

From the Chief Engineer Officer

Advice to Junior Engineer Officers: Interview with RADM Dieser, Chief Engineer, USPHS

By: *LT Michelle Roy*

Q: What advice would you give to Junior Engineer Officers?

A: My advice to junior engineers...Work hard, Play hard.

Work hard: Give your best at every one of your jobs. As a junior officer, learn as much as you can technically about engineering, and also seek lessons on leadership. Learn fast and seek opportunities to prepare yourself for the challenges in your future positions and the next level of responsibility.

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Edward M. Dieser, P.E.
Rear Admiral, USPHS
Assistant Surgeon General

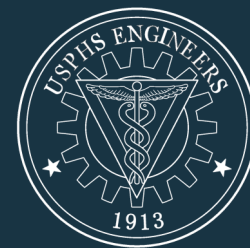
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My typical rule of thumb for a junior officer in the Public Health Service (PHS) is you shouldn't be in a position much more than three years. If you have been in a position for more than three years in the first ten years of your career, it is probably time to start looking for your next job. That doesn't necessarily mean a geographic move, but at least be looking for your next level of responsibility or your next challenge technically. Even a lateral move could be another challenge to expand your growth while you are still young and in learning mode. Be a sponge and soak it all in and challenge yourself to take on different positions.

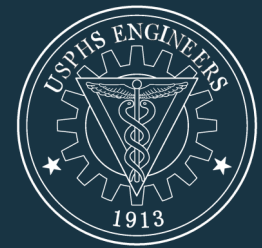
Those formative years for me were with the United States Army. I don't think I had a job for longer than 18 months as the Department of Defense rotated us through different positions. That might be too frequent for PHS officers, but if you stay in a job too long you are depriving yourself of some key learning opportunities. As a mid-career officer, you could probably stay in a position closer to five years. Once you are a senior officer, there can be advantages of settling into a position and staying there for eight, nine, even ten years, especially if you are developing the next generation of engineers. This doesn't have to be an absolute. In my career with over 20 years of service, I have never had a job for more than four years. I have been in some offices for six or seven years but had entirely different positions in that time.

Play Hard: Experience life, travel, discover hobbies, build friendships and learn about people – in so doing, you will learn about yourself. Your life is not all about work. While I want people to be completely committed to the uniform, I understand we have a life outside of the uniform. Most of us will be in uniform for 20 years, some upwards of 30 years, but we all have to recognize a 30-year career is not a right. I think the service should do what it can to get us to a 20-year career and to retirement, but anything beyond 20 is icing on the cake. So, we have to be prepared to take the uniform off and do something different. Therefore, maintain a life outside of the uniform. I understand it can be difficult as I am very much identified by the uniform. I put on a military uniform at 13 with the Junior Reserve Officers' Training Corps (JROTC) in high school. I have been in uniform for almost 40 years with only a few short breaks in service, but somewhere on the horizon I have to reconcile taking the uniform off. We will all have to do it. So, prepare yourself by maintaining a life outside of the Corps. Play hard, do the hobbies, make the trips, love your families, grow your friendships, participate in your community, and be a contributing member of society. Surround yourself with good people and "breathe deep," your uniformed career will fly by.

Machinatores Vitae: Paratus, Volens, Peritus!

RADM Edward M. Dieser, P.E.

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2021 EPAC Chair Update

CDR Deborah P. Cox, P.E.

As I reflect on where the Engineer Category is heading, I am excited!

We recently hosted our first ever Virtual E-week Awards Ceremony and the Events Subcommittee did an OUTSTANDING job! I would like to thank CDR Greg Ault and LCDRs Mike Gifford, David Sullivan, and Derek Buck as well as LT Colin Tack for their professionalism and resourcefulness. I also want to thank the National Park Service including Mr. Shawn Bengel, CAPT Sara Newman, and the Centennial Committee liaison LCDR Jessica Sharpe for sharing the *Power of the Parks for Health* with us.

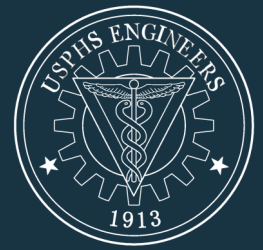


As you know, the USPHS Commissioned Corps is experiencing a time of tremendous change from the top down. I truly believe that change is where we grow, but I know it is not comfortable, especially for us engineers. Change brings the opportunity to reimagine our roles and category. I encourage every engineer to visit the EPAC website <https://dcp.psc.gov/osg/engineer/> frequently and get involved working on an initiative that speaks to you.

The Information Subcommittee led by LCDRs Garret Chun and Travis Sorum are making tremendous updates to our website and highlighting engineer achievements on the Commissioned Corps of the U.S. Public Health Service social media accounts. The Awards Subcommittee led by CDRs John Kathol and Matt Mergenthaler have done great work updating our Spring and Fall award criteria. Together, we can help influence some of the changes to ensure the Engineer Category is situated to best support engineers in our work to protect, promote, and advance the health and safety of our Nation.

I recently came across an interesting statement from a marketing professor, Don Roy, who stated, "Quotes are like a snack for the mind, giving a mental boost or sparking thought that can lead to personal growth." Roy's article encouraged readers to be **constructively discontent** and not accept the status quo but explore avenues for growth. I invite you to reflect on what small and simple changes would help you do your job better. What little things can you do to help make our category stronger? How can you mentor others? Albert Einstein stated, "Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius – and a lot of courage – to move in the opposite direction." Let's all get involved and work together to keep moving our category in the right direction!

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The EPAC has numerous initiatives we are working on in 2021 which are highlighted in this edition. Monthly calls remain on the second Thursday of the month, but we have changed the format.

- 1) Calls are scheduled for 90 minutes from 1500-1630 EST.
- 2) EPAC Executive Secretary, LCDR Melissa deVera, sent a calendar invite to the ListServ and sends a reminder email for each meeting.
- 3) EPAC business meetings have been scheduled on a bi-monthly basis on February 11th, April 8th, June 10th, August 12th, October 14th, and December 9th.
- 4) Senior Officer Panels have been scheduled for January 14th, March 11th, July 8th, and November 18th.
- 5) CPO Town Halls are scheduled for June 23rd during Category Day and September 9th.

