

MACHINATORES VITAE

Engineer and Architect Newsletter

From the Chief Engineer Officer



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Career Planning

You may have noticed that the US Public Health Service (USPHS) Chief Professional Officers (CPOs) held a Career Planning forum at the 2011 USPHS Scientific and Training Symposium, New Orleans. This was a combined effort of all the CPOs and came about because we have noticed that some officers are using the Promotion Benchmarks as their only career planning tool. That is unfortunate because the Promotion Benchmarks were never intended to be used in that manner and do not encompass everything that should be considered when you do career planning.

As discussed at the Symposium forum, career planning requires that you take a much broader view and do some in-depth soul searching to determine what is it that you really want to do. After all, a career in the Public Health Service, whether in the Civil Service or the Corps, is more than just a job. As engineers and architects, we have been drawn to a particular field of applied science. But how we embrace and apply our skills goes to one of the primary roots of career planning.

Does determining the best design or building new structures and facilities get your motor running or do you really want to understand how pollutants or

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hazardous substances travel in the environment/workplace and impact human health? Try to determine what you find most interesting or have an inner desire to do something about. That is probably your passion that you should try to embrace.

Understanding your passion will also help you determine what aspects of your profession you want to expand and continually improve. Continued professional development is another aspect of career planning. Set professional development goals based upon your passion and continue to push your professional growth.

“Learning is not a product of schooling but the lifelong attempt to acquire it.” – Albert Einstein

Once you have determined what you are passionate about and how you will continually improve your professional knowledge and capabilities you are just about ready to start matching up your skills and passion to the opportunities that are and may become available. But first you probably need to consider how your personal and professional lives will intertwine. This will be one of those reality checks as to where you and the people important to you want to be and do. It may put limitations on the choices you make for your career. This is fine so long as you are conscious about how you are trying to balance your personal and professional lives.

“If passion drives you, let reason hold the reins.” – Benjamin Franklin

With a firm broad understanding of where you want to go with your professional and personal lives, you can now start matching up your skills and passion with the mission requirements of the various public health organizations. Map out a plan so that you will be taking on increasing responsibilities. This should allow you to have more direct involvement with the organization achieving its mission requirements. But keep your plan as flexible as possible so that you can take advantage of opportunities that you may not have anticipated.

I would have never imagined how my Public Health Service career would develop when I first started out with the Indian Health Service. In fact, my career took a few interesting twists as I learned more, my passions shifted and new opportunities developed. Be ready to accept new challenges and take some risks.

As a part of a PHS Officer's career, we also expect that Officers will support the PHS Commissioned Corps mission. This is in addition to providing substantial amount of their professional effort in supporting their assigned agency's mission. Finding the right balance is important.

12th PHS Chief Engineer Goals

Reflect upon our past accomplishments as we prepare for our 100th Anniversary as a category;

Renew our efforts to recruit even more engineers and architects and advance the engineering and architectural sciences; and

Respond to the ever changing health needs of our country.

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Of course, PHS Officers will take a look at the Promotion Benchmarks to see how they are matching up. But keep in mind that Promotion Boards and Selecting Officials are most interested in seeing how you have and can support the mission of the organization and what *impact* your accomplishments have made to the organization's mission. By harnessing your passion and continued professional growth, you will take a major step toward planning your career. Just keep in mind that career planning is not a static, one-time effort. You should revisit your plan and goals fairly frequently and determine if it is still a good fit.

“When work, commitment, and pleasure all become one and you reach the deep well where passion lives, nothing is impossible.”
– Author unknown

Having a mentor or two can assist in this process. I would encourage you to start developing a mentoring relationship early in your career. In addition, being a mentor will also help you in your career planning process. By assisting others in their career planning, it will likely result in you taking another look at your underlying assumption and plans.

By utilizing the full spectrum of career planning, the CPOs believe you will be able to achieve your professional goals while at the same time protecting, promoting and advancing the health and safety of our Nation. It is an adventure that should be embraced.

Machinatores Vitae!! (Engineering for Life)

To get involved with Engineer Professional Advisory Committee (EPAC) activities, feel free to contact any of the following EPAC members.

