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CONTENT

FROM THE PRESIDENT

Fellow Members of the USN Aerospace Experimental Psychology Society,

It is with great honor that I step into the role of President of our esteemed society. For years, this community has been at the forefront of ensuring the human element remains central to naval aviation, a mission I have been proud to be a part of throughout my career. In my current role as the Military Director for AI/Autonomy Development & Integration at NAVAIR, I am constantly reminded of the critical importance of our work, and I am excited to lead a society that is so vital to the future of the fleet.

This issue of *Call Signs* is packed with insightful articles that speak to the vibrant and evolving nature of our community. It features a forward-looking piece from CAPT Foster and LCDR Natali on the future of the AEP community, a look into the modernization of student training by LCDR Kukenberger, and an inspiring article on professional growth through the DUINS program by LCDR NeSmith. We also have the distinct pleasure of hearing directly from the SNAEP Class of 2025 as they reflect on their journey to earning their wings.

I am particularly looking forward to connecting with many of you at the upcoming USNAEPS event in Orlando, FL. It will be a fantastic opportunity to reconnect, share ideas, and discuss the future of our field. I hope to see many familiar faces there.

Very respectfully,

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FUTURE OF THE AEP COMMUNITY

The Aerospace Experimental Psychologist: Leading Naval Aviation at the Forefront of Human-Centered Innovation

By: CAPT T. Chris Foster, Ph.D, AEP #125 and LCDR Michael "Tinder" Natali, Ph.D, AEP #150

CDR Frank Weisser of the Blue Angels participates in a heritage flight alongside an F6F Hellcat and F6F Bearcat aircraft over the Imperial Valley.

From the cockpits of WWII Hellcats to the integrated digital systems of the F-35 Lightning II, technology has relentlessly transformed naval aviation. Yet, one constant remains paramount: the human operator. For over 80 years, the Aerospace Experimental Psychology (AEP) community has served as the Navy's cornerstone for understanding, protecting, and optimizing the human element of aviation. This dedication to the warfighter is now at the center of our nation's highest strategic priorities. The Department of Defense (DoD) notes that achieving "Decision Advantage" is the ultimate goal, a goal that can only be reached through an agile, user-focused, and product-centric development process that empowers the warfighter at all echelons (DoD, 2023). Furthermore, the *Artificial Intelligence Strategy for the Department of War* states unequivocally that this can only be accomplished through a "trusted, responsible, and human-centric approach" (Department of War (DoW), 2026).

Since our inception during World War II, AEPs have championed this very user-centric approach. As a small but highly specialized cadre of approximately 30 active-duty officers, we work closely with industry, government scientists, engineers, and aviators
to consistently place ourselves at the forefront of technological innovation. This article highlights our distinguished legacy to make an important point: our community's role is just as critical, if not more so, today than ever before. As we look to a future defined by autonomy and artificial intelligence (AI), the vision is not

merely for the AEP community to keep pace, but to help lead the way. We must ensure that as Naval Aviation systems become more "intelligent," our collaborative efforts to support warfighter integration with those systems keep pace. This remains our enduring commitment as we continue to enhance aviator performance, mission effectiveness, safety, and survival in an age of autonomy.

Our Genesis: Applying Science to a World War

The AEP community was not born in a quiet laboratory; it was forged in the crucible of global conflict. As the United States plunged into World War II, the demand for naval aviators skyrocketed, but this urgency was crippled by staggering training attrition rates. In response, the Navy turned to a new kind of specialist to solve the problem. On February 7, 1941, then-RADM Chester Nimitz formally established the H-V(S) designation for Naval Aviation Psychologists, giving them a clear mission: apply numerical methods to pilot selection (Petho, 2016).

