG Take Back campaign can use any of six permanent drop-off sites in Harford County:

- Harford County Sheriff Main Office, 45 S. Main Street, Bel Air

- Northern Precinct, 3724 Norrisville Road, Jarrettsville
- Southern Precinct, 1305 Pulaski Highway, Edgewood
- Havre de Grace Police Department, 715 Pennington Avenue, Havre de Grace
- Aberdeen Police Department, 60 North Parke Street, Aberdeen.

All of the Harford County sites are open 24/7 for medicine drop-offs. No liquids or sharp objects will be accepted.

The 13th APG Take Back campaign will be conducted in April 2017.

For more information, contact Scott at 410-278-4013 or email cynthia.m.scott4.civ@mail.mil.



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Check us out on flickr <http://www.flickr.com/photos/usagapg/>

See Something

Cut along dotted lines and fold in middle for use as wallet reference Card.

Provided by the INTEL DIV/DPTMS

Say Something

INSTALLATION WATCH CARD

DO OBSERVE & REPORT

- Suspicious activity or suspected surveillance.
- Unusual questions or requests for information relating to capabilities, limitations, or operational information.
- Unusual vehicles operating in or around APG.
- Unusual phone calls, messages, or e-mails.
- Unusual contacts on or off post.
- Unusual aerial activity near or around installation.
- Any possible compromise of sensitive information.



INSTALLATION WATCH CARD

DON'T

- Discuss any aspect of military operations or planning.
- Discuss military capabilities or limitations.
- Discuss FP measures, capabilities, or posture.
- Disclose information about R&D and testing.

Report suspicious activity immediately to APG Police!



APG (North & South):
410.306.2222

Off Post in Maryland call
1-800-492-TIPS or 911

Card created by APG Intel



APG NEWS

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Training centers on energy management strategies

Soldiers, civilians explore individual zones of function

BY COURTNEY GILBERT
Army Test and Evaluation Command

The U.S. Army Test and Evaluation Command's, or ATEC, Ready and Resilient, or R2, Campaign program taught a resiliency skill on energy management during a session at ATEC headquarters on APG North (Aberdeen), Oct. 18.

The Army's R2 initiative is to develop physical, emotional, and mental resilience amongst Soldiers, Army civilians, and their families, and to increase his or her ability to manage all life circumstances. ATEC delivers training sessions to the workforce that teach coping skills and behaviors suitable for handling these life challenges.

The training objective focused on how to appropriately manage one's energy level for the task-at-hand and how to optimize performance of the task.

According to Daniel Grifo, master resiliency trainer and instructor for the session, energy management helps build self-regulation; impacts the ability to perform in one's professional and personal life; and enables one to be in control of their physical, mental, and emotional state during stressful times.

Grifo explained that energy is activated either in the fight or flight state, or in the rest and digest state.

"Fight or flight is a physical state that occurs in response to any stressor, real or imagined, resulting in heightened physiological changes," Grifo said. "When your body gets ready for the fight or flight state, all the oxygen from your blood travels to the muscles giving you a boost of energy to deal with a stressor."

Grifo described the rest and digest state as the complementary response of fight or flight.

"Rest and digest is a physical state that occurs when the body is at rest and results



U.S. ARMY PHOTOS BY COURTNEY GILBERT, ATEC
Master Resiliency Trainer Daniel Grifo delivers a resiliency training session on the energy management skill at the Army Test and Evaluation Command Oct. 18, 2016.

in recovery and regeneration," Grifo said. "This state is designed to redirect our energy levels and put the body in a relaxed state. Unlike the fight or flight response, it doesn't need all that blood sent to the extremities."

According to Grifo, understanding the role of these two energy activation states helps individuals develop strategies to regulate them, and ultimately control performance.

Grifo explained that Soldiers, family members and civilians perform tasks in various ways, professionally and personally. He presented scenarios of tasks that require high levels of energy and those that require low levels of energy.

"The less energy you have, the lower your performance level," Grifo said. "If you have too much energy, your performance is less, too. The idea is to reach an optimum energy level that will result in reaching your optimum performance level."

According to Grifo, once an individual has reached that level of optimum performance and energy level, he or she has

reached the individual zone of function, or IZOF. He explained that the deep breathing technique is one way to harness energy to bring one's self to the IZOF.

Grifo stated that deliberate breathing causes the body to use energy more efficiently resulting in the body only using energy when it needs it. He led the class through rhythmic deliberate breathing exercises.

The class concluded with a practical exercise activity during which participants listed their routine activities and the level of energy they put into those activities. Afterwards, participants noted whether or not they needed to increase or decrease their level of energy dedicated to their activities.

"I thought the breathing techniques

were good," said Maria Welsh, an ATEC budget analyst. "For me, the techniques help me to be calm when I'm upset."

A Soldier participant also shared his thoughts on how the content impacted him.

"As a high school football coach, I strive to teach my kids how to deal with adversity," said Captain Michael Lee, company commander, ATEC. "You have to be in the right frame of mind and try to project positive energy as you're dealing with that adversity."

For more information about ATEC's Ready and Resilient Campaign, visit <http://www.atec.army.mil/r2c>. To learn more about the Army's Ready and Resilient Campaign, visit <https://www.army.mil/readyandresilient/>.



Soldiers engage in a rhythmic breathing practical exercise during the resiliency training session held at ATEC Oct. 18, 2016.

Newcomers welcome



U.S. ARMY PHOTO BY RACHEL PONDER, APG NEWS

Volunteer Suzanne Andrews watches as Maj. Tracy Tawaih, of the U.S. Army Evaluation Center, makes friends with "Sailor," a therapy dog, during the Newcomers Orientation at the APG North (Aberdeen) recreation center Oct. 25, 2016. The quarterly event, hosted by Army Community Service, provides newcomers with the opportunity to learn about services on post and in the surrounding community.

Ten nonprofit organizations displayed information about volunteer opportunities during the event. Tawaih, who recently arrived from Fort Hood, Texas, called the event "very informative." "Even if someone has been here for a while, they can still come and get some updated information," she said. The next Newcomers Orientation is set for Feb. 15, 2017, from 1 to 3 p.m. at the APG North recreation center.

Hallelujah Harvest features family fun



U.S. ARMY PHOTOS BY RACHEL PONDER, APG NEWS

Kendall Knoph (above) tries to knock down milk cartons during Hallelujah Harvest at the APG South (Edgewood) recreation center Oct. 29, 2016.

Dressed as a police officer, Savion Griffin (left), 4, receives a fire helmet to wear.

Personnel from the APG Directorate of Emergency Services Fire Department showed Hallelujah Harvest attendees a fire truck and equipment. The annual event was hosted by the APG Religious Support Office as an alternative to Halloween activities. "This event gives us an opportunity to enjoy each other, while having free food, fun and games and letting the community know we are here to serve them," said John Mark Edwards, director of religious education. Military veteran Isabel Erby said she attends with her family every year. "It's a good alternative to going trick-or-treating, it's safer, a little more family oriented," she said.

Tell them you saw it in the APG News



ALL THINGS MARYLAND

An APG News original series exploring the history, cultural oddities, well-documented and lesser-known points of interest, and travel destinations that call the Old Line State home.

The Ouija Board's humble beginnings

Cultural iconn, claimed link to the afterlife traces roots to Chestertown

BY LAUREN FINNEGAN
APG News

"Are you doing it?"
"No, I swear I'm not. Are you?"
"Guys, it's not me. I'm not moving it."

People all over the world have had conversations similar to this while they sat in darkened rooms with their fingertips lightly touching a plastic "teardrop" or planchette through which spirits reveal answers to questions about the past, present and future.

The Ouija Board, a simple invention and cultural phenomenon, got its start in Maryland in 1886, when Charles Kennard, the owner of a failing fertilizer business, saw a popular Associated Press article about a spiritualists' camp in Ohio. The campers in the article said they used a talking board, similar to the modern version of the Ouija Board, to communicate with the dead.

In an age where 50 was the average life expectancy, the article inspired hope and intrigue from the masses about the possibility of communicating with departed loved ones. Kennard was inspired to start a new business.

While he had idea, he didn't have the know-how, so he recruited his office mate in Chestertown, Maryland, E.C. Reiche, a Prussian immigrant and coffin maker, to design and build the boards. The business saw some success, and in 1890, when Kennard moved his business to Baltimore, he looked for investors using the original designs, and called the board, "Kennard's Talking Board."

The time was ripe for Kennard's invention. Elijah Bond, Col. Washington Bowie, Harry Welles Rusk, William Maupin, and John F. Green decided to invest in Kennard, and the Kennard Novelty Com-



TOMACCO/GETTY IMAGES/ISTOCKPHOTO

pany was certified Oct. 30, 1890.

The Ouija Board arrived during the American Spiritualism movement, when séances and attempts to communicate with the dead were common Friday night activities. People had lost patience with traditional attempts to reach deceased relatives, one of which involved calling out a letter and waiting for a spirit to knock, in the hope that a meaningful message would come across. The "Kennard Talking Board," made talking to the dead nearly as quick and easy as talking to the living.

proved the board worked.

They were stumped, but the officer had a plan. He asked the Ouija Board to accurately spell his name, which was supposedly unknown to both Bond and Peters. When the "board" did just that, the shaken officer awarded the patent, and the "Ouija Board" was officially born.

The game took off right away, and by 1892, the Kennard Novelty Company grew from one Baltimore factory to two, in addition to two in New York, two in Chicago, and one in London.

After its initial success, the company changed hands several times, and eventually went to William Fuld, a former employee and stockholder.

Years later, Fuld said the board told him to, "prepare for big business." He built a large factory on Harford Avenue to produce the board as well as other toys and novelties. One day, while replacing a flag pole on the roof of the building, Fuld fell and was mortally wounded. On his deathbed, though his children promised to never sell the rights to the "Ouija Board," 40 years later it was sold to Parker Brothers for the sum of \$1 million.

But it wasn't until the board's appearance in the 1973 film, "The Exorcist" that its reputation as a fun weekend activity turned sinister.

The film told the story of the demonic possession a young girl named Regan, and displayed the Ouija Board as the portal through which spiritual beings pass to enter this world. It struck fear in people all over the world.

According to Ouija Board rules, those who attempt to contact a spirit through the board should be sure to move the planchette to the "Goodbye" area on the board before putting it away, to avoid ending up like Regan.