	Point of Contact	Agency	e-mail
EPAC Chair	CAPT Peter Nachod	IHS	Peter.Nachod@ihs.gov
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Awards	LCDR Varsha Savalia	FDA	Varsha.Savalia@fda.hhs.gov
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Public Health Engineering Practices	CDR Jennifer Proctor	NPS	Jennifer_A_Proctor@nps.gov
Career Development	LCDR Vivian Porter	IHS	Vivian.porter@dshs.state.tx.us
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USPHS Training and Scientific Symposium	LT Kesteloot	NPS	Kurt_Kesteloot@nps.gov
EPAC Website			http://www.usphsengineers.org/



2011 EPAC Chair

CAPT Peter Nachod, P.E.

Greetings fellow engineers! Summer has arrived.....and it seems to be passing almost as quickly as it came!

These are indeed interesting times to say the least. I want to briefly talk about the political climate we are currently experiencing and the microscope which we as Federal employees are constantly under. We see lots of stuff on the nightly news dealing with the Federal Government and what could be coming down the road. It can be extremely frustrating to hear all the talking heads on television talk about how the Government is useless, how Federal employees are overpaid, don't work hard, are lazy, etc. Unfortunately, I don't think those attitudes and mentalities are going away anytime soon. So, what can we do as employees of the United States Government? Well, I know what I am doing. I am going to continue to do my job that I have been tasked to do! Our actions can speak a thousand words! We can breakdown these preconceived barriers and notions that I previously mentioned by doing our work the way only we know how to do it. We can do it efficiently. We can do it fast! We can do it as good or better than any of counterparts out there, Federal or Private! We have always said we are the best.....now it's truly time to show we are the best!



About a month ago, the promotion results for FY2011 were released. To all of those who were successful, congratulations and job well done! I have been in your shoes and can definitely say that it is quite a relief when the good news arrives.

For those of you who were not successful this cycle I offer the following advice; become engaged with your category and get involved! Whether it is with EPAC as a member or on a subcommittee or maybe it is with your local branch of the COA. Find a senior officer who you are comfortable with in talking about your career. You'd be surprised at how many officers in leadership there are who would be more than willing to help out with reviewing your C.V. or discussing their experience with the promotion process. There are more than you realize. Don't be shy about it and approach one! This is your career, not mine or the engineer in the office next to you. You are the one responsible for the course it takes. If you didn't get promoted, don't take it personally and don't let it get you down. Review the comments which the promotion board has provided and take the necessary steps to ensure that those comments don't appear again next year!

More importantly, take care of yourself! Don't let stress get the best of you. Make sure you are exercising and eating healthy. Don't lose sight of your family, at the end of the day they are the ones you are sitting down with at the dinner table talking over the day's events or what happened at school or whatever it is.

On a final note, I want to say that if you ever have any ideas, concerns, issues or just plain want to talk about the engineer category and the EPAC, feel free to contact me. My door is always open and I will do my best to address whatever you might bring my way!

v/r
Peter



EPA's Response to the Fukushima Daiichi Nuclear Power Plant Incident

CDR Jen Mosser and CDR Scott Telofski

March 11, 2011, saw the confluence of multiple events that led to the release of radionuclides from the Fukushima Daiichi nuclear power plant in Japan. As a result of the magnitude 9.0 earthquake and subsequent tsunami with waves over 20 meters high, the supply of off-site power was cut to the plant. In addition, diesel generators intended to provide back-up electricity to the plant's cooling system were disabled by tsunami flooding. These events led to meltdowns in multiple reactor cores and overheating of cooling ponds for spent fuel. Initially classified as a level 4 "Accident with Local Consequences" on the International Nuclear and Radiological Event Scale (INES), the situation progressed until it became a level 7 "Major Accident." Prior to this event, the 1986 Chernobyl nuclear disaster was the only INES level 7 accident.