This data-driven mandate was a radical departure from the subjective interviews of the time. Pioneers like John Jenkins, Jack Dunlap, and E. Lowell Kelly developed groundbreaking tools for the time like the Biographical Inventory, which correlated life history with training success (Petho, 2016; McFarland & Franzen, 1944). Their work, a forerunner of modern aviation selection, dramatically reduced attrition and laid the intellectual foundation for the modern Aviation Selection Test Battery (ASTB). From here our role evolved to include aviation training and training evaluation. AEPs were deployed forward, with members like LCDR Verne Lyon collecting aviator performance data aboard the USS *Ticonderoga* during combat, even surviving a kamikaze attack to continue his mission (Grubb, 2016). In the post-war era, this quantitative rigor was applied to aviation safety, where pioneers like ENS John Charles championed the statistical analysis of mishap data, leading to the first formal human factors specifications for aircraft design, such as MIL-H-22174 (Petho, 2019). This institutionalized the AEP's critical role in systems acquisition, establishing a legacy of proactive, data-driven, and operationally focused problem solving.

The Enduring and Evolving Mission of the AEP

The Department of Defense's Human Systems Integration (HSI) framework provides a useful framework for understanding our community's mission. HSI mandates the comprehensive integration of human considerations into system design to optimize total system performance and minimize total ownership costs. Within this unified framework, our core domains of expertise within aviation – Selection, Training, Safety, and Human Factors – have been the bedrock of our contribution to Naval Aviation for over 80 years.

While the remainder of this article focuses heavily on the transformative impacts of AI and autonomy, it is important to emphasize that this is not our only area of emphasis. We will continue to execute and advance our foundational roles across all of our traditional domains. Furthermore, AEPs are actively engaged in solving a wide array of other critical operational challenges. Preparing the warfighter for the future fight means addressing the physical and cognitive tolls of extended mission duration, optimizing performance in GPS- and communications-denied environments, enhancing cold weather survival capabilities, innovating next generation training solutions, driving data driven decision making, and advancing aircrew conditioning programs. Our mandate encompasses the full spectrum of human performance. Today, these same HSI domains provide the essential framework for implementing the DoW's AI strategy and tackling the most complex challenges of the 21st-century battlespace.

Aviator Selection: Finding the Right Stuff for a New Era

Naval aviation candidates take the ASTB in the Naval Aerospace Medical Institute at NAS Pensacola.

Our legacy in selection is clear: we replaced guesswork with science. Today, the *DoW AI Strategy* calls for "transforming the workforce to be AI-ready," and our community is on the front lines of this transformation (DoW, 2026). The cognitive demands on an aviator in a Human-Autonomy Teaming (HAT) environment will be fundamentally different. Our next great challenge is to define and identify the psychological and cognitive attributes needed to succeed in this new paradigm. We must now ask: What are the cognitive traits of an effective swarm commander? How do we select for individuals who are capable of effectively working with AI agents? Furthermore, given the demand for a higher number of qualified aviators we must ensure that our selection models do not screen out candidates likely to succeed in training and beyond due to overreliance on tools that systematically disadvantage specific groups.

The rapid evolution of the future battlespace demands that our selection tools be capable of similar rapid adaptation, which is expected to require more frequent renewal of these tools. As AI changes the nature of warfare it also offers the potential to speed responsive updates to our selection methods. This requires that AEPs proactively grow our knowledge of AI, conduct necessary basic and applied research, and guide its appropriate use.

Aviator Training: Forging the Human -AI Partnership

From the beginning, our work in selection has been intrinsically linked to training outcomes. Today, the training revolution is already underway as we guide the enterprise's transition from legacy, time-based syllabi to agile, competency-based training paradigms. Our community is leading the charge in leveraging technologies such as Extended Reality (XR) to provide more accessible and data-rich individualized training environments (Mercado & Natali, 2019; Sciarini, 2019; Seech & Natali, 2022). AEPs are now at the forefront of developing the very tools CNATRA needs to modernize, including AI-assisted scheduling systems, individualized student feedback, and flexible digital syllabi (Rao, et al, 2023). While fielding these dynamic, individual-focused technologies, we are also leading the research to mitigate their unintended consequences, such as the work being done through NATO's HFM-346 research group to understand and mitigate cybersickness (Beadle & Cox, 2025).