I am proud of the work engineers are doing and honored to be the 2021 EPAC Chair! I look forward to seeing what the EPAC can accomplish this year working together. I encourage you to consider how you can get involved, continue to mentor others, and always be open to change. Your efforts will help ensure the Engineer Category is positioned for a bright future. Thank you for all that you do, In the Service of Health!

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EPAC Subcommittees Update

With COVID-19 pandemic social distancing requirements still in place for 2021, all Subcommittees are working together diligently to find ways to keep operations moving forward in virtual environments. Well done! Some of the projects our Subcommittees are working on in support of Engineers include:

Rules – The Rules Subcommittee has opened the application window for new Voting Members and is reviewing the EPAC By-Laws and templates to provide clear guidance for our category.

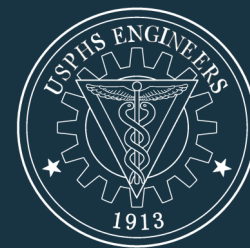
Awards – The Awards Subcommittee updated nomination forms for 11 award categories in January 2021. They continue to develop training materials and a training presentation for award write-ups.

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Career Development – The Career Development Subcommittee (CDS) hosted Senior Officer Panels with the Chief Professional Officer's (CPO's) Council of Captains on January 14th and March 11th. Additional panels are scheduled for July 8th and November 18th. CDS recently updated the Continuing Education Summary Sheet and conducted a survey of advanced degree programs. The CDS continues to match mentors and mentees, so submit your request today!

Events – The Events Subcommittee held an outstanding virtual E-Week Awards Ceremony hosted by the National Park Service. The event celebrated the Award-ees and the 100-year partnership between the NPS and the USPHS spotlighting the *Power of Parks for Health*. Events is now focusing on Category Day, which will also be virtual on June 23rd. They will also host a CPO Town Hall in September.

Information – The Information Subcommittee is working non-stop on updating the EPAC website to be more user friendly and aligned with the Commissioned Corps' newly established [Brand Guidelines](#). They have also updated the Engineer Newsletter layout to align with these changes.

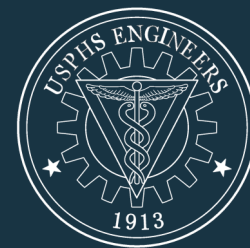
Public Health and Engineering Practice (PHEP) – The PHEP Subcommittee is working on numerous projects, including engineer core competencies lists and developing a database with reference standards and manuals that will be accessible to engineers in the field through portable electronics. In addition, PHEP is continuing to print 3D items, including face shields and masks.

Readiness – The Readiness Subcommittee is finalizing review of the Engineer Deployment Booklet. They are also working to develop readiness education to support officers deploying in traditional disaster/emergency response as well as non-typical roles to help ensure officers are ready for their deployments.

Recruitment and Retention (R & R) – The R & R Subcommittee developed a modernized presentation to assist in recruiting Call-to-Active Duty (CAD) applicants and is working on materials to assist officers serving on the CAD appointment boards.

Strategic Planning for Engineering – The Strategic Planning for Engineering Workgroup met in February to begin development of a white paper to update our strategic plan.

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NPS Hosts First Virtual Engineers Awards Ceremony

LCDR David Sullivan

The Engineer Professional Advisory Committee (EPAC) presented the annual U.S. Public Health Service (USPHS) Engineer Awards Ceremony to formally recognize and celebrate engineers serving our country in roles throughout the Federal Government. In honor of the 100th anniversary partnership between the National Park Service (NPS) and USPHS, the event was hosted by the NPS.

Mr. Shawn Bengel, the NPS Deputy Director of Operations, Exercising the Delegated Authority of the Director, provided wonderful remarks reflecting on the impact USPHS Engineer Officers have had at the NPS over the last 100 years. He noted it began with nine officers in 1921 joining to address safety issues the parks were facing with drinking water, wastewater, food services, as well as rising mosquito-borne illnesses. The very first USPHS officer assigned to NPS was an engineer. Just 20 years ago the NPS had only five engineer officers, but today 32 engineer officers represent nearly half of the 65 total USPHS officers stationed at NPS. Thanks to the support and guidance of the public health professionals assigned to the NPS, the agency has been able to safely continue its commitment to provide resources for recreation, enjoyment, and health.

CAPT Sara Newman, the NPS Director of the Office of Public Health, then spoke further on the Celebration of the 100th anniversary of the partnership forged between our 5th Surgeon General, VADM Hugh S. Cumming, and the 1st NPS director, Stephen T. Mather. As part of the [Power of Parks for Health](#) campaign, CAPT Newman reminded us the value of officers assigned to the NPS and how the partnership was recognized early on and documented in the 1922 NPS Annual Report:

- “From this brief review of the effective work of the Public Health Service the visitor of the parks may feel assured that his health is as zealously guarded as in the town or city whence he comes.”
- “This work by the Public Health Service furnishes one of the outstanding examples of effective cooperative work on the part of one bureau of the Government with another, and assuredly is conducive toward the most efficient functioning of each bureau, including the wise expenditure of Federal moneys for the work involved.”

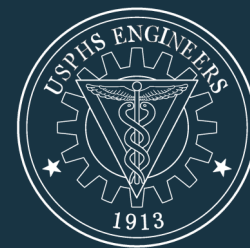
The USPHS partnership with NPS tied in with Congress’s expansion of the role of the USPHS Commissioned Corps in 1902, from solely medical and disease pre-

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vention to roles in scientific research, sanitation, water supply, and sewage disposal. Fast forwarding to 2009, the agreement was extended to the Department of the Interior and all its bureaus. Officers are now stationed at the Bureau of Indian Affairs, US Fish and Wildlife Service, and supporting leadership of the Department of the Interior. Today the NPS is addressing public health issues in the forefront of all its work. These issues include a changing climate that could bring new diseases, and increasing prevalence of fires, floods, and tropical storms. The USPHS and its engineers along with the NPS will address these challenges in the next 100 years of our strong bond.

After the opening remarks by Mr. Benge and CAPT Newman, our Chief Engineer, RADM Edward Dieser, recognized the outstanding accomplishments of USPHS Engineers assigned throughout the Federal government through three of our annual awards, the USPHS Engineer Responder of the Year, the RADM Jerrold Michael Award, and the USPHS Engineer of the Year.