ACRONYM OF THE WEEK

NINAETC

National Indian Native American Employment & Training Council

The National Indian and Native American Employment and Training Conference, known as NINAETC, established in 1979, serves the needs of a broad membership of Indian and Native American tribal governments, consortia, and organizations as a representative voice of consensus on national employment and training issues. Its goals are to:

Gather and share information regarding Indian and Native American employment and training programs and present these annually during a national conference;

Recognize the accomplishments of those who have benefited from these and other programs and training opportunities;

And provide a forum for the discussion of pressing concerns and issues to Native American workforce development.

The NINAETC is partnered with the U.S. Department of Labor, Employment & Training Administration, Division of Indian and Native American Programs.

Sources:
<http://www.ninaetc.net/index.htm>
<https://www.doleta.gov/dinap/>



BY THE NUM#RS

Electoral College

The United States Electoral College, established in 1787, is the formal body that elects the U.S. president and vice president of the United States every four years. Learn more about the Electoral College with these facts.

538

Number of electors who make up the Electoral College.

Each state has a number of electors equal to the number of its U.S. senators plus the number of its U.S. representatives. Washington D.C. is allocated three electors, as allowed by the 23rd Amendment.

270

Number of electoral votes a candidate must win to become the president of the United States. If no candidate receives the majority of votes, the election of the president goes to the U.S. House of Representatives.

29

Number of states, plus the District of Columbia, that have laws to penalize "faithless electors." A faithless elector is a member of the Electoral College who does not vote for the presidential or vice presidential candidate for whom they had pledged to vote. Faithless electors are rare and they have not changed the outcome of any presidential election to date.

10

Number of electoral votes allocated to Maryland. The state with the most electoral votes is California, with 55. Electoral votes are allocated based on the U.S. Census.

4

Number of times the Electoral College system resulted in the selection of a candidate who won the popular vote but lost the election. The 2000 presidential election when Al Gore won the popular vote but lost the election to George Bush was the most recent occurrence.

Sources
<https://www.archives.gov/federal-register/electoral-college/about.html>
http://www.elections.state.md.us/elections/electoral_college.html
<http://history.house.gov/Institution/Electoral-College/Electoral-College/>
<https://www.wikipedia.org/>
<http://people.howstuffworks.com/question4721.htm>

WORD OF THE WEEK

Cogent

Pronounced: koh-juh nt

Part of Speech: Adjectives

Definitions:

1. Having power to compel or constrain
2. Appealing forcibly to the mind or reason; convincing; pertinent; relevant

Examples in common use:

1. Though the couple had yet to be named suspects, there were cogent reasons to place them in separate vehicles for the ride to the police station.
2. The justification for the twins' separation may have seemed cogent at the time, but it's done far more harm than good.
3. Even after being fully briefed about his former partner's lawsuit, he had no cogent thoughts about where to turn for help.

By Yvonne Johnson, APG News
Sources:
www.merriam-webster.com
www.yourdictionary.com

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MEMORIES OF 'NAM

A multi-year original series produced by the APG News honoring the service and sacrifice of Vietnam veterans.

Army nurse survived 'Nam, Iranian Revolution

BY YVONNE JOHNSON
APG News

A Maryland native who was a nurse anesthetist in Vietnam said she never felt more alive than while serving the nation.

Retired Lt. Col. Betty Kruger served through a tumultuous period in American history; in the 1960s, women were still adjusting to their role in the U.S. military while serving in combat zones and "hot spots" around the world.

Born in Baltimore in 1931, Kruger said she didn't plan to go into nursing.

"It just kind of happened. I wanted to be a teacher," she said.

That changed, however, after she accompanied a friend to a nursing school interview. Before she knew it, she had filled out an application. She said she weighed three years of nursing school against going for a four-year teaching degree.

"I thought about it and figured three years [of nursing school] was better than four, so I took it," she said, noting that her friend dropped out after the second year.

Kruger loved every aspect of nursing, especially the scientific part, which drew her to anesthesiology. She was certified a nurse anesthetist upon graduation and was soon drawn to the military when a friend, who worked at the former Kirk Army Hospital at APG, informed her that the Army had a shortage of nurses.

Despite her reluctance to leave her parents, Kruger joined up for two years, which she pulled at the former Walter Reed Army Medical Center in Washington, D.C., before accepting another two-year assignment to Belgium. From there, she went to 'Nam.

Vietnam

She said there was no undue stress among nurses about serving in 'Nam.

"You go where you're needed," she said. "There were nurses in Belgium who had served there and they told us what to expect, what to bring with us, things like that, but they couldn't really prepare you. It all depended on where you were sent."

It was January 1970 and Kruger was assigned to the 85th Evacuation Hospital in Phu Bai.

"It was up north, above Da Nang, near the DMZ [Demilitarized Zone]," she said.

For the majority of her year-long tour the 85th supported the 101st Airborne Division at Camp Eagle near Hue. They also cared for South Vietnamese soldiers and local nationals – even children.

"Our hours were more or less around the clock," Kruger said. "We worked when we had patients and when there were no patients we didn't work."

They were seldom without patients, and the staff strived to keep the hospital nearly empty.

"We would treat patients and discharge them or transport them to the larger hospital in Da Nang or to hospital ships out on the South China Sea," she said.

The strategy was essential, Kruger said, because there was no way of knowing when an operation would result in a large number of casualties. Several major battles occurred that year, most notably, the Battle of Fire Support Base Ripcord, which pitted the 101st against the North Vietnamese in a 23-day battle in July.

But there was down time and humorous times as well. She said they slept in "hooches" that were constructed by engineers next to an airfield along Highway 1. Her hooch was jokingly named "The Sugar Shack."

She laughingly recalled when a Vietnamese woman from a nearby village was brought in with a snake bite.

"She came in with a dead chicken on her foot," Kruger said. "That was their treatment. She pointed out the kind of snake from a photo. But they had killed the chicken. It was still warm and they were using it as a hot water bottle. Of course we treated her."

During her first R&R to Hawaii, Kruger said she was the only female on a plane full of GIs going to meet their wives or sweethearts.

"It's all they talked about, and I listened but all I really wanted was to get to my hotel and sleep in a real bed," she said.

We never really talked about the war," she said of she and her fellow nurses. "We were too busy and half of us didn't really understand why we were there anyway."

She said whenever they flew escort transporting patients to other medical facilities on medevac helicopters, they had to call ahead to let the gaining hospital know what equipment they were using.

"If we had a patient with a tracheotomy tube, for example, the gaining hospital would have the same equipment for us to take back with us. We had to do that to keep from running out of equipment."

She added that there were no trauma centers and several doctors said they



U.S. ARMY PHOTO BY YVONNE JOHNSON, APG NEWS

Retired Lt. Col. Betty Kruger holds the Jan. 31, 1979 issue of the Tehran Journal that details the return of the Ayatollah Khomeini and pending U.S. evacuations from Iran. Kruger was among the hundreds of Americans who were evacuated from Iran at the height of the Iranian Revolution.

planned to urge the Army to set up triage centers for the wounded.

"I think that's one good thing that came out of the war," she said.

When she returned to Seattle in December at the end of her tour in 'Nam, right away, Kruger witnessed the anti-war climate. She said she'll never forget when on the plane back to Baltimore, the woman seated next to her inquired where she was traveling from.

"I told her I was in the Army and I'd just returned from Vietnam. She got up and moved to another seat," Kruger said.

She added that coming home was strange. "It was like getting used to a different world. Last night I was listening to rockets and mortars, and tonight the streets are quiet except for singing from carolers. A different world."

Kruger remained in the Army and subsequently served at Fort Campbell, Kentucky; Letterman Army Medical Center in San Francisco, California; Womack Army Medical Center in Fort Bragg, North Carolina; and Evans Army Community Hospital in Colorado Springs, Colorado.

Iranian Revolution

Her most memorable assignment was in Tehran, Iran. She served there during the Iranian Revolution and was caught up in the evacuation of hundreds of military service and family members that took place in

February 1979 when Iran returned to Islamic Rule upon the overthrow of the Shah and the return of Ayatollah Ruhollah Khomeini.

Kruger said the hospital was abandoned by the Shah's guards who joined the revolt. Hundreds of evacuees spent a frightening night sleeping on the floors at the American embassy where the U.S. flag had been replaced by a white flag of surrender and armed revolutionaries kept watch over them. They were herded onto buses the next morning and taken to the airfield where they boarded commercial planes manned by volunteer pilots and crew members.

Kruger managed to take two suitcases she had packed ahead of time in the event of an evacuation, but lost all her other possessions that were left behind in her apartment. Except for the souvenirs she had mailed back ahead of time she had nothing but clothes and not even a full uniform. Still, the mood on the plane was euphoric and cheers rang out once the plane was airborne and again after it was announced they had entered Turkish airspace. They were flown to Germany and a few days later back to the U.S.

She served at Fort Campbell, Kentucky before being assigned to Letterman and then to Colorado where she retired in 1986. She remained in Colorado two years before returning to Maryland.

Undaunted, Kruger continued to travel. To this day she's visited more than 30

countries and she's remained active in veteran activities. She's spoken to civic organizations and schools about her career and was present for the dedication of the Vietnam Women's Memorial in Washington, D.C.

Kruger never married or had children and she lives quietly in Bel Air. She is a former member of the Harford County Commission on Veterans Affairs and a current member of the Maryland Freestate Chapter 70 Women's Army Corps Veterans Association located in Aberdeen; the Catholic War Veterans Post 1841 in Havre de Grace; and Veterans of Foreign Wars Post 8672 in Jarrettsville. She was the first female to be named Maryland's Catholic War Veteran of the Year.

Kruger penned her memoirs in a book released earlier this year. "First In My Life" is the result of memoir classes she took, and it features photos of her career and artwork by her niece, who she said encouraged her to document her life.

At age 85, Kruger continues to travel with friends as often as possible. Though she spent many years angered at the treatment of Vietnam veterans, she acknowledged that "things are better these days."

"I'm happy that now they're appreciating what Vietnam veterans went through," Kruger said. "The war wasn't our fault. We were serving our country like in every other war."