Once a student masters the fundamentals of flying their own aircraft, the focus must inevitably shift to executing complex missions alongside others. This is where Live, Virtual, and Constructive (LVC) training environments become essential. As the future battlespace becomes more distributed, our ability to train as a cohesive joint and coalition force is paramount. AEPs are leading the effort to optimize these LVC environments from a human factors perspective, ensuring that aviators are prepared

A student naval aviator conducts VR flight training at Training Air Wing 4 as part of the Naval Aviation Next—Project Avenger flight training program.

not just as individual operators, but as fully integrated members of a combat team.

Crucially, our work directly enables a core goal of the *DoW AI Strategy*: developing and delivering AI-enabled capabilities at speed and scale (DoW, 2026). AI has a transformative role to play in both individual training and LVC mission execution. At the individual level, our most vital task is developing the new science for training humans to work with AI agents. This involves leveraging AI-assisted debrief tools to provide immediate, objective feedback, and teaching new skills like querying a Large Language Model (LLM)-based agent for tactical information or interpreting an Explainable AI (XAI) system to build calibrated trust. At the collective LVC level, we are preparing for a future where constructive entities are no longer driven by rigid, rule-based logic, but are fully AI-enabled. In these advanced training environments, Red Air (enemy aircraft) will eventually be able to digest real-world adversary tactics and dynamically employ them. AEPs must ensure that our aviators are cognitively equipped to face and defeat these adaptive, intelligent adversaries in a simulated environment before they ever meet them in combat.

Aviation Safety: Mitigating Risk in a More Complex World

We have institutionalized the principle that understanding human error is the key to preventing accidents, making Naval Aviation progressively safer (Patrey & Corpus, 2019). Today, our approach to safety continues to evolve. We are moving beyond solely reactive mishap analysis to proactive, predictive methods like Maintenance Line Operations Safety Assessments (M-LOSA), where peer observers collect data on everyday maintenance threats and errors to identify systemic risks before they can lead to a mishap (Beadle, 2024). This proactive stance is essential as AI introduces new and complex failure modes. Our role as safety experts now expands to directly support the DoW's (2026) ethical AI principles: Responsible, Equitable, Traceable, Reliable, and Governable. We ensure AI is Traceable by championing XAI, Reliable by rigorously testing the human-machine interface, and Governable by defining the standards for meaningful human control.

Human Factors Engineering (HFE): Designing the Partnership

This domain is the absolute epicenter of the AI challenge. The *DoW AI Strategy* mandates a robust "test, evaluation, verification, and validation ecosystem" to ensure trust in AI-enabled systems (DoW, 2026). Our community is working at the forefront by focusing on the most important component: the human. Within the broader HSI construct, our Human Factors expertise ensures that hardware and software are built around human cognitive and physical capabilities. All key technical hurdles in HAT are fundamentally human factors problems that our community is uniquely positioned to solve (Vorm, 2020). We are leading, guiding, and supporting the critical research to design the user interface solutions for a single operator managing multiple autonomous aircraft; championing Explainable AI (XAI) to build trust; and defining what constitutes meaningful human control in a world of increasingly agentic AI (Geeseman, Cox, & Braly, 2025).

Crucially, we are also actively engaged in pioneering the next generation of human performance measurement by integrating advanced Operator State Monitoring (OSM) and Brain-Computer Interface (BCI) technologies directly into our HAT research ecosystems. OSM / BCI technologies are being integrated into human machine teaming testbeds (Cohn et al., 2020), helping us to understand aircrew fatigue / task saturation, and providing insight into cognitive / physiologic state. This is the only way to truly validate adaptive autonomy concepts where the AI can dynamically respond to the operator's cognitive state, preserving decision superiority

XQ-58A Valkyrie, highly autonomous UAV conducts a test flight with an F35A Lightning II at Eglin AFB.

and preventing cognitive overload in the future fight.