The USPHS Engineer Responder of the Year, which recognizes a USPHS Engineer Officer who has demonstrated outstanding achievements in disaster response and emergency preparedness, was awarded to CAPT Varsha Savalia. She is stationed in San Antonio, TX with the Food and Drug Administration (FDA) as a training officer. She designs, develops, delivers, and evaluates manufactured food training courses, which are a requirement for FDA investigators to obtain their Level 1 certification. CAPT Savalia has been a member of Rapid Deployment Force 1 and was also part of Services Access Team 5. Since joining the USPHS in 2004, CAPT Savalia has deployed in various roles out of and across the country for hurricanes, national celebrations, and public health emergencies; most

notably, CAPT Savalia deployed three times in support of COVID-19 in the role of Team Lead or Officer in Charge within the past 12 months.

The RADM Jerrold M. Michael Award, which recognizes a USPHS Engineer who has demonstrated outstanding leadership and dedication to the education, training and/or mentoring of present and future USPHS Engineers, was awarded to LCDR Praveen K.C. He is a Mechanical Engineer assigned to the Environmental Protection Agency (EPA) since January 2017. In his current position, LCDR K.C. manages the EPA National Energy Independence and Security Act program, keeping 31 EPA labs and facilities nationwide in compliance with federal requirements. He also serves as Lead Mechanical Engineer for lab renovation projects as well as the in-house subject matter advisor for laboratory ventilation system design and fume hood testing and certification projects.

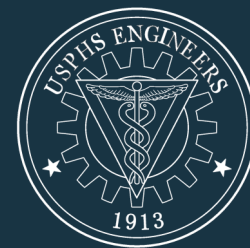


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The USPHS Engineer of the Year award, which recognizes impact in advancing public health and overall outstanding engineering achievement in engineering design, research, development, or management, was awarded to CDR Jennifer Stevenson. She was recognized for her outstanding career accomplishments to advance medical device regulatory science. CDR Stevenson is an engineer officer working for the FDA. Her current assignment is as Deputy Director in the Office of Surgical and Infection Control Devices of the FDA's Center for Devices and Radiological Health. In her role, she is responsible for providing leadership to a staff of over 100 highly skilled scientific and technical personnel and is key in the development, implementation, execution, management and direction of the Office's broad premarket, post market, and compliance programs.

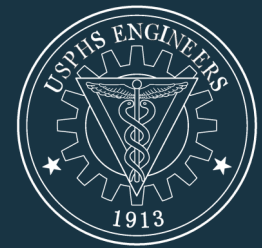


The 2021 National Society of Professional Engineers Federal Engineer Agency Winners were recognized by RADM Dieser as well. The Federal Engineer of the Year Award, sponsored by the Professional Engineers in Government, honors engineers employed by a federal agency with at least 50 engineer employees worldwide. Our USPHS engineers selected were: LCDR Michael Gifford from the NPS, LT James Courtney from the Indian Health Service, LT Vicky Hsu from the FDA, and Dr. Brian Beard from FDA.

Thank you to LT Colin Tack for co-leading this event, LCDR Jessica Sharpe for acting as the NPS liaison for the celebration of the 100-year partnership between the NPS and USPHS, EPAC Events subcommittee chair, LCDR Michael Gifford, and vice-chair, CDR Greg Ault, in assisting communication channels for this event, as well as last year's Events subcommittee chair, LCDR Derrick Buck, as planning for the event began last summer.

A recording of the video conference is accessible on the EPAC website embedded within the 2021 EPAC Meeting Calendar on the Events webpage. It is available for streaming and local download - <https://dcp.psc.gov/OSG/engineer/events.aspx>.

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USPHS and 100 Years at Hot Springs National Park

CDR Kurt Kesteloot, PE, BCEE, CPH

United States Public Health Service (USPHS) engineer officers have worked with the National Park Service (NPS) for over 100 years. USPHS medical officers and Engineers have been involved with Hot Springs National Park (HOSP) since it became a park in March of 1921. In November of 1921 a USPHS clinic was opened in HOSP with Dr. Hugh Cummings, Surgeon General of the USPHS, and Stephen Mather, the first Director of the NPS as two of the main dignitaries. This article will discuss some of the great health initiatives developed and implemented in HOSP by the USPHS and NPS over the last 100 years.

Starting in 1918 Sanitary Engineer H.B. Hommon assisted national parks in improving sanitation. Most of the initial work occurred in Yellowstone National Park; however, the 1922 NPS annual report mentions USPHS engineer officers also working at Mount Rainer, Yosemite, Glacier, Crater Lake and Hot Springs National Parks. Currently, USPHS Engineers and Environmental Health Officers conduct public health assessments, which include sanitary surveys of drinking water and wastewater systems as conducted over the last 100 years. In 1922 the Medical Times mentions a bath house that was replaced and dedicated in November of 1921 in Hot Springs, AR pursuant of the Act of Congress December 16, 1878. During construction the USPHS realized the value of combining a free bath house and a model venereal disease clinic.¹ HOSP became a National Park in March of 1921. The first five superintendents managing HOSP from 1921-1932 were USPHS medical officers. They were as follows.

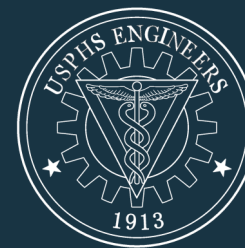
William P. Parks, M.D. 8/25/1916 – 2/28/1922
Clarence H. Waring², M.D. 3/1/1922 – 3/22/1924
Joseph Bolten, M.D. 3/23/1924 – 7/15/1929
Hugh de Valin, M.D. 7/16/1929 – 12/12/1930
George L. Collins, M.D. 12/13/1930 – 1/14/1932

In September 1921, upon request of the State health authorities, a survey was made by Assistant Surgeon C. Armstrong, of Hot Springs, AR. It included an investigation of every condition affecting the health of that city and of the organization of the health department of the city government. The fiscal year 1922 USPHS Annual Report stated, "At Hot Springs National Park a special report was prepared which contained estimates of cost and a description of a new system for collecting 500,000 gallons of hot water from springs and cooling and distributing into the bathhouses. This report is to be used as the basis for appropriations and plans for a new water-supply system that will be installed in the park in the near future."³ HOSP still provides free water to the general public today. The drinking water system is inspected by USPHS officers on an annual basis. It provides potable and non-potable water for various uses throughout



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the park. There are four hot water “jug” fountains, three within HOSP and one outside the park in Hot Springs, AR that allow visitors and local residents to fill containers with untreated thermal spring water that meets U.S. Environmental Protection Agency drinking water requirements. Additionally, there are three fountains inside park boundaries where visitors can drink untreated hot spring water delivered at a temperature of 135°F. There are also two cold water springs that provide ultraviolet and ozone treated water free to visitors.