2016 Veterans Day observances

County honors Medal of Honor recipient Saturday, Nov. 5

APG Senior Leader Maj. Gen. Bruce T. Crawford will be the guest speaker as Harford County honors its only Medal of Honor recipient, Union Sgt. Alfred B. Hilton. The luncheon is 11 a.m. to 2 p.m. at Ames United Methodist Church, 112 Baltimore Pike, Bel Air, MD 21014. For more information, or to purchase tickets or for more information, call 410-734-7755. American Legion Bel Air Post 55 is hosting the event.

Veteran Suit Up Event Wednesday, Nov. 9

The Meade Soldier for Life-Transition Assistance Program will host a Suit Up event for transitioning Soldiers, retirees and spouses on a first come first serve basis. Each person is allowed one suit and tie or one outfit. The event will be held 10 a.m. to 1 p.m. at 200 MP Reserves Center, 1250 Annapolis Road, Fort Meade, MD 20755. For more information, call 301-677-9871.

Vietnam Veterans Traveling Exhibit Nov. 15-Jan. 2

Harford County will host the Maryland Public Television, or MPT, Salutes Vietnam Veterans Traveling Exhibit at the Abingdon branch of the Harford County Public Library from Nov. 15, 2016 to Jan. 2, 2017. The multi-panel exhibit is making its way around the state to celebrate the military. The following local events are on tap for area veterans during 2016 Veterans Day observances.

VAMHCS Open House & Town Hall Wednesday, Nov. 16

VAMHCS will host an Open House & Town Hall 4:30 to 6:30 p.m. at the Baltimore VA Medical Center, 10 N. Greene Street, Baltimore, MD 21201. The event includes presentations by Maryland's top VA leadership and throughout the event veterans can visit with VA representatives concerning claims, health care services, applications, and more.

COLONIAL WARS • WAR OF INDEPENDENCE • AMERICAN INDIAN WARS • SPANISH-AMERICAN WAR • BANANA WAR • WORLD WAR I • WORLD WAR II • KOREAN WAR • VIETNAM WAR • GULF WAR • BOSNIA • KOSOVO • 9/11 • TERRORISM • AFGHANISTAN • IRAQ • SYRIA • YEMEN • LIBYAN CIVIL WAR • SYRIAN CIVIL WAR • U.S. MILITARY OPERATIONS IN AFGHANISTAN AND IRAQ

COURAGE

VETERANS DAY
NOVEMBER 11, 2016
HONORING ALL WHO SERVED

www.va.gov

Volunteer mentors encourage teens to succeed

MENTORS, From page 1
critical stage in their lives.

"The kids see their mentor more than they see their parents [during the residential phase]," she said. "So the mentor has to be someone that is reliable."

Most cadets choose mentors from their community, Dunmeyer said. If a cadet doesn't have a mentor, then the school will help match the cadet with a mentor. By week 13 of the residential program, all cadets are required to have a mentor.

"I always tell people, it only takes one conversation, and just that one conversation can be a life-changing event for one of these young people," she said.

Mentors continue the process after graduation. During the "post-residential phase," the mentor is required to submit a monthly report to FCA, for 12 months. These reports indicate whether the teen is working, has joined the military, or is enrolled in a college or a trade school.

"You can't just check the box, as a mentor you have to be fully committed and devoted to what you are doing," Dunmeyer said.

Here are just three of the dozens of volunteer mentors who are making a difference for FCA cadets.

Dianne Crawford

A special educator with Aberdeen Middle School, Dianne Crawford is the spouse of APG Senior Commander Maj. Gen. Bruce T. Crawford. She volunteers as a mentor for Michelle McIntosh, who graduated from the academy in December 2015. McIntosh has a full-time job and plans to attend college. Her long-term goal is to become a crime scene investigator.

"Mentoring, at its core, guarantees young people that there is someone, other than family, who cares about them, assures them they are not alone in dealing with day-to-day challenges, and makes them feel like they matter," Crawford said.

She called mentoring a "fulfilling opportunity," and said she often tells McIntosh, "If you can dream it, you can do it."

"I encourage her to follow a path to reach her goals," she said. "If they [the goals] need be adjusted, that is okay too."

Arthur Justice

Arthur Justice, a military veteran and retired pastor, mentors his nephew, Harry Jones, who graduated from FCA earlier this year. Jones attends Cecil College where he studies transportation and logistics.

"It was a great experience to watch this young man, who had no hope of graduating from Edgewood [High School] successfully, not only complete the program here, but see him get his Maryland high school diploma



U.S. ARMY PHOTO BY RACHEL PONDER, APG NEWS
PEO C3T Contractor Rick Burton (right) explains a math problem to Freestate ChalleNGe Academy Cadet Kevin Dingle during a tutoring session on APG South (Edgewood).

[by passing the GED]," he said. "What joy that was; it was very rewarding. It was probably one of the greatest days ever: the day we found out he accomplished everything."

According to Justice, mentors need to be compassionate and committed to the mentee.

"The main thing, to be a mentor, you need to have real concern for the young adult that you are going to be mentoring and to be there for them," he said. "To not give up on them."

Tessa Ricketts

Tessa Ricketts, a child care provider from Montgomery County, Maryland, mentors Cadet Dasia Williams, her great-niece. She also helps Williams prepare for the GED

during weekly tutoring sessions.

"I wanted to help her realize her full potential and do all I can to help her succeed through the Freestate ChalleNGe program and in the future," she said.

Ricketts said she is proud of Williams' transformation.

"Since Dasia has been in the program, she has more confidence and is very vocal on what she wants to do and how she is going to get there," Ricketts said.

Tutoring

In addition to mentors, FCA also seeks volunteers who can assist during Tuesday tutoring sessions, Dunmeyer said.

Rick Burton, a contractor with Program Executive Office Command Control Communications-Tactical, or PEO C3T, provides

math and science tutoring.

"A lot of the kids don't learn from conventional methods," he said. "Tutors can bring in a different element, a new way to reach the students."

Mentoring information

Those interested in mentoring can request a mentor application at 410-436-3301 or visit <http://freestatemil.maryland.gov/mentor/>. A criminal background check is mandatory for mentor candidates prior to being matched to a student, and all mentors are required to attend a four-hour training workshop. For more information, call 410-436-3331 or visit the FCA website at <http://freestatemil.maryland.gov>.

Youth inspired by father to help other Soldiers

YOUTH, From page 1

improve the nation using science and technology. Ward answered with two suggestions that he said were inspired by his life as a military child and due to his familiarity with the physical and mental effects of war on service members.

He proposed the invention of a microchip for service members that would reduce the symptoms of Post-Traumatic Stress Disorder, also known as PTSD, and a lighter bulletproof vest for Soldiers to prevent back problems later in life.

"My dad is a disabled veteran that has PTSD, and I wanted to help Soldiers like my dad," he said.

After arriving at the White House, Ward and the other children made their way to the Roosevelt Room in the West Wing to present

their ideas to Holdren, and Astronauts Mark and Chip Kelly.

During the presentations, Obama paid them a surprise visit and took the Kid Science Advisors to the Oval Office for photos. Each kid advisor was then presented with an official White House coin.

"It was really cool," Ward said, adding that was also excited about the box of M&M's with the presidential seal he received.

Karen Ward said her son's experience at the White House, "will greatly help him [to be] more involved with STEM programs... and hopefully [get] him into a STEM based high school."

As for Ward's future, he said he plans to stick with STEM-related studies and hopes to become an engineer on the space program who "builds rockets."

MARK YOUR CALENDAR

EVENTS & TOWN HALLS

VETERANS DAY THUNDER RIDE

NOVEMBER 9
APG South (Edgewood) Hoadley Road (Rt. 24) gate, 8 a.m. rally. Motorcycle riders are invited to attend a Thunder Ride to place flags at the APG South cemetery and the APG North (Aberdeen) cemetery. Riders must comply with all rules for personal protective equipment on military installations. For more information, contact Sgt. 1st Class Glominio De Leon at 443-307-1240 or glominio.d.deleon.mil@mail.mil.

VETERANS DAY REMEMBRANCE CEREMONY

NOVEMBER 9
APG North (Aberdeen) recreation center, 10 to 11 a.m. Immediately following the Thunder Ride will be a Veterans Day Remembrance Ceremony open to APG Soldiers, families, civilians and veterans. Local Vietnam veteran David Yensan will serve as guest speaker; RDECOM Chief of Staff Col. Ray Compton will host the ceremony. For more information, contact Sgt. 1st Class Glominio De Leon at 443-307-1240 or glominio.d.deleon.mil@mail.mil.

AMERICAN INDIAN HERITAGE MONTH OBSERVANCE

NOVEMBER 17
Myer Auditorium, Bldg. 6000. 11 a.m. Theme is "Serving our Nations." Smithsonian Curator Dennis Zotigh will serve as guest speaker. Native American food tasting will follow the presentation.

MEETINGS & CONFERENCES

'STATE OF THE CONGRESSIONAL BUDGET' HOT TOPIC FORUM

NOVEMBER 16
6175 Guardian Gateway; 11:30 a.m. to 1 p.m. Hosted by the Defense Acquisition University. Will be broadcast via VTC in the APG DAU facility. Kate Kaufer, a professional staff member supporting the Senate Appropriations Committee subcommittee on Defense, will address the congressional enactment process, with a focus on the appropriation process. She will also provide a status on the FY17 appropriation process. This training forum provides 2 Continuous Learning Points for government employees in attendance. To register to attend the forum students must contact Ben Metcalfe at benjamin.metcalfe@dau.mil or 410-272-9471 before Nov. 15.

FY17 GARRISON EEO FACE-TO-FACE TRAINING

DECEMBER 7
Ball Conference Center, 9 to 10:30 a.m. and 1:30 to 3 p.m. Open to all garrison employees. For more information, contact Charles Gilmore at charles.l.gilmore3.civ@mail.mil or 410-278-0130.

EEO/HR FOR IMCOM SUPERVISORS

DECEMBER 8
Bldg. 3147, 8 a.m. to 4:30 p.m. Registration is required for IMCOM supervisors/managers assigned within last 90 days. For more information, contact Charles Gilmore at

charles.l.gilmore3.civ@mail.mil or 410-278-0130.