A Call to Action for the AEP Community

The strategic imperatives are clear. To meet these demands, we must take deliberate action. First, we must continue sharpening our edge. The *DoW AI Strategy* calls for a "digitally fluent workforce" (DoW, 2026). To lead, we must commit to continuous learning, ensuring AEPs have the skills in data science, agile development, and AI to be expert participants in their creation, not just consumers. Second, we must ensure strategic placement of our expertise by advocating for AEPs in key billets across the acquisition enterprise, RDT&E commands, and policy-making bodies. We must serve as catalysts for institutional agility, helping the training enterprise overcome legacy inertia and rapidly integrate the objective, data-driven readiness metrics and competency-based models required to produce the aviators of tomorrow. Finally, we must continue to champion the balance of speed with rigor. The DoW rightly demands we move faster. Our community's role is to ensure that this speed is paired with rigorous science, upholding the DoW's core principles and avoiding the catastrophic failures that can occur when human factors are ignored.

Conclusion

Our community's journey, from the flight decks of World War II to the AI-driven battlespace of tomorrow, has been guided by a singular and unwavering focus: the human in the system. The strategic landscape is clear—the future of naval power will hinge on successful human-autonomy integration. While technology provides the tools, the *Artificial Intelligence Strategy for the Department of War* makes it clear that our enduring advantage comes from our people (DoW, 2026). The Aerospace Experimental Psychology community is uniquely suited to support the execution of this strategic priority. While we are a small community and cannot accomplish this massive undertaking alone, our unique position as PhDs in uniform allows us to effectively bridge the gap between civilian researchers, engineering teams, and fleet operators (Pilots and NFOs). Through our strategic billets across commands, we foster the essential collaborations needed to drive these innovations. With our unique blend of operational experience, scientific expertise, academic diversity, and forward-thinking leadership, we are key to unlocking that potential. Our history is one of innovation, and our future is one of indispensable leadership in building a truly responsible, human-centric, and effective AI-enabled force. We will continue to ensure that the most advanced, adaptable, and ultimately, most lethal component in any weapon system remains the human being who operates it.

LCDR Natali practices flight maneuvers in the T-45 mixed reality trainer.

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TRAINING FOR STUDENT AEPS

Inside the SNAEP Training Pipeline

By: LCDR Michael "Crisis" Kukenburger, Ph.D, AEP #174

There is a distinct weight to the gold wings of a Naval Aerospace Experimental Psychologist. It is not just the physical weight of the metal pinned to a uniform, but the profound operational responsibility they represent. When those wings are pinned on, an officer is no longer just a scientist; they are a critical bridge between the bleeding edge of human performance research and the tactical reality of the warfighter.

As the lead instructor for the Student Naval Aerospace Experimental Psychologist (SNAEP) training course at the NAMI here in Pensacola, Florida, I have the unique privilege of overseeing that transformation. Every day, I watch highly accomplished civilian researchers—individuals who have already conquered the rigors of doctoral programs—step into an entirely new crucible. Our mission at NAMI is not to teach them how to be psychologists or researchers; they already possess that expertise. Our mission is to teach them how to be Naval Officers, and crucially, how to operationalize their science in the most demanding environments on earth.

The "Next Generation of AEPs" is not just a thematic buzzword; it is a daily reality walking the halls of NAMI. As warfare evolves at an unprecedented pace, the way we train the minds that will optimize our students must evolve in tandem.

NIFE students participate in a lecture on the mechanics of aircraft systems and engines at NASC.

The Anatomy of a SNAEP: Breaking the Academic Mold

The officers who enter the SNAEP pipeline arrive with diverse, high-level academic backgrounds—from neuroscience and cognitive psychology to human factors engineering and industrial-organizational psychology. They have spent years in controlled laboratory environments, writing peer-reviewed papers, and mastering experimental design. However, the Fleet does not operate in a controlled laboratory.

The first and most critical phase of the SNAEP training pipeline is the cultural and environmental immersion with the Naval Flight Students. SNAEPs train side by side with the future aviators of the fleet to learn their experience. We have to break the traditional academic mold and introduce SNAEPs to the fast-paced, unforgiving realities of Naval Aviation. A Ph.D. in human factors is invaluable, but its utility is severely limited if the researcher does not fundamentally understand what a aircrew are experiencing under 7 Gs, or the cognitive overload a strike pilot faces during a night trap on a pitching flight deck.