There are 27 thermal springs that supply HOSP. They are covered with sealed lids and protected to send water to a complex water distribution system. First, the hot spring water is piped into an approximately 265,000-gallon reservoir. From here, the water is pumped to the bathhouses, additional hot water reservoirs, and a heat exchange system that cools the hot (>140°F) spring water to 75-95°F. This warm water is then pumped to a 200,000-gallon reservoir (modified from 400,000-gallon capacity before legionella concerns in 2018). Hot and warm water reservoirs are at a higher elevation than the bathhouses and provide constant water pressure to them. The temperature of the water is adjusted by mixing warm and hot water in the bathhouses before use. The water temperature cannot exceed 104°F in full body contact recreational water (like hot tubs or pools), per National Park Service regulations.



Photo by NPS Employee at HOSP while inspecting the free water fountain for adequate temperature and sanitation with LCDR Dondzila (left) and CDR Kesteloot (right)

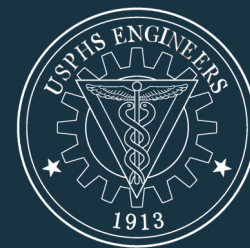
The drinking water reservoir mentioned in 1921 has been modified once or twice and was recently inspected by a contractor overseen by USPHS engineer CAPT(ret.) Bob Reiss. The tank will be modified and cleaned as needed in the near future. CAPT Said, CDR Kesteloot, LCDR Kostamo, and other professionals investigated a spread of legionella cases starting in 2018 in the Park. Several discoveries were made, water system users developed water management plans and as of October 2020, no new cases have been reported. It is a great honor to continue the tradition of USPHS Officers at NPS. We look forward to the next 100 years!

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Provided by Hot Springs National Park in 2021: Dignitaries present on 14 November 1921 at the grand opening of the USPHS clinic in the brand-new Government Free Bathhouse. They are standing outside the entrance to the lower level of the building on Spring Street. From left to right: (1) unknown, (2) unknown, (3) Stephen T. Mather, Director of the NPS, (4) unknown, (5) Dr. Hugh Cumming, Surgeon General of the United States, (6) Dr. Hubert Work, President of the American Medical Association, (7) unknown, (8) Arkansas Senator Joseph T. Robinson, and (9) unknown. The building is currently named the "Libbey Memorial Physical Medicine Center" and still stands today.

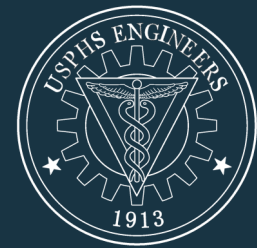


Photo of the Libbey Memorial Physical Medicine Center currently in HOSP with a free thermal drinking water jug fountain in front.

¹ [Minnesota Medicine - Google Books](#)

² [Report of the Director of the National Park Service 1922—Google Books](#)

³ [USPHS 1922 Annual Report—Google Books](#)



Q&A with COVID-19 Responders

A Survey by the EPAC Readiness Subcommittee

Name of Deployment: Commissioned Corps Headquarters (CCHQ) Readiness Deployment Branch (RDB) Augmentation

What is your current assignment in USPHS?

- CDR Leo Angelo Gumapas – Mechanical Engineer at NIH
- CDR James Coburn – Senior Advisor for Emerging Technologies at FDA
- LCDR Abbas Bandukwala – Science Policy Analyst, Biomarker Qualification Program at FDA
- LCDR David Dar – Acting Deputy Division Director in the Office of In Vitro Diagnostics and Radiological Health at FDA

What was the mission of your deployment or focus of your COVID-19-related activities?

Track the availability status and deployment of over 6,000 USPHS Commissioned Corps Officers for CCHQ RDB Missions. Create reports to inform leadership of the status of Corps Officers, deployment teams, and agency activities in response to COVID-19.

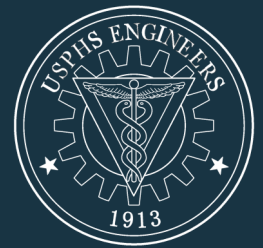
What was your understanding of your role before deployment? Was that your role during your deployment?

The role was described as creating a method to access, manage and analyze data using Microsoft Excel, SharePoint, and Access. During the deployment, we also implemented automation and process improvements that improved data quality, increased officer information available to CCHQ, reduced potential for errors, and reduced time needed to track deployments and availability.

What would you consider your major accomplishment?

We co-developed an Access Database to track the availability status of over 6,000 Officers for CCHQ RDB Missions. The database automates many aspects of maintaining officer availability and deployment status as well as providing accurate reports to PHS and Administration leadership. To do this, the database executes 41 RDB Business Rules, updates 36 Officer attributes from monthly ad hoc CCHQ reports, and generates 15 report queries to apprise CCHQ leadership of daily and weekly reports automatically. We authored a comprehensive standard operating procedure to document the business processes and information sources to effectively roster officers. The document is serving as the blueprint for the current contract within Division of System Integration to implement an enterprise solution for rostering officers for RDB.

We also streamlined the logistics to distribute 1,840 coins for USPHS Commissioned Corps Officers who supported the 2017 Hurricane Maria/Irma deployments.



What were some of the challenges that you faced or experienced during your deployment or COVID-related activities?

The systems and methods to track officers who were deployed to respond to COVID-19 were relatively simple and were overwhelmed due to the unprecedented number of officers deployed for this response. Officers were deployed by CCHQ from over 21 agencies and many of the agencies deployed thousands of their PHS Officers to their own response effort. There was no coordinated and standardized system to manage and use this data. Reports containing deployment information were provided in different formats and variations of information. The team worked with agency liaisons and CorpsCare to resolve inconsistencies in this information. The team then created dozens of data validation rules, processes, and automated workflows to turn the raw data stream into 15 reports and charts summarizing the status of the Corps and the response.

What are some of your best memories from the experience?

The opportunity to work and learn from other USPHS Commissioned Corps Engineers to build a system that streamlined rostering officers for the multiple CCHQ RDB missions. As mentioned above, many reports and processes needed to be developed to provide accurate and usable information. Updated reports or new types of reports were requested daily. Listening to a difficulty or problem allowed the team to provide solutions and work together to develop new functions to provide the most useful data in a concise and effective method.