FAMILY & KIDS

ARMY V. NAVY BLOOD DONOR CHALLENGE

NOVEMBER 3
APG North (Aberdeen) recreation center. 9 a.m. to 2 p.m. Annual Army v. Navy Armed Services Blood Program drive. Make an appointment online at militarydonor.com using sponsor code APGMD.

HOLIDAY SPENDING INFO SESSION

NOVEMBER 8
Bldg. 6001, 2nd floor, room 224. 11:30 a.m. to 12:30 p.m. Open to all employees and service members. Session provides light-hearted foundation for planning holiday spending, how to avoid debt and establishing a gift-giving budget. For more information contact Tiffany Grimes at 443-861-7901 or tiffany.l.grimes.civ@mail.mil.

HOLIDAY HEALTH INFO SESSION

NOVEMBER 15
For more information contact Bldg. 6000, Myer Auditorium. 11:30 a.m. to 12:30 p.m. Open to all. Session explores how to stay healthy over the holidays, from food swaps to managing stress Tiffany Grimes at 443-861-7901 or tiffany.l.grimes.civ@mail.mil.

BLOOD DRIVE

DECEMBER 1
APG South (Edgewood) recreation center.

Starts at 9 a.m.

ANNOUNCEMENTS & MISCELLANEOUS

ALTERNATIVE WORKSPACE DISPUTE SEEKS MEDIATORS

APPLICATION DEADLINE NOVEMBER 9
Training for new Alternative Workplace Dispute Program mediators has been changed to Dec. 12-16 and the application deadline has been extended to Nov. 9. Individuals interested in becoming mediators should email Cathy Davis at cath.a.davis4.civ@mail.mil or Ria Johnson at valaria.r.jonson.civ@mail.mil.

COMBINED FEDERAL CAMPAIGN

THROUGH DECEMBER 15
The Combined Federal Campaign at APG runs Oct. 1 through Dec. 15. This year's installation goal is \$300,000. Make a Difference, Be a Hero. For more information about the campaign or how to donate, contact Sgt. 1st Class Tameka Dixon at Tameka.d.dixon.mil@mail.mil or 410-278-3549.

APG SOUTH 2016 WATER MAIN FLUSHING

The APG South (Edgewood) 2016 water main flushing schedule is as follows: Through September: E3000-E4000 area; Oct. through Dec.: E5000 area; Nov. 10-12: APG South housing area, Austin Road. For more information, contact Robert Warlick at 410-436-2196 or robert.w.warlick2.civ@mail.mil.

MORALE, WELFARE & RECREATION



Upcoming Activities

Learn more about APG MWR activities and services by going online at www.apgmwr.com.

SAVE THE DATE

HOLIDAY BAZAAR

NOVEMBER 16
APG North (Aberdeen) recreations center, 10 a.m. to 2 p.m., vendors to feature home decor, jewelry, gifts, baked goods and much more. Door prizes and giveaways. For more information, call 410-278-4011.

THANKSGIVING ON THE BAY

NOVEMBER 17
Top of the Bay, 11 a.m. to 1:30 p.m. \$9.95 per person. Authentic Thanksgiving meal with free dessert. Enjoy carved turkey, mashed potatoes, homemade stuffing, fresh baked signature rolls and more. For more information, email casey.e.vincenti.naf@mail.mil.

NEW YORK CITY BUS TRIP

REGISTER BY NOVEMBER 18
Trip on Dec. 3. Leaves APG North (Aberdeen) recreation center at 7 a.m. Scheduled to return to APG around 9 p.m., traffic dependent. \$51 per person. To reserve a seat, visit MWR Leisure Travel Services at the APG North recreation center, Bldg. 3326. For more information, call 410-278-4011/4907.

LEISURE & RECREATION

CABINS AT SHORE PARK NOW TAKING RESERVATIONS

OPEN NOVEMBER 10
Reservations are now being accepted with check-in on Nov. 10. Three-night minimum on holiday weekends, two-night for normal weekends. Visit www.apgmwr.com for more information, or call 410-278-4124/5789/2134/2135/2432.

"A CHRISTMAS STORY" MUSICAL DISCOUNT TICKETS

DECEMBER 11
Hippodrome Theater, Baltimore, 6:30 p.m. Upper balcony seating, \$39 per ticket. Visit MWR Leisure Travel Services to purchase tickets. For more information, call 410-278-4011.

BINGO

MONDAY & WEDNESDAY
APG Bowling Center; early bird games at 6 p.m., session program at 7 p.m. Eight session games paying out \$50 each. Two nightly jackpots paying out \$200 and \$500. For more information, call 410-278-4041.

CHILD & YOUTH SERVICES

CREATIVE CANVAS

NOVEMBER 4
APG South (Edgewood) youth center, 6 to 8 p.m. SKIES Unlimited will guide youth and adult through step-by-step painting. Open to 1st through 12th grade students and their parents. Parent participation is required. Supply fee is \$25, includes one youth and 1 adult. \$10 per additional child. Food and refreshments to be served. For

more information, contact shirelle.j.womack.naf@mail.mil or call 410-278-4589/3250.

FAMILY MOVIE NIGHT

NOVEMBER 4
APG North (Aberdeen) recreation center. 6 p.m. Free movie night featuring "Ice Age: Collision Course." Food and drink available for purchase. For more information, call 410-278-4011.

CYSS SURVEY THROUGH NOVEMBER 14

Have a child enrolled in elementary school in Edgewood? Interested in transportation for your children? Take this CYSS survey through Nov. 14: <https://www.surveymonkey.com/r/2XMLWJL>.

FAMILY MOVIE NIGHT

NOVEMBER 18
APG South (Edgewood) recreation center.

6 p.m. Free movie night featuring "Nine Lives." Option to bring your own food. For more information, call 410-278-4011.

STRONG BEGINNINGS, PRE-SCHOOL AND KINDERGARTEN OPENINGS

Participants must be registered with the Parent Central Office. Fees are based on the total family income. For more information, contact the Parent Central Office at 410-278-7479.

ARMY COMMUNITY SERVICE

KEEPING THE HOLIDAYS IN PERSPECTIVE

NOVEMBER 16
Bldg. 2503 11 a.m. to 1 p.m. Session provides tools and techniques to prepare a positive mindset during the stressful holiday season. Bring a smooth-sided glass jar to create a Gratitude Jar to help

build positive emotion all year long. Brown bag lunch. Registration is required. For more information, or to register, contact Sarah Polanco at 410-278-2464 or sarah.polanco.civ@mail.mil.

VOLUNTEER MANAGEMENT INFORMATION SYSTEM TRAINING

NOVEMBER 17 DECEMBER 15
Bldg. 2503 11 a.m. to noon. Whether a new volunteer or someone who has volunteered for years, it's never too late to register as a volunteer on VMIS. VMIS allows users to apply for volunteer positions on or off post, track all volunteer hours (regardless of location) retain volunteer information, training and awards, and receive recognition at the annual Volunteer Recognition Ceremony. Bring your own laptop (optional) to register on the spot. For more information, or to register, contact Sarah Polanco at 410-278-2464 or sarah.polanco.civ@mail.mil.

APG 2016
Holiday Bazaar

November 16, 10 a.m. - 2 p.m.
APG Recreation Center, Building 3326, Ballroom

Our APG 2016 Holiday Bazaar is a festive event with vendors and giveaways. 30-40 vendors will be offering a wide range of items, including home décor, jewelry, art work, gift items, baked goods and much more. Door prizes will be provided. Come and receive a chance to win giveaways while you shop!

For more information visit MWR Leisure Travel Services at AA Recreation Center, Bldg 3326.
For questions call 410-278-4011/4907 or email us at: usarmy.apg.imcom.list.apgr-usag-mwr-leisuretravel@mail.mil

INNOVATION

at Aberdeen Proving Ground, Maryland

www.TeamAPG.com

THURSDAY, NOVEMBER 3, 2016

Vol. 60, No. 44

inside

CYBER

The Association of Old Crows recognizes the lifetime achievements of a CERDEC civilian and cyber subject matter expert, naming him this year's Jeffrey B. Jones Cyber Operations Award recipient.

Civilian | B2

PARTNERSHIPS

ARL invites industry and universities to its upcoming open house as part of its Open Campus initiative to promote collaborative science and technology projects between the government and private sector.

ARL | B3

CHEM/BIO

Senior Service College Fellowship program fellows visit Antietam National Battlefield in western Maryland during the program's first staff ride of the new academic year.

Fellows | B5

newsbrief

ARMED SERVICES SECRETARIES TALK FUTURE THREATS

OFFICE OF THE ARMY OF THE SECRETARY

During a rare, joint appearance, all three Armed services secretaries participated in a panel discussion hosted by the Center for a New American Security, Oct. 24.

In a conversation with CNN's Pentagon correspondent Barbra Star, Army Secretary Eric Fanning, Navy Secretary Ray Mabus, and Air Force Secretary Deborah James discussed their responsibilities, national security challenges, and opportunities to innovate.

Among the secretaries, addressing this capabilities gap was seen as a top priority. Secretary Mabus noted the Navy is increasingly focused on pilot programs, rather than programs of record, to get technologies into the hands of service members to respond quickly to emerging threats.

Similarly, the Army created the Rapid Capabilities Office in August to respond to near-term needs of warfighters and commanders.

"The office will tackle issues such as electronic warfare, position navigation and timing, counter unmanned aircraft systems, and cyber," Fanning explained. The purpose of the office, he said, is "to get capabilities fielded faster to our Soldiers."

Read the full article online at www.army.mil/article/177377.

online

www.TeamAPG.com/APGNews

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ICE ICE system <http://ice.disa.mil/>
Facebook, <http://on.fb.me/HzQlow>



U.S. ARMY PHOTO
Tim Allan, one of the team members who worked on the biomedical analysis, examines samples at the Edgewood Chemical Biological Center's Forensic Analytic Center.

Lab earns 'A' for biomedical

ECBC one of two in U.S. permitted to analyze OPCW biomedical samples

EDGEWOOD CHEMICAL BIOLOGICAL CENTER

ECBC is now one of only two laboratories in the United States that is permitted to analyze

OPCW biomedical samples recovered from sites where there is a suspected use of chemical warfare agents. That's because the ECBC Forensic Analytical Center earned an "A" grade from the Organization for the Prohibition of Chemical Weapons, or OPCW, in the organization's first-ever biomedical proficiency test.