This is why our students go through Naval Introductory Flight Evaluation (NIFE). They sit in the same classrooms as the Student Naval Aviators and Naval Flight Officers they will eventually support. They undergo the same grueling water survival training, the same spatial disorientation profiles in the spinning chair, and the same hypobaric chamber flights to experience hypoxia firsthand.

As an instructor, watching a SNAEP experience their first hypoxic symptom in the chamber, or watching them successfully navigate the helo dunker, is a profound milestone. It is the moment the theoretical becomes practical. They are no longer studying human limits on a spreadsheet; they are experiencing them. This shared adversity builds immediate credibility with the aviation community. When an AEP eventually steps onto a flight line or into a simulator to recommend a procedural change, they do so not as an outsider, but as someone who has shared the physiological risks of the trade.

Naval flight students participate in the helo dunker.

Modernizing the Curriculum: Preparing for the 2030s

Historically, AEP training heavily emphasized classical aviation psychology: spatial disorientation, fatigue management, visual perception, and crew resource management (CRM). While these remain foundational pillars of our curriculum, the operational landscape of 2026 demands a radical expansion of our focus.

The wars of the future will be defined by cognitive dominance as much as air superiority. Therefore, we are actively evolving the SNAEP curriculum to address the complexities of modern warfare.

Human-Machine Teaming and Autonomy: Our students are no longer just learning how humans interact with dials and glass cockpits; they are learning how humans supervise and trust artificial intelligence. We are integrating concepts of autonomous wingmen and advanced algorithmic decision aids into the coursework. An AEP must be able to evaluate not just if a pilot can physically fly an aircraft, but whether they can maintain situational awareness while managing a swarm of unmanned assets.

Data-Driven Readiness and Biometrics: The days of relying solely on subjective surveys to measure fatigue or cognitive load are ending. We are training our SNAEPs to understand and integrate biometric sensors, eye-tracking, and neurological monitoring (like EEG) directly into operational and simulated environments. They must be fluent in data analytics and understand how to translate massive streams of physiological data into actionable leadership decisions.

Complex Organizational Dynamics: As recent research from our community has highlighted, safety and performance are deeply tied to organizational climate. We are pushing our students to view human performance through a wider lens, analyzing how unit leadership, extreme operating environments, and organizational stressors impact the individual warfighter's ability to execute the mission.

The Whole Person Concept: Developing the Officer

While the academic and physiological training is rigorous, my primary focus as the lead instructor is the development of the officer. The AEP community is small—often referred to as a "boutique" community within the Medical Service Corps. Because of our size, a single AEP can wield outsized influence on major acquisition programs at NAVAIR, overarching medical policies at BUMED, or daily flight operations at a Training Air Wing. Therefore, leadership is not a secondary objective of the SNAEP course; it is the core objective.

We require our students to brief senior leadership, defend their research methodologies under pressure, and navigate the complex administrative bureaucracies of the Navy. They learn that a brilliant scientific solution is useless if they cannot communicate its value to a strike group commander in

LCDR Kukenberger, LT Tsai, and members of VT-10 pose in front of a T-6 Texan II inside the hangar bay.

three minutes or less. We teach them the art of the "bottom line up front" (BLUF) and the necessity of being a diplomat for science in an operational world.

Furthermore, we instill the ethical imperatives of our profession. AEPs are the ultimate advocates for the human in the loop. In a military culture that rightfully prizes mission accomplishment, the AEP is often the lone voice in the room demanding that we protect the cognitive and physical well-being of the operator. That requires moral courage, a trait we work daily to cultivate in our students.

The Legacy Continues

Whenever I stand at the front of the classroom, I am acutely aware of the legacy I am tasked with maintaining. The AEP community has a storied history of solving some of the most complex human factors challenges in military aviation. The solutions developed by our predecessors have saved countless aircraft and, more importantly, countless lives.

Looking at the current crop of SNAEPs, I am immensely confident in the future. The individuals volunteering for this demanding path are sharper, more adaptable, and more technologically fluent than ever before. They are asking the right questions, challenging outdated assumptions, and demonstrating a fierce dedication to the Fleet.