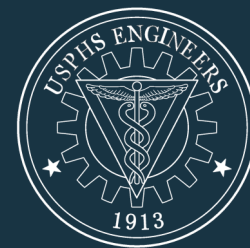
Do you have any advice to share with fellow engineer officers that are responding to address the pandemic?

For both agency work and deployments, it's beneficial for engineers to maintain (at least) a base level of competency in Microsoft Excel, Access, and SharePoint. More effective use of our data can result in efficiencies that streamline operations and free resources to better serve public health. Knowledge of how to effectively manage and automatically process large sets of data from disparate sources is a consistent need in many deployment teams.

Please feel free to share anything else regarding your deployment or COVID-related activities to highlight your experiences or to increase the readiness of fellow officers.

The engineer mindset and application of engineering principles was beneficial in creating the database, reports, and other IT structures. It is beneficial for PHS Engineers to become familiar with different IT skills that can make significant contributions on deployments.

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Sticks to a Plan: Social Distancing by Design

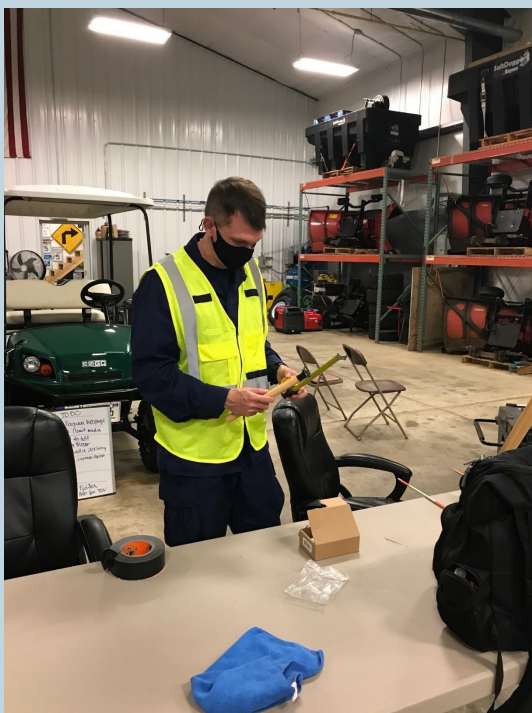
LCDR Michael D Gifford II

As COVID-19 persists, we continue to find innovative ways to address public health concerns. Solutions of today are often built atop solutions from the past. In June of 2020, I had the honor of joining the National Park Service's Western Pennsylvania Incident Management Team (WEPA IMT) to plan and execute the annual September 11th Observance, which the President of the United States attended. In past years, the Flight 93 National Memorial in Shanksville, PA housed thousands of attendees from around the globe to observe the events that occurred in America on September 11, 2001. The 2020 observance was vastly different with 250 invitees and a variety of COVID-19 challenges.



My role was Safety Officer with a special technical emphasis on COVID-19 protection. Being involved early allowed me to set the tone and garner buy-in for safety measures with multiple stakeholders at various levels. We assessed risks and developed plans. Significant operational changes were implemented

to ensure safety. As a USPHS Officer, I found that my category didn't matter. I was the face of public health in a global pandemic. Page after page could be written about my experience; however, there is one story in particular the engineering community may find more interesting than others.



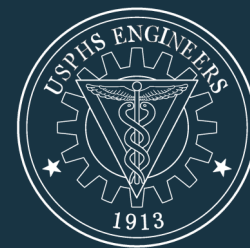
In response roles, we are often thrust into situations requiring solutions in short order. Plans can be thrown out the window or modified right up until the time of execution. Event seating and optics became hot topics as the day approached and dignitaries marked their calendars. Oh yes, we had plans in place; however, security protocols continued to shorten setup time, outside entities continued to question the team's safety decisions, and optics began to take center stage due to national media coverage.

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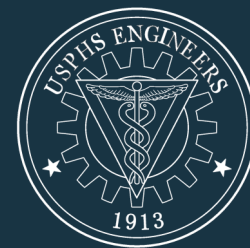


How could we arrange seating to meet Presidential optics? How would we set up 200 COVID-19 friendly seats for a nationally televised event under immense time constraints and three personnel? As I laid in bed the night of the 10th, the eureka moment struck. The American flag and sticks! The stars on the American flag are staggered rows. Event seating would replicate the stars giving maximum protection to those attending. American symbolism would meet optics requirements. I contacted the Incident Commander, explained my case, and the matter was put to rest. Next, two sticks measuring six feet in length would be perfect templates to quickly setup chairs. On the morning of the 11th, it was game on. The first stop was the maintenance bay where I found a bin of eight-foot wooden closet rods. Minutes later, I brandished two six-foot wooden “sticks” to evenly space a couple hundred chairs in short order. Long story short, we finished ahead of time amidst attendees and multiple news outlets covering the event. Many noted our “American ingenuity” and were appreciative of our efforts to keep people safe.



In closing, there are three takeaways I would like to highlight from my experience. Wearing the uniform automatically puts you in the spotlight as a public health expert. Wear it proudly and understand that people don't always see you as an engineer. Also know that if we cannot communicate health risks to people at their level, we have the potential to lose the lead. And lastly, the next time you're in a pinch with little time and resources, find a maintenance bay and use some of that good old-fashioned USPHS engineering ingenuity that we all have inside of us.

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Deploying in an Engineer Role: You are Only as Effective as Your Team

CDR Matt Mergenthaler

Over the past several years, many engineers are having more opportunities to deploy in engineer roles. Every engineer hopes for this opportunity, but it can be daunting to prepare for such a role. When approaching this task, I find it helpful to remember that we are part of a great engineering community willing to support and enable each other's success. Engineers and mentors throughout my career have taught me that engineers are best when we recognize and utilize the strengths of others around us. These engineers do not always receive credit or the opportunity to deploy on these missions themselves. I know many officers and civilians have played a great role in many situations for me, both by handling day-to-day work while I am deployed and by supporting me in my deployments in areas where they have great experience. I am writing this article for two reasons: (1) to show how the broader engineer category can assist you when you are called to deploy, and (2) to highlight the impact of our colleagues that stay back at the duty station during response missions.