The OPCW is an independent and multinational organization, which was established to implement the Chemical Weapons Convention, known as CWC, that bans the production,

stockpiling and use of chemical weapons.

In 2013, the OPCW earned the Nobel Peace Prize for overseeing the removal of Syria's chemical warfare agent stockpile. As a part of its responsibility to protect the CWC, the OPCW has designated laboratories worldwide that are equipped and ready to analyze samples such as soil, water, and blood from suspected contaminated sites.

The ECBC Forensic Analytical Center is one See **BIOMEDICAL**, page 7

Engaging in quantum entanglement

Researchers explore applications of the photon

BY C. TODD LOPEZ
Army News Service

ADELPHI, Md. – At the U.S. Army Research Laboratory, scientists are looking at new ways to exploit the most fundamental or "quantum" component of light – the photon – to enhance communications, sensing and cryptography, and anything else they can think of.

"We don't really know what all the applications are. But our mandate, in part, is to find those applications," said Michael Brodsky, a physical scientist at Army Research Laboratory.

"If a sufficient number of parties share a sufficient number of entangled particles, is there any application?" Brodsky asked. "That's what we're looking for. Ten years from now, we'll have a better answer to that question."

Brodsky is setting up a new lab at the ARL, located about 12 miles north of the Pentagon in Adelphi, Maryland. He has boxes there that generate entangled photons – the smallest See **PHOTONS**, page 7

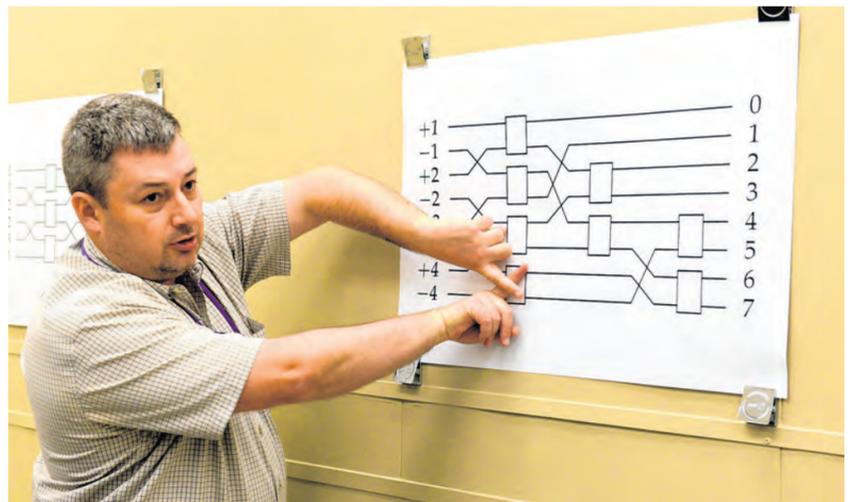


PHOTO BY DAVID VERGUN, ARMY NEWS SERVICE
Michael Brodsky, a physical scientist at the Army Research Laboratory in Adelphi, Maryland, is one of several researchers within the Army working to find new ways to exploit the most fundamental or "quantum" component of light -- the photon -- to enhance communications, sensing and cryptography, and anything else within reason.

Expo showcases latest technologies



U.S. ARMY PHOTO BY LAUREN FINNEGAN, APG NEWS
Del Griffanti, a Sales Manager with Tektronix, a supplier of test and measurement equipment for communications, and radar applications, shows Karl Lasala, a program analyst with the Communications-Electronics, Research, Development, and Engineering Center (CERDEC), a spectrum analyzer at the APG Fall Technology Expo, held on Wednesday, Oct. 18, 2016. The expo was hosted by the Edgewood Chemical Biological Center (ECBC) Corporate Information Office (CIO).

Civilian receives achievement award

Association honors cyber expert's career

BY KRISTEN KUSHIYAMA
Communications-Electronics Research, Development and Engineering Center

A U.S. Army cyber-subject matter expert received a cyber operations award from the Association of Old Crows, or AOC, during the Cyber Electromagnetic Activities Conference at APG, Oct. 19.

The Jeffrey B. Jones Cyber Operations Award recognized Charles Kendzierski, a lead computer scientist and offensive cyber team lead at the U.S. Army Materiel Command's Communications-Electronics Research, Development and Engineering Center, or CERDEC, for his committed career to cyber and electronic warfare.

Each year the AOC presents the Jeffrey B. Jones Cyberspace Operations Award to a U.S. or international government, military or industry official for outstanding and lifelong dedicated service to promoting and advancing the cyberspace operations discipline; this includes informing, persuading and influencing activities, said the AOC.

"Chuck consistently pushes the state of the art to develop and deliver both cyber and electronic warfare capabilities for transition to the U.S. Army Cyber Command; U.S. Army Intelligence & Security Command; U.S. Cyber Command; the Program Executive Office - Intelligence Electronic Warfare and Sensors; and Assistant Secretary of Defense for Research and Engineering," said Paul Robb, Jr., CERDEC Intelligence and Information Warfare, or I2WD, Cyber Technology Branch chief.

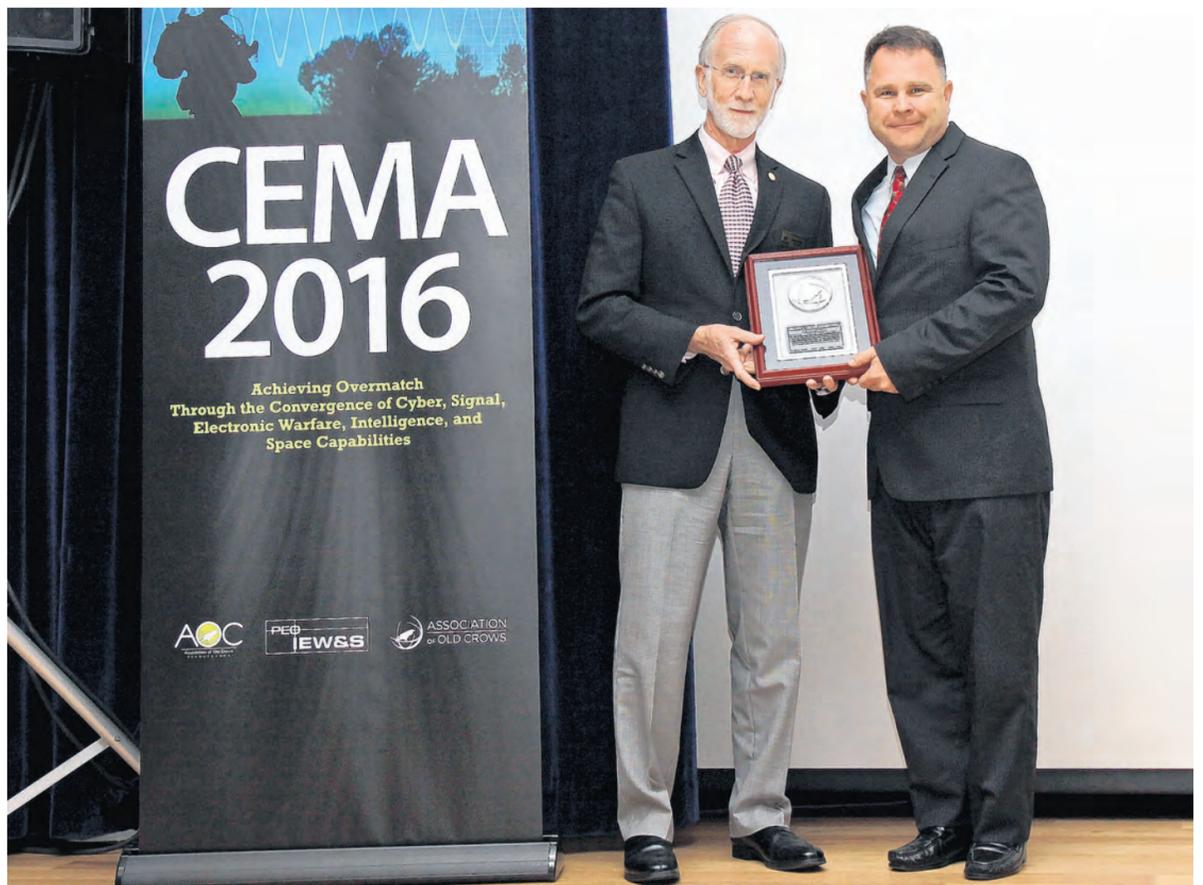
Kendzierski's work in cyber began in 1987 when the National Security Agency hired him as a computer scientist. After 18 years with the NSA, he led requirements collection, analysis and Joint Requirements Oversight Council validation of Defense Department cyber situational awareness gaps, requirements and capability needs on behalf of the U.S. Cyber Command.

He served as the Cyber Command's lead for co-development of the Joint Cyber Situational Awareness Initial Capabilities Document with U.S. Strategic Command and was one of two deputy directors under OSD AT&L's Joint Cyber Situational Awareness Evaluation of Alternatives.

While working for the NSA and U.S. Cyber Command, Kendzierski served as an enlisted Airman and a Cyber and Intelligence officer in the U.S. Air Force and Air National Guard.

Prior to retiring from military service in 2011 after almost 24 years, Kendzierski spent his last six years as a commander in the Air National Guard's first Network Warfare Squadron. Kendzierski, along with assistance from then Delaware Senator Joseph Biden, was instrumental in standing up the Air Force's establishment of the first Network Warfare Squadron.

In 2014, Kendzierski arrived at I2WD and has since overseen several offensive cyber



Charles Kendzierski (right), a lead computer scientist and offensive cyber team lead, received the Jeffrey B. Jones Cyber Operations award from the Association of Old Crows during an Oct. 19, 2016 ceremony at Aberdeen Proving Ground, Maryland. The award recognizes a U.S. or international military, civilian or industry official for outstanding and lifelong dedicated service to promoting and advancing the cyberspace operations.

technology development initiatives and the successful transition of cyber capabilities for operational use. Additionally, Kendzierski was appointed as I2WD's component lead for a four year, multimillion dollar, CERDEC-wide Science and Technology Objective effort called Cyber Electromagnetic Activity Situational Awareness Tactical Analytic Framework, more commonly known as C-STAF.

"Under this strategic initiative, he is guiding the development of analytical techniques to discern red and grey space CEMA situational understanding derived from tactical sensor collections; this information is critical for timely, accurate and effective decision making by the tactical commander," Robb said.