When a SNAEP finally completes the syllabus and stands at the front of the room to receive their wings—as my own peers did just a short time ago—it represents the culmination of immense effort and the beginning of a vital career. They leave NAMI not just as scientists, but as Naval Aerospace Experimental Psychologists, fully prepared to deploy to the Fleet, tackle the unanswerable questions, and ensure that the human operator remains the United States Navy's greatest asymmetric advantage.

AN OPPORTUNITY FOR GROWTH

From NAMI to Academia: Navigating the DUINS Transition

By: LCDR Rebecca "Rainbow" NeSmith, M.S., AEP #168

After fourteen years in the Navy, this summer begins my most exciting set of orders to date: getting a PhD. I joined the Navy in 2012 as a Naval Aviator with a Bachelor's degree in psychology and shore tour saw the completion of a Master's degree in Human Factors. I laterally transferred to the Aerospace Experimental Psychology (AEP) community in 2020 and completed my first tour at Naval Aerospace Medical Institute (NAMI) working on the Aviation Selection Test Battery (ASTB) as the Biostats Division Officer. Over the past three years I have brought my subject matter expertise in flight school and fleet life to test development and administration, but I realized that I wanted to become more technically proficient. Attempts to learn R and Item Response Theory from YouTube tutorials proved a fruitless task. I simply did not have the focus and time available to master the subjects my Master's degree lacked. Fortunately, BUMED offers Medical Service Corps well-qualified officers the opportunity to complete critical education and training needs at no cost to the service member through the Duty Under Instruction (DUINS) program. DUINS pays the member's full salary as well as tuition and fees for programs between one and three years in length. After coordinating with the Specialty Leader, I applied to the Academic Year 2026 DUINS program for the completion of a PhD in Industrial Organizational Psychology and accepted admission to the University of Minnesota. While there are very few lateral transfers within the AEP community, I offer the following recommendations to anyone considering DUINS for a PhD.

LT NeSmith poses next to the P-3C Orion aircraft after completing her final flight on the platform.

Consider your school carefully

DUINS allots just three years to complete a PhD. Your advisor needs to be not only on board with a compressed timeline, but also willing to advocate on your behalf to ensure you are able to meet all degree requirements and defend on time. I chose UMN, in part, because there are currently two military students from other branches enrolled who are on track to finish within their own three-year restrictions. Knowing that

there was a proven path to follow reduced stress considerably when considering course load and dissertation requirements. Compared to other schools I spoke with, UMN does not require a master's degree be completed enroute to the PhD. I am able to focus my efforts toward course work and the dissertation without an additional hurdle to clear along the way.

Location also factored in greatly when considering schools. I knew that this was a rare opportunity to choose location outside of the Navy hubs and took full advantage of it to live closer to family.

Apply with an area of study in mind

Capitalize on your Navy experience and connections. If you plan to answer questions and solve problems relevant to Big Navy concerns, and it will be easier to access data sets to streamline your research. Building off of my work at NAMI, my stated goal of my dissertation is to develop a new measure for the ASTB. Throughout the program, I'll complete a meta-analysis, design and validate a measure and collect data in the ASTB lab from flight students awaiting training in collaboration with the AEPs stationed there.

Start your package early

Do not wait until the DUINS message is released to begin compiling documents and talking to potential advisors. My package ended up being over 60 pages long between FITREPS, awards, personal statements and recommendations. It takes time to gather all of the information so use the previous year's message to get a head start. Additionally, DUINS requires either a preliminary acceptance letter from the university or a letter stating that you meet all of the requirements for acceptance. Policies vary by university. Clemson University sent a full acceptance letter on the spot, while UMN's admissions department could not make a statement of any kind outside of the normal application cycle due to university policy. In my case, I should have applied to UMN for the AY2025 year and requested a deferral to 2026 to better align with the summer DUINS application deadline. I was fortunate to have strong letters of support from my potential advisor at UMN and the acceptance letter from Clemson to show the DUINS board that I was a desirable candidate. Once selected for DUINS in June, I had to wait until UMN decisions were made in January to update my school selection.