In my experience with the Puerto Rico Hurricane Recovery and Unaccompanied Children Missions, I learned not to rely solely on my own experience. When preparing for any mission, I recommend reaching out to other engineer officers to solicit advice. This can be gathering technical information to support your efforts or simply soliciting feedback on how to handle a unique deployment. I have been blessed to get to know many great engineers in my agency and through EPAC. When being deployed in any role, I would always speak with the senior engineers around me to find out what experiences they have had, and gather any useful templates, guides and spreadsheets they can share. It would be impossible to name all the officers that have made a great impact on my deployments, but particular officers within my agency have played key roles.

Prior to departing for the Unaccompanied Children Mission, I knew I would be inspecting buildings for temporary housing. This was not a task I completed regularly in my job. I did inspect sanitation facilities, but that was much different than inspecting temporary housing for children. In this case, I contacted CAPT Chris Brady who provided me with information related to inspecting and evaluating existing structures for disaster shelters. CAPT Brady had experience on multiple deployments and spent the time to educate me on this task. This along with talking with other engineers on my deployment team proved to be extremely valuable in performing my duties on deployment.

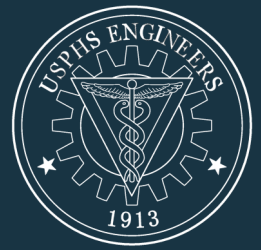
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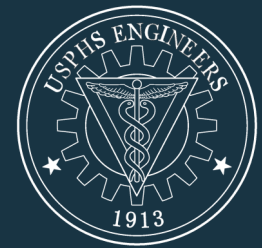
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In another case when I was preparing to deploy for the Puerto Rico Hurricane Recovery mission, I was able to follow the lead of CAPT Dave Mazorra. CAPT Mazorra was supportive as my supervisor in many ways. He not only covered my work with the local Tribes while I was deployed, but he also provided key materials that I would need in this deployment. CAPT Mazorra had previously deployed to Puerto Rico and was able to share critical information such as the RS Means software for site assessment and cost estimating. He also sent me report templates they had used on the mission, told me how to prepare for the climate and travel, and shared many great tips that made me more effective. Prior to my arrival in Puerto Rico there was a great team of engineers who provided detailed reports on the existing conditions of BSL Laboratories, which needed to be replaced. When I arrived, I was tasked with reviewing these reports, evaluating new sites for construction, preparing a request for technical design review and preparing a draft design build contract and statement of work for the new labs. I had a great team on the ground in Puerto Rico in CAPT Cruz of CDC (Emergency Management Specialist), Jesus Rodriguez of CDC (Logistics), and Dr. Hugues of FEMA. We met on a daily basis to discuss the tasks ahead and held many meetings with prospective contractors. Meanwhile, my team back at my duty station played an equally important role. As I prepared documents for the Department of Health, I consulted with CDR Shane Deckert who had experience with lab design at NIH in a previous work assignment. CDR Deckert spent numerous hours helping throughout several weeks.

We are much more effective on deployments when we look outside ourselves and lean on the wisdom of the deployment team and support from engineer officers back home. One of the great resources of our category is the combined education and experience of the engineers around us. In both missions, I was the only engineer deployed at that specific time, but I was not alone in the effort. We can turn to our larger team of engineers and be assured that they have our backs.

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Reflection on the Pandemic's First Wave

LT William Chang

I remember learning about the U.S. Public Health Service in 2014 around the time Ebola was threatening our nation. I said to myself back then that I wanted to get involved and join the Corps. I had to wait a couple more years for an opening in the engineer category. Fast forward to now, and that dream has been realized at a time this country is seeing its worst pandemic in 100 years.

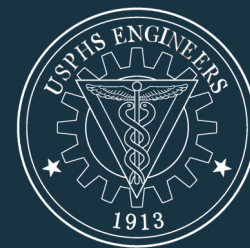
I had joined the Tier 1 National Incident Support Team (NIST) in October 2018. January 2020 was my on-call month, and in February we were told to stand by. My team commander called me in early February expecting us to be deployed to either California or Texas to work with the quarantine teams repatriating Americans from China. I ended up going to Lackland AFB in San Antonio, TX. The NIST had been developing me into an Admin & Finance Officer and I was assigned to that section, where I met LCDR Michael Gu, another engineer, who was the Section Chief. We were joined by CAPT Ruby Lerner, another member of the NIST. The three of us worked tirelessly to ensure daily accountability of the entire Incident Management Team (IMT). I kept track of everyone's hours and made daily reports of arrivals and departures of IMT members. We ensured each person arriving was given hotel and car rental information as well as where to report to duty. For folks departing, we ensured they had their travel itinerary, health release forms and travel expense forms. The IMT ran every day from 7:00AM to 7:00PM. When I first arrived, I saw that the repatriated Americans had already been at Lackland for a week. My initial thoughts were that this deployment would not last the full two weeks. Then on the 3rd day, the IMT was told that quarantined passengers on the cruise ship *Diamond Princess* in Japan were being sent to Lackland AFB and the scope of the mission started to come into focus. When I think back to this time, I still had no idea that this pandemic could penetrate our borders. I even purchased Disney World tickets for the summer at the Lackland AFB ticket center in my spare time. When my deployment ended, I resumed my work at FDA, while the COVID pandemic intensified. When the President declared COVID a National Emergency, I remember watching on television as Secretary Azar stood with Vice President Pence and Admiral Giroir, with another five USPHS officers behind them. I remember the pride I felt in seeing our uniform at a Presidential press conference.

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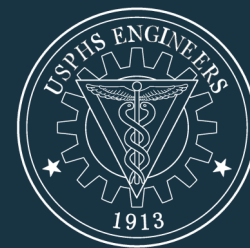


My local FDA office closed as a result of the shutdown in New Jersey. My time afterwards was spent with FDA on a special detail, working with the Center for Devices and Radiological Health (CDRH). I was assigned to review Emergency Use Authorization requests from manufacturers and suppliers trying to distribute much-needed personal protective equipment. I worked on that detail from April to June, helping to ensure that our frontline health care workers had safe and effective masks and respirators.