Under the Nuclear/Radiological Incident Annex to the National Response Framework, the U.S. Environmental Protection Agency (EPA) coordinates the federal environmental response for "incidents involving foreign, unknown, or unlicensed radiological sources that have actual, potential, or perceived radiological consequences in the United States or its territories, possessions, or territorial waters, and that are not addressed by the Department of Homeland Security's Customs and Border Patrol or U.S. Coast Guard." The EPA was also responsible for recommending any necessary protective actions that would have been taken to mitigate effects from the radiological contamination. Nuclear experts from the Department of Energy, Department of Defense and Nuclear Regulatory Commission deployed to Japan to support their nuclear safety and public protection efforts.

The EPA response included activating the headquarters Emergency Operations Center (EOC) to support air monitoring activities and provide situational awareness, communicate with the public concerning the impacts of what was being detected, coordinate with other federal agencies and state governments, and respond to inquiries from the White House and Congress. EPA's Regional responders worked with their states to address local issues and concerns. The western regions which have areas in the Pacific and, thus, were most likely to be impacted by radiological contamination from Japan were especially engaged. Additionally, EPA's National Air and Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama commenced daily operations to perform sample analysis and review monitoring data.

EPA's RadNet program was the primary data source for measuring nationwide contamination. Serving as the nation's largest environmental radiation monitoring network, RadNet monitors airborne particulates, precipitation, milk, and drinking water at locations across the

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nation, including Alaska and Hawaii. RadNet also has real-time monitors that continuously measure radioactivity from airborne particulates collected on a filter. These data are sent back to the NAREL hourly, where it is screened against preset limits to look for abnormal increases in radioactivity in the air. To supplement the fixed stations, EPA has a suite of deployable monitors that can be placed in specialized areas. These mobile monitors (called “deployables”) collect air particulates and gases and measure ambient gamma radiation levels, which are also sent to the NAREL on a real-time basis. Data from the fixed and deployable monitors, if representative of environmental radioactivity, become available to the public on the internet. To improve monitoring coverage for the Fukushima incident, deployables were sent to Oahu, Kauai, Guam, Saipan, Nome, and a location on the Aleutian Islands.