Kendzierski provides subject matter expertise to the Army's 40 year Cyber Materiel Development Strategy - the Army-wide strategic investment strategy for cyber.

In addition to his technical expertise, Kendzierski creates and maintains relationships with CEMA customers, those in the development community, and multiple Joint military efforts.

"These relationships and his ability to convey complex cyber concepts has resulted in an ASD(R&E) approved three-year, multi-million dollar program across Army, Navy, and Air Force research labs to develop a defensible offensive cyber operations (OCO) architecture and OCO cyber situational awareness. This effort has far-reaching application across many emerging CEMA technologies and has a clear transition path to materiel developers," Robb said.

Kendzierski's ability to maintain relationships led him to his position at CERDEC.

"My background was predominately in defensive cyber, but I've had a consistent relationship with I2WD since 2008," Kendzierski said.

Kendzierski believes the work done at CERDEC significantly impacts to the operational environment.

"The work we do in CEMA is considered by warfighters as critical to their success. Timely and accurate CEMA situational awareness of the battle space is a vital component to both Army and Joint future mission success, and the capability and ability we have to determine solutions makes

a difference on the future battlefield," Kendzierski said.

"The individual elements that make up CEMA are incredibly difficult problems to solve. The work we do - these R&D solutions - will enable decision and action giving the commander the information needed to make a decision within operationally relevant timelines," Kendzierski said.

Kendzierski credited the successes of his current team to the diversity of thinking and experiences with both new and seasoned engineers bringing different views of analysis, visualization and problem solving to the workplace.

"I've had incredibly blessed career thus far, and I'm humbled by the team I have and the people I work with," Kendzierski said. "Their acumen, expertise, and persistency makes it easier to come to work."

"Coming from my previous positions with U.S. Cyber Command and the U.S. Air Force, I am consistently humbled by the Army's substantive expertise, understanding and contributions in the areas of research and development of science and technology for CEMA," Kendzierski said.

Army Warfighting Assessment 171

Increasing the pace of battle in a coalition environment

BY AMY WALKER
PEO Command Control Communications-Tactical

FORT BLISS, Texas - During Army Warfighting Assessment, or AWA, 171, U.S. and coalition forces are conducting realistic war games in the austere southwest desert to improve how they fight, communicate and share digital data on the battlefield.

More than 5,000 personnel are participating in this year's AWA exercise, including U.S. Army elements from the 2nd Brigade Combat Team, 1st Armored Division (2/1 AD), who are fighting in realistic operational environments alongside U.S. Marine, Air Force, and Special Operations elements, as well as five multinational partners from Australia, Canada, Denmark, Italy, and the United Kingdom.

Coalition Partners

"This exercise is an incubator of tactical interoperability," said the commanding brigadier of the UK's 1 Armoured Infantry Brigade. "We want to efficiently share intelligence so we can see and visualize the battle space the same way and make quick decisions together."

AWA 171 is providing a venue for the U.K. to improve operational tempo by assessing the human, procedural and technical aspects of three interoperability targets: a common operating picture; secure voice (interoperability on different radios), and digital fires, the brigadier said.

"It's the generation of tempo -- observing, sighting and acting quickly," he said. "That is the prize: to fight tonight against a high-tempo, high-demand foe."

The U.S. Army is conducting AWA 171 from Oct. 17-28 at Fort Bliss and White Sands Missile Range, New Mexico. AWAs focus on the refinement and improvement of concepts and capabilities in live, virtual, and constructive domains, beyond the constraints of the formal testing environment of its sister exercise, the Network Integration Exercise, or NIE.

"We will always be [fighting] with the Americans, the British, the French, so this exercise is very important to us," said the commanding officer for the 2nd Outland Dragons Royal Danish Army. "It's about interoperability regarding C2 [command and control] communications and doctrine. It



Soldiers in mobile Warfighter Information Network-Tactical (WIN-T) network-equipped vehicles bring their tactical operations center with them on the battlefield during Army Warfighting Assessment 171 at Fort Bliss, Texas. A mobile WIN-T equipped vehicle is shown outside the brigade main command post Oct. 14, 2016.

gives us an understanding of what we are able to do and where the missing links are so we can fix it and go on."

Interoperability

Among the tools in the coalitional interoperability tool box is an embedded software application known as the Multilateral Interoperability Programme, or MIP, which enables the U.S. and partner forces to share a comprehensive common operating picture. The UK is using MIP during AWA 171 to mediate between various coalition C2 systems that share locations, graphics and reports.

"To be able to work together with our joint international partners in the construct of AWA is very powerful," said Col. Charles Lombardo, commander for 2/1 AD. "In a coalition environment we have to have that interoperable bandwidth; it's incredibly important. Even though we are an armored brigade, our main weapon system is really our network, and being able to distribute mission command down to the edge and to our joint and collation partners is the focus."

During the exercise, the U.S. Army is using its commercial coalition equipment (CCE) enclave to connect to the coalition network over its mobile tactical communications network known as Warfighter Information Network-Tactical (WIN-T). WIN-T enables

mission command, situational awareness and secure reliable voice, video and data communications, both inside a stationary command post or on-the-move in tactical vehicles.

"The WIN-T network provides more operational flexibility and agility, which gives back tactical time," Lombardo said. "I am making more educated decisions because I am making decisions with better and more accurate information."

Not only does the CCE enable U.S. forces to connect to the coalition network, it also provides a radio bridging voice cross-banding capability that enables radios on different frequencies, or different equipment such as radios, to voice over internet protocol phones, to seamlessly talk to each other, which is essential in coalition operations and also during disaster response when different players and organizations have their own equipment.

AWA 171 is providing a venue to securely improve the interoperability between American and coalition mission command and communication systems, including the speed and accuracy of coalition fires missions.

Command Posts

Improving interoperability and the speed of data sharing is only part of the solution to increasing battle tempo; the U.S. Army is also working to improve maneuverability by

reducing the size, weight and power requirements of its systems, including command posts, or CPs. Lombardo said that both U.S. and coalition forces are going through a change in operational tactics, moving away from "the counterinsurgency static forward operating base-mentality of the last 15 years to being able to move out in a matter of minutes."

During AWA 171, 2/1 AD is assessing a vehicle-based CP concept that results in a smaller physical footprint for increased maneuverability. This design uses several pre-wired expandable vans intended to deliver the network and mission command at workstations inside the van, significantly reducing the space needed in an enormous legacy tent-based CP. The unit is also looking at a unit-designed CP network server van, which combines two Humvees and shelters into a single vehicle, creating a server room and tactical radio platform all in one, without need of unloading equipment into the CP. Additionally, Soldiers on-the-move inside their WIN-T network-equipped vehicles can actually bring the CP with them on the battlefield. They can dial into meetings, conduct mission command and view the coalition common operating picture for uninterrupted situational awareness regardless of location.

The unit's goal is to be able to jump the main brigade CP within hours instead of days, and the smaller forward Tactical CPs within minutes.

"We are downsizing ourselves, scaling down network mission command platforms, while increasing mission command capability, to fight on-the-move with continuous effects on the enemy," Lombardo said. "At the end of the day our Soldiers are taking less time setting up tents and the network and focusing more time on their jobs and the enemy."

On the battlefield, time is pivotal during critical and complex missions, and coalition forces agreed that increasing the pace of battle to provide overmatch requires multiple solutions, including reducing footprint for increased agility and delivering uninterrupted network communications to both internal formations and between partner nations.

"Every step of this process we are trying to generate additional tempo," said deputy chief of staff for 1 Armoured Infantry Brigade. "If we can have that shared understanding digitally, we are able to think quicker than our enemy, make decisions quicker than our enemy and outmaneuver and defeat our enemy. That is the whole purpose of this [exercise]."



U.S. ARMY PHOTO

To promote collaborative science and technology projects and multidisciplinary work, the U.S. Army Research Laboratory will hold an open house for industry, academia and fellow government agencies at the Adelphi Laboratory Center Nov. 16-17, 2016.

ARL to host open house at Adelphi

By JOYCE M. CONANT
Army Research Laboratory

To promote collaborative science and technology projects and multidisciplinary work, the U.S. Army Research Laboratory will hold an open house for industry, academia and fellow government agencies at the Adelphi Laboratory Center Nov. 16-17.

Army officials said the Open Campus Open House will expand the laboratory's business model as they continue to introduce the science and technology community to Army research goals.

Open Campus is a "collaborative endeavor, with the goal of building a science and technology ecosystem to encourage groundbreaking advances in basic and applied research areas of relevance to the Army," according to the lab's website.

"Through the Open Campus framework, ARL scientists and engineers work collaboratively and side-by-side with visiting scientists in ARL's facilities, and as visiting researchers at collaborators' institutions," said acting ARL Director Dr. Philip Perconti. "Central to the research collaborations is mutual scientific interest and investment by all partners."

Perconti said the global academic community, industry, small businesses and other government laboratories benefit from this kind of engagement through "collaboration with ARL's specialized research staff and unique technical facilities."

"These collaborations will build research networks, explore complex and singular problems, enable self-forming expertise-driven team building that will be well-positioned for competitive research opportunities, and expose scientists, engineers, including professors and students to realistic research applications and perspectives, helping to ensure our nation's future strength and competitiveness in these critical fields," he said.

One such collaborator is Dr. Kathryn Loftis. She is a biomedical engineering contractor for Altus Engineering and serves as a researcher and analyst for ARL's Survivability/Lethality Analysis Directorate at APG.

"Working within these collaborative teams has been very rewarding," Loftis said. "When the medical professionals, engineers, analysts, and vehicle/body armor teams work together, larger gains can be made towards a common goal of preventing injury and saving

lives."

Her work includes motor vehicle crash injury research, Soldier survivability and injury biomechanics. Loftis is also a certified abbreviated injury scale specialist and an active faculty member for the Association for the Advancement of Automotive Medicine, which is a professional group that includes experts in medicine, automotive safety, and injury researchers. Loftis' work with the military has included body armor analysis and participation in the Joint Trauma Analysis and Prevention of Injury in Combat program, which is a network of partners across the Department of Defense devoted to preventing injuries through actionable analysis of real-world data from theater.