By late May, I was called to deploy again directly from Commissioned Corp Headquarters, and informed that it would last 30 days. I was happy when I learned that the deployment was to nearby Bergen Community College in Paramus, NJ, which was only about a 40-minute commute. Through my contacts at the New York Commissioned Officers Association (a WhatsApp text chain actually), I was able to get in touch with an officer currently at the site, LCDR Melka Argaw. I drove up the next day to meet him at the site, and he went over the duties of being a Safety/Quality Control Officer. I was to replace him, and we reviewed his role working at the registration tent. He had been there for the previous month and his job was to oversee the nurses/EMTs that collected information from patients while in their cars. Every form filled out was controlled and had to be reconciled with card numbers that each patient was given when they entered. My role was to ensure handwriting was neat, that form numbers matched the distributed cards, and that all personnel were working in a safe manner. While it was a 30-day deployment, the site only ran four days per week, and it was nice to be home on off days. I worked with another officer, CDR Stacy Shields, who was also on her 2nd deployment. Towards the end of the deployment, the state of NJ was conducting tests at various locations around the state. They used supplies from our site, so inventory control became an additional duty. The state of NJ also needed personnel training for their mobile test sites, and I stepped in to fill that role. I developed training material and training forms to ensure consistent messaging and had trainees sign off for accountability.

Since being back from deployment, I've continued to work at various FDA roles since my office had not re-opened and inspections have not resumed. I've assisted in device recalls and database clean-up projects, and I have even authored training material for new inspectors. The transition has been smooth, and I've always felt that I work for one entity, an FDA/USPHS entity, that has its goals aligned. I know that is not always the case outside of FDA. I still imagine that I will be deployed again this year. As I write this, the COVID vaccine is not expected until 2021, and hurricane season is starting soon. I have a lot of pride in what the USPHS is doing during this pandemic, and it never gets old to see ADM Giroir holding a press conference next to the President.

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A Perspective on Precursors: Prior to EPA's First 50 Years

CAPT Nelson Mix, PE, CHMM, F. SAME

December 2, 2020 marked the U.S. Environmental Protection Agency's (EPA's) 50th Anniversary. The mission of the EPA is to protect human health and the environment. Prior to December 2, 1970 mankind and nature played roles in shaping the current legacy of the U.S. Public Health Service (USPHS) and the EPA. While it's impossible to list every incident and reaction in this modern historical era, below is an informed opinion and attempt to chronologically highlight and recognize some important parts of past public health protection (with a slight emphasis on water), as we congratulate the EPA (and previous USPHS engineers) on this milestone and its mission!

1700-1959

During 1700s and 1800s, the fields of medicine and engineering were evolving. Professional associations were forming, and annual meetings were established. Knowledge about water borne diseases was expanding. The early 1900s were important years for the country and USPHS: by 1908 the US had its first chlorinated drinking water facility^{1(McGuire)}; drinking

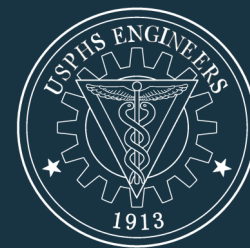
water standards and the Ohio River Station were established; mosquitos, river pollution and shellfish were studied; fluoride, fumigation, industrial hygiene, and occupational health related issues were studied; World War I occurred; and there was pandemic flu in 1918.



"Sanitary Privies are Cheaper than Coffins" was a theme and advertisement in the 1920s and 1930s, because chlorination was successfully implemented in many cities within a couple of decades after the first utility had done so. As sanitation and rural health practices improved, there was a focus on the state and county aspects of public health. The impact of pollution in rivers was better understood thanks to the USPHS engineers in Ohio. In the 1930s federal funding increased for water and other environmental related projects, such as sealing off abandoned mines with acidic wastes draining into water supplies.

In the 1940s, there was more USPHS involvement with radiologic health, sanitation for Alaskan and Indian health, World War II support and environmental health, flouride studies, and an airborne chemical incident occurred in Donora, PA in

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1948. In the mid-1950s (and during the Cold War), drinking water fluoridation was considered by some to be a communist plot,^{2(Salzman)} although today it's considered one of ten Great Public Health Achievements.^{3(CDC)} By the end of the 1950s, the Department of Health, Education and Welfare (HEW), Centers for Disease Control and Prevention, and Indian Health Service were created. Meanwhile, the USPHS was administering the federal program (currently managed by EPA) that funded the construction of many of the large urban wastewater treatment plants in use today. Amniotriazole and the Great Cranberry Crises of 1959 was a notable headline at the end of the decade.

The 1960s and Environmental Movement

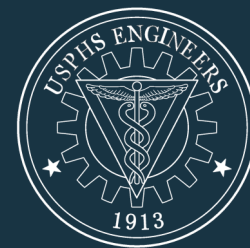
In 1960, Surgeon General Leroy Burney said, "The unprecedented speed at which developing and using new substances and new materials has outdistanced our ability to determine and control their composite impacts on public health and well being." He went on to discuss chemical contaminants in water and air, using three groupings: Challenge of Chemical Contaminants, Implications of Ionizing Radiation, and Apportionment of Responsibility.^{4(Rinsky)} (Burney in 1988 also said "One is reminded of an aphorism, 'Idealism increases in direct proportion to one's distance from the problem'".)

It's noted, "In 1961, government attorneys going after industries that had polluted New Jersey's Raritan Bay were frustrated Service (sic i.e. PHS) physicians tried to dampen publicity about the case and took other steps to be less confrontational."^{5(Stobbe)} "Water pollution control became an increasingly embattled area, with the environmental lobby continuing to criticize the PHS and pushing for a new agency of its own. Engineers within the Service felt caught between an ever more demanding public and PHS leadership that was predominately medical and, in their judgment, insufficiently interested in environmental issues."^{6(Mullan)}

In 1961, all authority for water pollution control was transferred from the Surgeon General to the HEW secretary. In 1962, *Silent Spring* by Rachel Carson was published. In 1964, a USPHS engineer served as the first Director of the Robert S. Kerr Water Research Center, in Ada, OK and the USPHS estimated it would cost \$30B to retrofit the nations combined sewers (the estimate increased in 1967 to \$48B).^{7(Sedlak)} A 1965 law set up the Federal Water Pollution Control Administration that was promptly moved from HEW to the Department of the Interior. In 1966, a directive transferred all of the Surgeon General's powers to the Secretary of HEW.

"President Johnson told reporters a change was needed because more than 50 new programs had been placed under the service since 1950, its budget had increased 900%, and the old organizational structure had become 'clearly obsolete' for managing all that."^{5(Stobbe)} In 1968, responsibility of the USPHS was delegated to the Assistant Secretary of Health, by the President.^{8(Knoben, 2006)} In 1969, the Cuyahoga River in Ohio was so polluted it caught on fire.