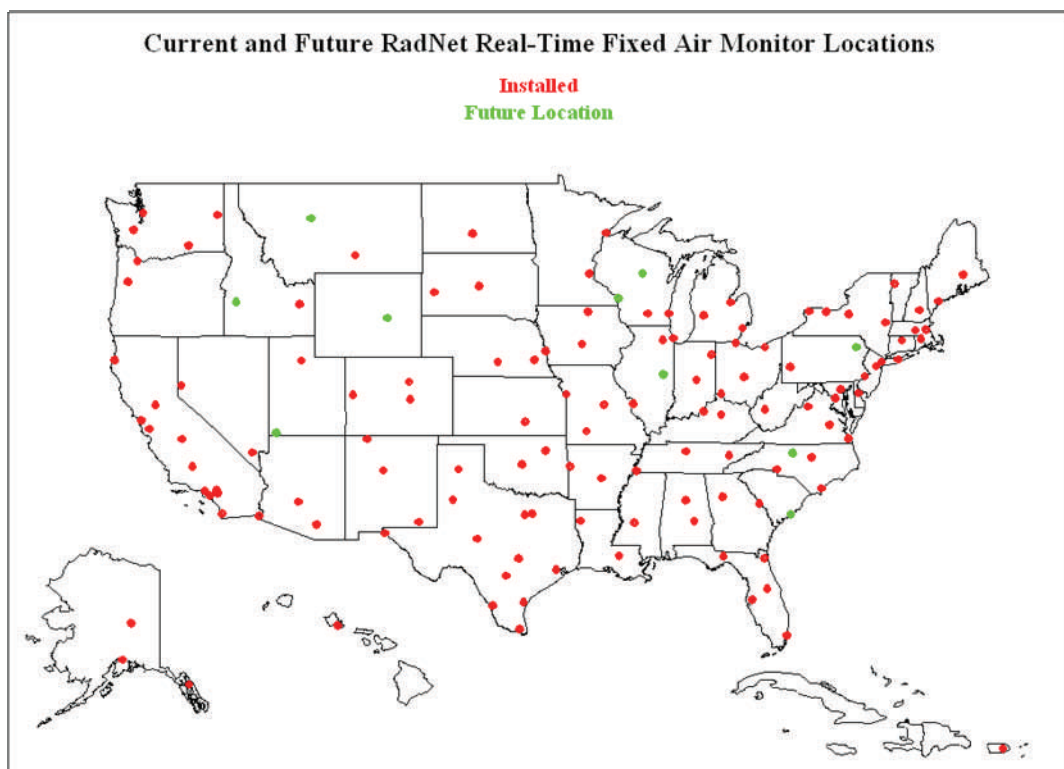


Figure 1: Map showing the current location of fixed monitors and identified future locations for fixed monitors

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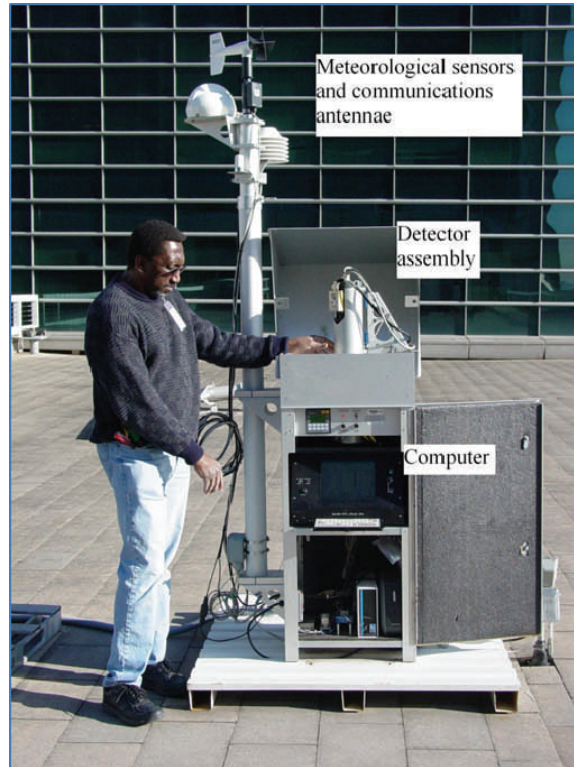


Figure 2: Components of a monitor setup

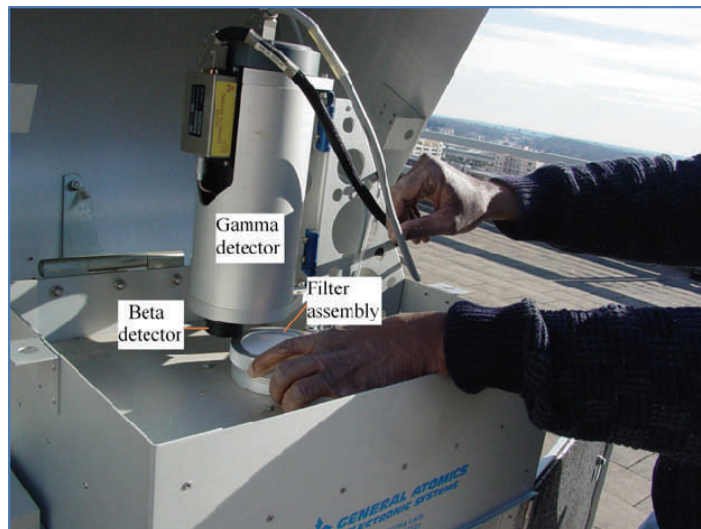


Figure 3: Close-up of the gamma and beta detectors and filter assembly

RadNet's real-

time data allows
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for quick action when an increase in radiation is measured. For example, when the monitor in Honolulu, Hawaii, measured iodine-131 (I-131) on an air filter, this was reported to the EOC where quick action was taken to communicate results with regional partners. Without the real-time capability, the contamination data would not have been available until three days later.