"Dr. Loftis' work, and the work of many others at ARL, really ties into the concept of a Center for Human Injury and Performance that we are in the initial stages of standing up," said Stephanie Snead, chief of ARL's Warfighter Survivability Branch in the Survivability/Lethality Analysis Directorate.

Snead said the objective of the center is to develop a multidisciplinary community of practice for professionals that focus on studying injury frequency, mechanisms, and

resulting biomechanical performance to inform prevention, treatment, and rehabilitation. She said they reached out to potential collaborators at the U.S. Army Medical Research and Materiel Command at Fort Detrick, Maryland.

"We spoke to MRMC about being a critical government stakeholder in this endeavor and they have agreed to pursue the development of it with us," Snead said. "We are also looking to bring in other partners as well such as Virginia Tech, University of Maryland Shock Trauma, Johns Hopkins University Medical Institute and Applied Physics Lab, Association for the Advancement of Automotive Medicine — I believe this is the reach this research center could have."

Snead said to look for the Center for Human Injury and Performance poster at the open house next month that showcases the new collaborative research center ARL is introducing.

"The objective of the center is to develop a multidisciplinary community of practice for professionals that focus on studying injury frequency, mechanisms, and resulting biomechanical performance to inform prevention, treatment, and rehabilitation," she said.

THIS WEEK IN APG HISTORY



Take a look back in time as the APG News explores what made the headlines around APG during this week 10, 25 and 50 years ago. This week's APG News masthead is from 1966.

By YVONNE JOHNSON, APG NEWS



10 Years Ago

Oct. 9, 1991

Maryland National Guard Sgt. Joseph Beale of Company C 2/224th Aviation, and his daughter, Mary, 4, absorb the moment of their reunion at the Gen. Warren Hodges Armory during his unit's return from Iraq.



25 Years Ago

Oct. 30, 1991

From left, Dennis Yonce and Charles Adams of the Directorate of Engineering and Housing trim the bottom of a door from the Powers Memorial Conference Room in the Ryan Building.



50 Years Ago

Nov. 3, 1966

Joseph Puskarich (left), of the Aberdeen Workshop, and Charles Wigfield display a double-size rubber doormat volunteers just completed for the Officer's Open Mess.

Send newspaper submissions to the APG News

Community members are asked to send all submissions for the APG News to usarmy.apg.imcom.mbx.apg-pao@mail.mil, and CC amanda.r.rominiecki.civ@mail.mil. Type APG NEWS SUBMISSION in the Subject Line. You should receive a response within three business days letting you know that the submission has been received. If you do not receive a response, please call 410-278-7274 to inquire.



National Park Service Ranger Keith Snyder describes the action at Antietam National Battlefield's "Bloody Lane," the many tough choices made by leaders, the outcomes, and their significance on the Battle of Antietam to visiting APG Senior Service College fellows Oct. 20, 2016. PHOTO BY SCOTT KELLEY

Fellows visit Antietam Battlefield

BY JIM OMAN
Defense Acquisition University

Personnel enrolled in the Class of 2017 APG Senior Service College Fellowship Program, or SSCFP, visited Antietam National Battlefield, Oct. 20, as the group's first staff ride of the academic year.

APG fellows Lareina Adams, Stephen Conley, Mike Danhires, Brian DeBiase, Jerry Harper, Scott Kelley, Phil Minor, Graciano Nikolich, Jonathan Reiner, and Jim Shillingford were joined by APG SSCFP Director Jim Oman on the trip to the Civil War battlefield in western Maryland.

National Park Service Ranger, Keith Snyder, served as the fellows guide and deftly shared his perspectives and insights throughout the staff ride.

The excursion provided a superb study on leadership and decision-making as well as afforded the fellows with the opportunity to "walk the ground" where more than 23,000 casualties had occurred earning the distinction of the

"bloodiest single day in American history."

Snyder skillfully explained the tactical, operational, and strategic decisions made by key Union and Confederate Army leaders and described how those decisions determined the immediate and long-lasting outcomes of the war. Through experiences such as this, the fellows gain a deeper appreciation for thinking critically, leadership choices, and the necessity to consider second and third order effects.

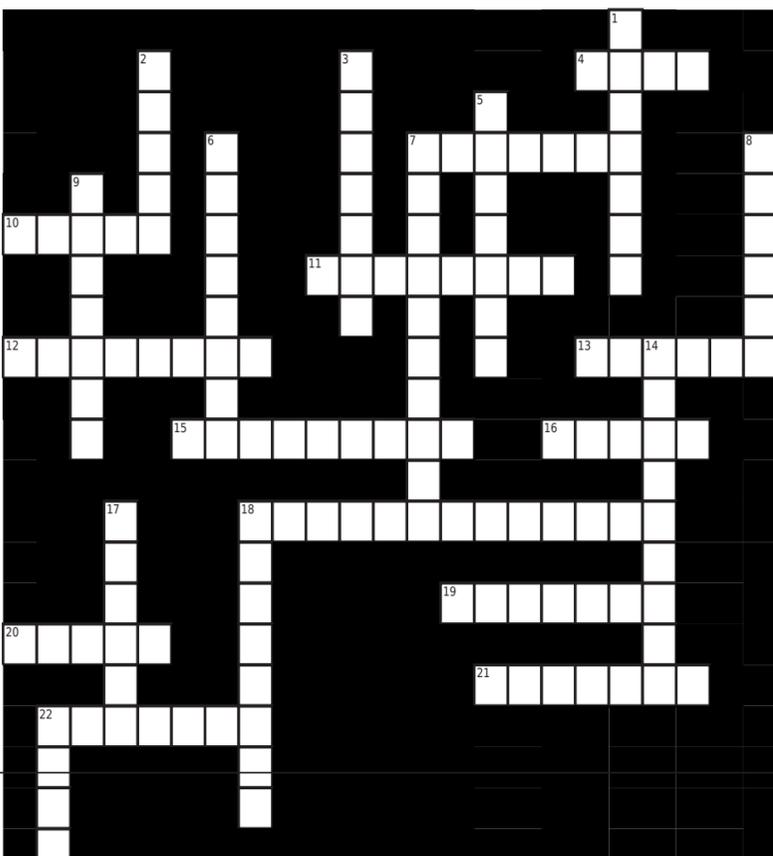
Future trips

In the spring of 2017, the SSCFP will travel to Europe. The fellows will visit several significant World War I and World War II battlefields. They will also visit the North Atlantic Treaty Organization, the Supreme Headquarters Allied Powers Europe, U. S. European Command, U.S. Africa Command the U.S. Army in Europe, and the Joint Multinational Readiness Center. At each command the fellows will meet with multiple senior leaders and learn about

the roles and missions associated with each organization.

Senior Service College Fellowship Program

The SSCFP is a nationally-recognized, Army-sponsored program designed to develop strong, effective senior leaders for the Department of Defense Acquisition community. SSCFP announcement, call for applications for selection/attendance to attend the class of 2017-18, which starts on July 24, 2017 will run from Jan. 23, 2017 through March 23, 2017. Program information will be posted on the U.S. Army Acquisition Support Center website at <http://asc.army.mil/web/>. Acquisition professionals from the fourth estate may also apply for consideration/selection. For more information, visit the DAU website at www.dau.mil/sscf/Pages/apg.aspx or contact James Oman at james.oman@dau.mil or 410-272-9470.



THE APG CROSSWORD

Presidential Elections

Clinton or Trump? That will be the question on everyone's mind when the 2016 Presidential election takes place Nov. 8. After you've completed your civic duty, relax with this crossword about previous Presidential elections.

BY LAUREN FINNEGAN
APG News

Across

4. Presidential candidates winning the

popular vote, but losing the election has happened _____ times in American History.

7. This president was born with the surname Blythe.

10. "Hanging _____" were a big issue in Florida during the 2000 election.

11. Hillary Clinton represented the state of New York when she served in the U.S. Senate from 2001 to 2009, but was born in this state.

12. This animal is the symbol for the Republican Party.

13. Only two presidential candidates were not born in the continental U.S., Obama and _____.

15. The 2008 election was the first time since 1928 that either the _____ president or vice president ran.

16. Martin Van _____ was the first natural-born American to become president.

18. James Monroe almost won every electoral vote in 1820, but a delegate from this state wanted Washington to be the only president to be elected unanimously.

19. Donald Trump's running mate is Mike Pence, the governor of this state.

20. The closest presidential election took place in 1960 between Kennedy and _____.

21. At age 43, he was the youngest elected president and the first president who was born in the 20th century.

22. Only three women have ever won the nomination of a major party during the Presidential election; Palin, Clinton, and _____.

the top presidents throughout history, this president was rated as number one.

6. This president was the only one to be elected as a bachelor.

7. This state has the most electoral votes.

8. This president received the greatest number of popular and electoral votes that stand to this day.

9. November was chosen as the election month because it was a convenient time for _____.

14. Barack Obama is the 44th president, but the U.S. has only had 43, as this former president served two nonconsecutive terms.

17. Washington spent his entire campaign budget of 50 pounds on 160 gallons of _____.

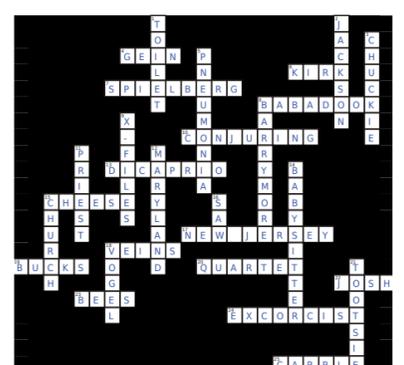
18. This state did not participate in the first presidential election because it had not chosen electors.

22. This is the only person to serve as vice president and president without being elected to either office.

Think you solved last week's puzzle?

Check out the solution below

Solution to the October 27 puzzle



Down

1. This man is running as the 2016 Libertarian candidate for President.

2. This inventor patented the mechanical lever voting machine in 1889.

3. This tallest president stood 6 feet, 4 inches tall

5. In a study in which scholars voted on

ECBC center remains OPCW certified

BIOMEDICAL, From page 1

of only 19 labs designated worldwide by the OPCW for environmental sample analysis and one of only 17 labs designated worldwide by the OPCW for biomedical sample analysis to confirm the presence of nerve agents and other chemical weapons.