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Prior to the passage of the Safe Drinking Water Act, "Serious concerns weren't being addressed or being discussed. And these related largely to a Public Health Service community water survey of 1969, which looked at more than a thousand systems across the country and concluded, (1) that the state supervision programs were very uneven and often lax, and (2) they expressed concerns about the bacteriological quality of the water, particularly among small systems that appeared to be not doing the routine monitoring that the then in-place regs required."^{9(kimm)} April 22, 1970 was the first Earth Day. On December 2, 1970 - the U.S. Environmental Protection Agency was officially created.

The EPA in 2020

In 2020, EPA provided approximately \$1.6B in new federal grant funding for the Clean Water State Revolving Fund (CWSRF). This funding is available for a wide range of water infrastructure projects, including modernizing aging wastewater infrastructure, implementing water reuse and recycling, and managing stormwater. More than \$64M in CWSRF grant funding is available to tribes, certain U.S. territories and the District of Columbia for infrastructure projects.

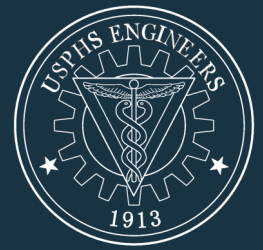


EPA is also making available more than \$1.07B in new federal grant funding for the Drinking Water State Revolving Fund (DWSRF). This funding can be used for loans that help drinking water systems install treatment for contaminants, improve distribution systems by removing lead service lines, and improve system resiliency to natural disasters, such as floods. In addition, more than \$50M in DWSRF grant funding is available to tribes, U.S. territories and the District of Columbia to use for drinking water system upgrades.

EPA's decades-long commitment to water infrastructure has helped provide \$180B in project financing to over 41,000 water quality infrastructure projects and 15,000 drinking water projects across the country.^{10(USEPA)} Also, the EPA's labs in Ada, OK and Cincinnati, OH continue to foster premier research related to groundwater, drinking water and wastewater. At least three of the first four Chief Engineers served at what is now the EPA lab in Ohio, and 10 of 33 Engineer Assistant Surgeon Generals have worked at the EPA, or a facility now within the EPA portfolio (but none in the past 25 years).¹¹

Lastly, in 2020, over 50 USPHS officers (over half are engineers) continue to serve in important roles in EPA regions, headquarters, and in Trust Territories in the Pacific Ocean. Officers help accomplish EPA's public health mission by serving in national programs related to air quality, children's health, drinking water, emergency response, facility management, hazardous waste, pesticides, radiation, solid waste, tribal programs, and wastewater. USPHS officers at EPA have also deployed for the COVID-19 pandemic, in a variety of roles. EPA is proudly protecting human health and the environment.

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Author's Note (and about the author): References are included alphabetically below along with additional recommended reading. All URLs were verified on November 9, 2020. CAPT Mix transferred to the EPA in January 1997 and works in the EPA's Office of Water.

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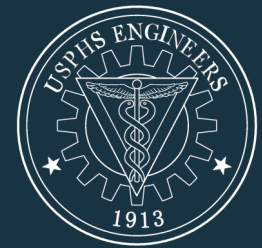
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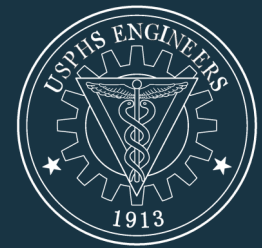
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New Engineer Officers

The EPAC would like to acknowledge the following engineers who have recently become Commissioned Officers. The EPAC welcomes each of you and hopes you will enjoy a long and prosperous career in the PHS.

| Rank | Name | OPDIV | City | State |
|------|------------------|-------|---------------|-------|
| LT | Matthew Pfister | IHS | Rapid City | SD |
| LTJG | Caitlin Caldwell | IHS | Albuquerque | NM |
| LT | Aakash Jain | FDA | Silver Spring | MD |
| LTJG | Saul Ruiz | FDA | Jamaica | NY |
| LT | Sophia Lopez | IHS | Sparks | NV |
| LT | Dylan Lantis | HIS | Lawton | OK |

Fair Winds and Following Seas

The EPAC would also like to recognize the engineer officers who have recently retired from Commissioned Corps service. The EPAC sincerely appreciates your leadership and dedication to the mission of PHS engineers.

| Rank | Name | OPDIV |
|------|---------------------|-------|
| CAPT | Susan Neurath | CDC |
| CDR | Bradford Blackstone | IHS |
| CAPT | Christopher Bradley | IHS |
| CAPT | Christopher Aguilar | EPA |

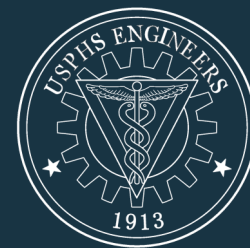
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Dear Readers,

Machinatores Vitae (Engineering for Life) is a publication of the EPAC, but we need help in bringing you the information and stories that you want to read. Please consider submitting an article for an upcoming issue or let us know when you or a colleague have reached a milestone, been recognized for an accomplishment, or have an experience to share. If you are an accomplished writer, send something along that is already polished. If you don't feel like a Hemingway or Dickinson, just send enough detail so the writing team can take hold of it and build the story for you.

The writing staff can only see a bit of the big world that is public health engineering. There are numerous accomplishments even within our readership that remain unknown except in the relatively small circles around you. If you have not presented at a national meeting, the likelihood is that no one outside of your agency, or possibly even Office, ever heard about the project that you nearly exhausted yourself completing. Here is your chance to shine!

All ideas are welcomed. Remember that we do not have to solely focus on work going on within the PHS. Let us know if you hear of new technologies or applications, or just find an interesting story from the outside world. The rule of thumb is that if you as an engineer are interested in it, then others will be too!

Send your thoughts, suggestions, or a brief synopsis of a proposed article to the newsletter coordinator, CDR Jason Petersen at Jason.Petersen@ihs.gov.

Thank you,

The Newsletter Team
EPAC Information Subcommittee

Machinatores Vitae is published twice annually and posted on the USPHS Engineer Professional Advisory Committee website. The deadline for submitting articles for the **Fall 2021** edition is **August 31, 2021**.

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