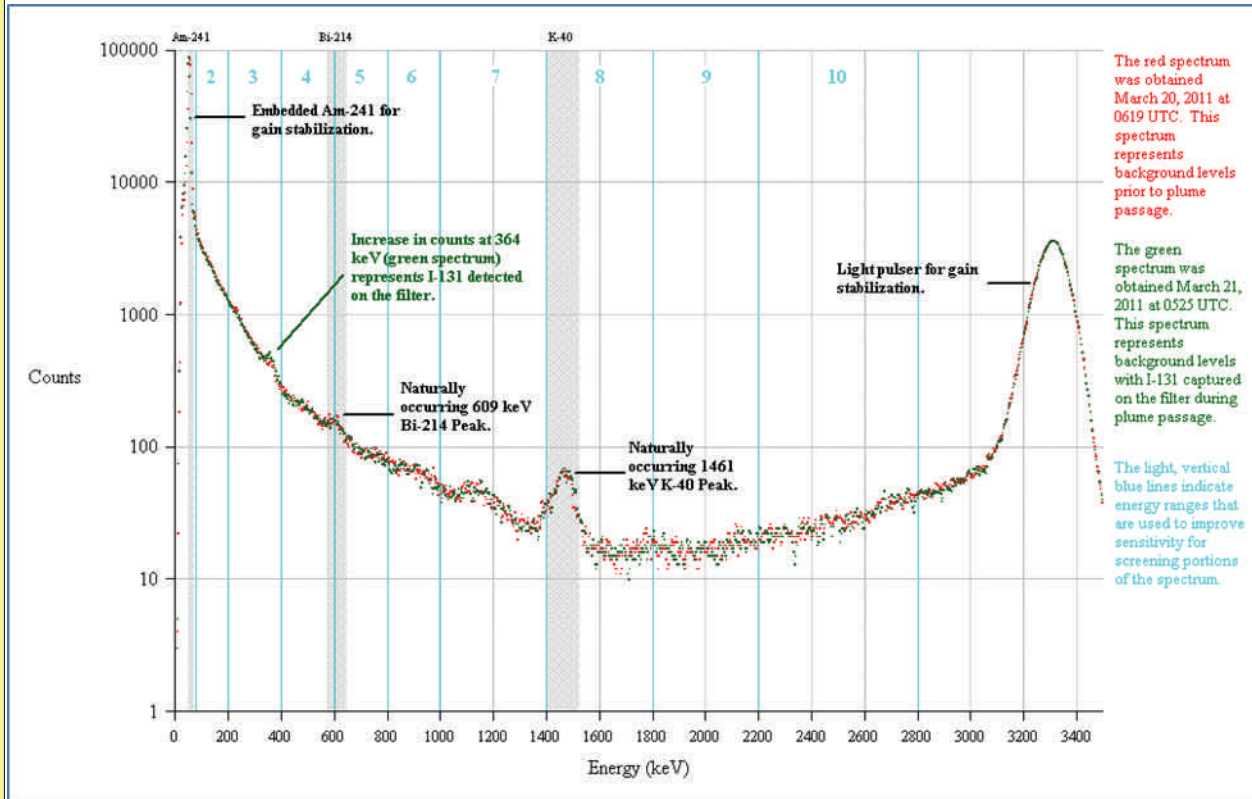


Figure 4: The gamma spectrum showing the slight increase in radioactivity levels in a certain energy range that corresponded to the I-131 "hit" seen in Honolulu

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The durability of the RadNet monitors was also demonstrated as they worked under a spectrum of environmental conditions. From Saipan to Nome, the monitors took a beating and still functioned (Figure 5).



Figure 5: Deployable monitors in Saipan, CNMI and Nome, AK



Overall, the RadNet system showed typical fluctuations in background radiation levels, which were far below levels of public health concern. No protective actions were warranted for any location within the U.S. or its territories. Radiation levels from the Fukushima incident were a fraction of those detected from 1986 Chernobyl nuclear accident. Table 1 compares the *highest* concentrations of I-131 detected in milk, air and rain water from Chernobyl to the results from Fukushima.