"[This grade] ensures that U.S. diplomats and the DOD have internationally recognized capability for analysis of both biomedical and environmental samples in a legally defensible manner," said ECBC Chemist E. Alex Jestel, one of the scientists involved with the proficiency test.

Making the Mark

ECBC's Forensic Analytical Center was the first U.S. laboratory to become a designated OPCW laboratory. They were given that status by the Director General of the OPCW in 1996. In order to maintain accreditation, all OPCW laboratories must adhere to strict administrative guidelines and successfully complete and maintain a three-year rolling average of at least two "As" and one "B". The Center's scientists and technicians conduct highly sophisticated chemical and forensic analysis for monitoring the proliferation of weapons of mass destruction, as well as analysis of samples associated with possible terrorist attacks or breaches of security.

Historically, the OPCW has focused on environmental samples such as soil or water for proficiency tests. In 2009, to address the need for capability to provide proof of human exposure to chemical agent, OPCW started to conduct international practice exercises using biomedical samples. In 2016, after five practice exercises, the OPCW administered its first biomedical proficiency test, in which ECBC participated.

Five scientists from the Forensic Analytical Center worked on the biomedical proficiency test with other members of the branch supporting the scientists as needed with data and report review. Dr. Joy Ginter, Jestel, Dr. Kevin Shefcheck, Tim Allan, Lisa Walden, and Amanda Dubbs had 15 days from the time they received the samples to complete their preparation, analysis and reporting. "The test scenario stated that mustard exposure was suspected and blood and urine had been collected from victims. This allowed us to focus our sample preparation and analysis on looking for biomarkers of mustard exposure." Ginter



U.S. ARMY PHOTO

Another "A" grade allows for the Edgewood Chemical Biological Center's Forensic Analytical Center to remain an OPCW designated laboratory that can now receive environmental and biomedical samples.

said.

The biomedical proficiency test presented new challenges to the team. In the biomedical tests, there are smaller amounts of available sample. Also, biomedical samples tend to require more preparation time, and are more complex.

"The spiking levels for the biomedical test are typically 2-3 orders of magnitude lower than the environmental samples, so we are measuring chemicals in the low part per billion level," Jestel said. "The analysis of biomedical samples is much more focused since a specific agent is suspected based on either previous environmental analysis and/or symptoms of exposure. For environmental samples we run numerous analyses to look for an extensive target list, while for biomedical we are only doing one

or two analyses, but each one can take a couple days."

Of the 26 laboratories from 22 countries, 17 received an "A" grade, including the other OPCW designated lab in the U.S., the Lawrence Livermore National Laboratory in California.

"Because of this designation we are officially allowed to receive biomedical samples from OPCW which demonstrates we are both technically and logistically capable of doing the analysis and preparing a legally defensible report," Jestel said.

"It's a feather in our cap, but it also ensures that U.S. diplomats and the Department of Defense have internationally recognized capability for analysis of both biomedical and environmental samples in a legally defensible manner."

Prepared to Serve

Edgewood's Forensic Analytical Center completed the environmental proficiency test shortly after the biomedical and served as this year's evaluators. They have received an "A" and continue their partnership and status as an OPCW-designated laboratory that can receive both environmental and biomedical samples.

Due in part to the Center's proficient and accurate work, they are prepared to accept and analyze samples from scenarios such as the situation in Syria in 2013. If a similar incident occurs, ECBC is equipped to analyze both environmental and biomedical samples recovered from the scene, helping the nation and the world combat chemical warfare agents.

Encrypted comms may use entangled photons

PHOTONS, From page 1

measure of light. It's entangled photons that are of interest to Brodsky and the Army. A pair of entangled photons exhibits a unique property that Brodsky and his team hope to exploit.

A single photon, on its own, can be captured in a memory unit — or "quantum storage" — and subsequently measured. The measurements can be recorded as well. But when two entangled photons are captured and measured in the same way, they yield the same measurements every time, Brodsky said.

Those same two entangled photons could be split up, on different sides of the lab, on different sides of a research campus, or on different sides of the country, and still, because they are entangled, they behave the same way, and so they yield the same measurements no matter where they are.

The results of those measurements are unpredictable — completely random — and can be converted to a string of zeros and ones, Brodsky said, but "you get identical strings of zeros and ones at two remote locations. Which, for instance, could be used as a key for secure communications."

A critical part of cryptography and secure communications is the use of random numbers. On both sides of the communication, both parties will need the same string of random numbers to encrypt that communication. If both parties had one half of an entangled pair of photons, then they would both have an endless supply of

random numbers at their disposal, and those random numbers would be the same. So a pair of entangled photons, distributed to two parties, could be used to encrypt communications between the two parties.

Distributing those entangled photons is a key issue for Brodsky and his team — how to get the entangled photons to where they need to be, to multiple parties, so everybody can make use of the properties of the entangled photons. One way to do that is with fiber optics. A photon, which is light, can be sent by fiber optics.

"We've looked at how to take classical networking devices and integrate them in a fashion that would allow us to perform that function," said Robert J. Drost, also with ARL. "The idea is that a conventional networking design has requirements that are more restrictive than what we need to do. Because we have less restrictive requirements, we are able to optimize this design to minimize the loss that these photons experience through the network, and minimize the number of devices that are needed to be able to perform the function that we wanted."

It's not just two parties that can make use of the properties exhibited by entangled photons. It's multiple parties. And at ARL, they are looking at how to build networks of fiber optics with fiber-optic switching devices, to distribute those photons where they need to go, without degrading the photons themselves.

"The question is, how many switches you

need to serve all possible entanglement requests from 6, 8 or 10 parties," Brodsky said. "We developed a theoretical framework, and subsequently performed some optimization routines, based on which we said these designs are optimal; the least number of switches you could possibly use to satisfy all possible entanglement requests."

Brodsky and his team will be working to develop networks where command posts or stations, called nodes, can get what they need, and where it's possible to distribute entangled photons in every combination to every node, but at the same time, also use the least amount of hardware so as to ensure the least amount of degradation.

Having entangled photons generated from a single, central node, and then distributed outward to other nodes, is one idea.

"At this central node, we're going to generate entangled photons, but we need to know how to get those entangled photons to the ... neighboring nodes that are necessary to allow one particular node and another to do some quantum communications," Drost said. "And then maybe an hour later, this same node wants to do some secure communications with a completely different node. We need a device that will allow us to reroute and send those entangled photons to those new pair of users that want to perform some sort of quantum protocol."

Another quirk of entangled photons is

"entanglement swapping." Two photons can be entangled: A1 and A2, for instance. And two other photons are also entangled: B1 and B2. A1 and A2, because they are entangled, behave the same, as do B1 and B2. Brian Kirby, a post-doctoral fellow at ARL, explained that by doing a particular "operation" on B2 and A1, those two photons will be destroyed. But as a result, A1 and B2 will become entangled, even if they've never been together.

"This idea of distributing entanglement in this way has been thought of before. And we're interested in how it would work for the warfighter, and how it would work in very noisy, realistic situations," Kirby said. "I did a lot of modeling on how this operation, this spreading of entanglement, would work if you are in a very noisy environment, places that have low signals and things like that. So for example, how it would be on the battlefield, where it's messy and loud and things don't work very well."

Finding ways to distribute entangled photons, and using those entangled photons for secure networking are just two challenges that ARL is working on now. But they are looking at other ways to use entangled photons as well, such as enhancing sensors and quantum computing, for instance.

"We need to search for more applications. We need to see what is possible — what this quantum relation can be used for," Brodsky said.



DID YOU KNOW?

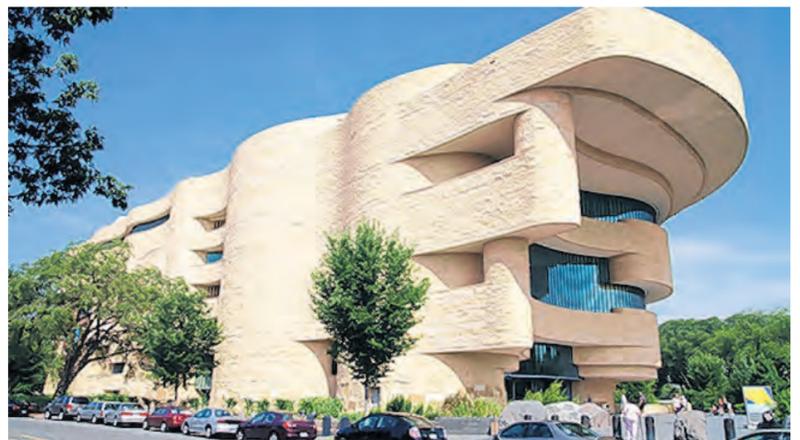
The National Museum of the American Indian, or NMAI, has three branches - in Washington, D.C.; New York City; and Suitland, Maryland.

The NMAI is a component of the Smithsonian Institution. It cares for one of the world's most expansive collections of Native artifacts, including objects, photographs, archives, and media covering the entire Western Hemisphere, from the Arctic Circle to Tierra del Fuego.

Its National Mall location offer exhibits, galleries and spaces for performances, lectures and symposia, research, and education. The George Gustav Heye Center in New York City houses exhibits, research, educational activities, and performing arts programs, and the Cultural Resources Center in Suitland, Maryland, houses the museum's collections as well as the conservation, repatriation, and digital imaging programs, and research facilities

The museum's collection of Native American art and artifacts includes approximately 266,000 catalog records, totaling 825,000 items, representing more than 12,000 years of history and more than 1,200 indigenous cultures throughout the Americas. About 68 percent of the collection originates in the United States while the rest comes from Canada, Mexico, Central and South America and the Caribbean. In addition, the museums' Archive Center serves as a repository for the records of contemporary Native American artists, writers, activists, and organizations.

The National Museum of the American Indian is located on the National Mall at Fourth Street & Independence Ave., S.W., Washington, DC 20560. For more information visit the website at <http://www.nmai.si.edu/visit/washington/> or call 202-633-1000.



COURTESY PHOTO

National Museum of the American Indian, Washington, D.C.

In New York, the museum is located inside the historic Alexander Hamilton Custom House at One Bowling Green, New York, NY 10004. For more information visit <http://www.nmai.si.edu/visit/newyork/> or call 212-514-3700.

By Yvonne Johnson, APG News
Source: <http://www.nmai.si.edu/>