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Table 1 Comparison of Chernobyl and Fukushima data

	Highest I-131 in Milk	Highest I-131 in Air	Highest I-131 in Rain
Chernobyl 1986	136 pCi/L Spokane, WA	1.6 pCi/m ³ Boise, ID and Phoenix, AZ	6,620 pCi/L Spokane, WA
Japan 2011	18 pCi/L Hilo, HI	0.84 pCi/m ³ Boise, ID	390 pCi/L Boise, ID

Public interest on this historical event led to unprecedented web attention for EPA's monitoring results. The public website for data collected during the Japan response received more hits than the website for the Deepwater Horizon oil spill that occurred last summer. EPA's monitoring information, press releases and FAQs for the Fukushima incident can be found at <http://epa.gov/japan2011/>. For more information on the RadNet system, please visit <http://www.epa.gov/narel/radnet/>.

CDR Scott Telofski is the RadNet Program Manager stationed at EPA's National Air and Radiation Environmental Laboratory in Montgomery, AL. During the response, he evaluated the gamma spectra reported from the RadNet system to identify potential contamination. As a dose assessor, he worked with other technical experts to determine levels for several radionuclides that if detected would warrant protective actions. To learn more about the RadNet system, please contact CDR Telofski at telofski.scott@epa.gov.

CDR Jen Mosser served as the Environmental Unit Leader in EPA's EOC where she prepared the RadNet data and data interpretations for posting on the EPA public website, worked with the Public Information Officers to develop press releases, and coordinated with EPA senior management and other federal partners on response actions. To learn more about the data posted on the public website, please contact CDR Jen Mosser at mosser.jennifer@epa.gov.



EPAC's Public Health & Engineering Practices Subcommittee

The Public Health and Engineering Practices Subcommittee (PHEP) was developed as a forum for engineers to identify, share or disseminate the best public health engineering practices in industry today. It also provides engineers an opportunity to introduce and analyze public health engineering practices of interest, conduct research, and present potential solutions to the Engineer Professional Advisory Committee for consideration for further action. PHEP also provides an opportunity for engineers to publish the results of their research in the workgroups in technical publications and SAME.

There are three active workgroups within the PHEP Subcommittee in addition to general discussion topics which involve information sharing between members of the subcommittee. Current general discussion topics include the application, cost and installation requirements for solar street lighting and water testing requirements and test processes following the radiation releases from the Fukushima Nuclear Power Plant in Japan.

The three active workgroups are:

- HVAC equipment mounted above electrical equipment: This workgroup has formed for the purpose of guiding engineers and facility management personnel in identifying conditions in which a water source has the potential to create a hazard to electrical equipment. An example of such a scenario exists when HVAC equipment is mounted above electrical equipment. The workgroup is generating a checklist for engineers to use when assessing the current risks of water damage to existing electrical equipment at their facilities. The workgroup is also attempting to identify regulations for the prevention of such scenarios during the design phase, and to serve as a guide in identifying code violations during condition assessments.
- Water/Wastewater Pipe: This workgroup is investigating the environmental footprint during the production of several types of water/wastewater pipe. The results of the research will assist engineers in complying with Executive Order 13148 Greening the Government through Environmental Leadership by selecting the most environmentally friendly product that meets design requirements.
- Engineer Outreach: This workgroup looks at engineering volunteer opportunities nation and worldwide to support the growth and development of students interested in math, science or engineering and to improve the public health of communities. In addition, members of this workgroup are partnering with the Emergency Preparedness subcommittee to identify ways to support engineers when deployed.

The PHEP Subcommittee meets every 2nd Wednesday of the month at 2pm EST.

At present, all of the Working Groups need more volunteers. Please note that you do not need technical expertise to join one of our Working Groups. If you are interested in participating in one of our Working Groups or have ideas on starting a new workgroup, contact the PHEP Subcommittee Chair, CDR Jennifer Proctor at Jennifer_a_proctor@nps.gov or at 202-513-7026.



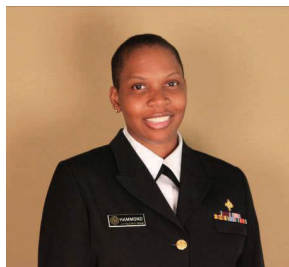
Meet an EPAC Member

These members joined the EPAC in 2011...



David B. Caimbeul, AIA, NCARB, Centers for Disease Control and Prevention, Atlanta, GA

David serves as a Program/Project Manager within the Capital Improvements Management Office for the Chamblee Campus. He is originally from Chattanooga, Tennessee, and received his Bachelor of Architecture from the University of Tennessee, Knoxville. In 1995, David was commissioned as a Lieutenant in the U.S. Air Force through the Air Force Reserve Officer Training Corps (AFROTC) Detachment 800, where he served four years before receiving an Honorable Discharge as a Captain. In 2000, David became a Civil Service employee with Naval Facilities Engineering Command Southern Division and received a Master of Science in Architecture and Urban Design from the Georgia Institute of Technology in 2009. David has a Registered Architect license in Georgia and Missouri. He lives in Grant Park in a 1903 Victorian Cottage with his son Dillon and two Scottish Terriers, Donovan and Úna.



LCDR Jill R. Hammond, MPH, Food and Drug Administration, Silver Spring, MD

LCDR Jill Hammond is a Senior Regulatory Research Officer in the Freedom of Information (FOI) Branch in the Office of Management Operations (OMO), Center for Devices and Radiological Health (CDRH) where she is responsible for the development and implementation of FOI policy, procedures and practice standards. LCDR Hammond earned her Bachelor of Science degree in Chemical Engineering from North Carolina Agricultural and Technical State University and Masters of Public Health degree from the University of Maryland, College Park. LCDR Hammond is active with the EPAC Awards and Career Development subcommittees and currently spearheads the New Engineers Orientation Program. She is also an active member of the District of Columbia Commissioned Officers Association (DC COA) branch and serves on the Engineering Category Board of Directors and as Chair of the Merchandise Committee. She enjoys jazz music, traveling and working on community outreach activities.

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CDR Ramsey Hawasly, P.E., Indian Health Service, Rockville, MD

CDR Hawasly manages a national data system used to track and report water, sewer and solid waste deficiencies for American Indian and Alaska Native homes and communities. He has been working with EPAC subcommittees for many years and is currently the chair of the “Content Management Workgroup” of the EPAC Information Subcommittee. CDR Hawasly enjoys spending quality time with his wife and three children.



CDR Steven Raynor, P.E., Indian Health Service Headquarters, Rockville, MD

CDR Raynor serves as the National Program Manager for the Indian Health Service for all new healthcare facility design and construction activities in the Bemidji, Phoenix, and Portland Areas. This involves reviewing projects, budgeting and policy development. He is involved in the EPAC Career Development Subcommittee and hopes to join a few more committees soon. He is very involved in lives of his children in Colorado, Utah, Wisconsin, and Maryland. He is an active volunteer with the Boy Scouts of America and enjoys kayaking.



LCDR Matt Vojik, P.E., American Samoa EPA, Pago Pago, AS

LCDR Vojik manages the Technical Services Division of ASEPA and advises the American Samoan Government on environmental policy and program development. Before moving to the south Pacific, he worked for the Navajo Area Indian Health Service and served as a Peace Corps volunteer in Mauritania. He chairs the Newsletter working group of the EPAC Information Subcommittee and in his free time enjoys various outdoor activities that include hiking, tennis and snorkeling. In 2010 he was recognized as ASEPA Athlete of the Year for coaching the office softball team.



Dear Readers,

The *Machinatores Vitae* newsletter is a publication of the EPAC, but we need help in bringing you the stories 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 your pet 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 editors at epac@usphsengineers.org.

Thank you,

EPAC Newsletter Team

The *Machinatores Vitae* is published three times a year and posted on the USPHS Engineer Professional Advisory Committee website. The next issue of the newsletter will be published in December 2011. The deadline for submitting articles is November 15, 2011.

If you have suggestions or comments about the newsletter, or would like to submit an article, please contact the editors at epac@usphsengineers.org.

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