LT NeSmith as an instructor pilot in the T-6 for VT-10 at NAS Pensacola

Conclusion

The DUINS program is a phenomenal opportunity, and I am very excited to see what the next three years bring. Being back on campus as a 36-year-old will surely bring unique challenges, but the life and work experience that I've gained will provide additional direction to my studies.

EARNING THE WINGS OF GOLD

A Reflection from the SNAEP Class of 2025

By: LCDR Michael "Crisis" Kukenberger, Ph.D., AEP #174; LT Edward Tsai, Ph.D., AEP #175; LT Quin Kidder, Ph.D., AEP #176; and LT Abbie Hutton Ph.D., AEP # 177

What was the transition into the Navy like?

LT Edward Tsai (AEP #175): Coming into the SNAEP pipeline, the biggest shock to the system is undeniably Naval Flight Introductory Evaluation (NIFE). In a doctoral program, your primary adversaries are a looming dissertation deadline and reviewer comments. At NIFE, your adversary is a sinking helicopter simulator and the physical reality of hypoxia. You quickly realize that the Navy doesn't just want your scientific mind; they need to know you can survive the environments you are tasked with studying. There is a deeply humbling moment in the water survival pool where your Ph.D. means absolutely nothing, and your ability to remain calm under pressure means everything.

LT Quin Kidder (AEP #176): I completely agree with Edward. The academic side of the SNAEP curriculum—the deep dives into spatial disorientation, sensory physiology, and cognitive workload—felt familiar. It was the physical and cultural immersion that redefined my perspective. We are taught to be advocates for the human in the loop. You cannot authentically advocate for a Student Naval Aviator if you haven't sat in the same spinning chair, felt the same G-forces, or experienced the same exhaustion. NIFE strips away the academic detachment.

LCDR Kukenberger and LT Tsai practicing their checklist and emergency procedures in the simulator.

LT Abbie Hutton (AEP #177): For me, the transition was about learning a completely new language. Academia has its own dialect, but the military is an alphabet soup of acronyms, operational instructions, and rigid hierarchies. The SNAEP program forces you to translate your scientific expertise into the "Bottom Line Up Front" (BLUF) format. I had to learn that a brilliant, ten-page human systems analysis is useless to the fleet if I can't communicate the operational impact and the recommended mitigation in a three-minute brief.

What was the turning point in training when things start "click"?

LCDRs Sarah Melick, Nick Armendariz, Kukenberger, NeSmith and LT Quin Kidder attend the winging ceremony of LT Abbie Hutton.

LT Quinn Kidder (AEP #176): The turning point for me happened during Primary flight training. We were standing on the flight line, watching aircraft recover, and a senior instructor pointed out a specific modification to the life support gear—a modification directly resulting from AEP research a few years prior. It suddenly wasn't just a textbook case study anymore. Real pilots were flying safer, and maintaining better situational awareness, because an AEP recognized a human factors breakdown and fought to fix it. That was the moment the weight of the wings truly registered. We aren't just publishing papers; our data changes how the Navy fights.

LCDR Michael Kukenberger (AEP #174): For me, the turning point was realizing how deliberately the Navy develops contextual competence across the aerospace medicine community. In organizational psychology, we talk constantly about the importance of context. The Aerospace Medicine Officer curriculum puts that idea into practice by ensuring that Aerospace Experimental Psychologists, flight surgeons, and others in the aerospace medicine community understand the operational environment they are being asked to support. Through aviation training, water survival, physiology, classroom instruction, and exposure to the culture of naval aviation, we are not just learning about aviation from the outside. We are developing the context needed to ask better questions, interpret data more responsibly, and translate our expertise into recommendations that are actually useful to the fleet.

What are you doing after training?

LT Edward Tsai (AEP #175): Now

LT Tsai preparing for a training flight in the T-6

that I am stationed at the Navy Medical Research Center (NMRC), I am incredibly eager to dive into the research and development side. The SNAEP program gave me the operational context I need to ensure that the human performance research we conduct in Washington, D.C., directly translates to the tactical edge. My focus has been on understanding how different exposures resulting from operating in the dynamic flight envelop can potentially impact aviator health in different ways.

LT Abbie Hutton (AEP #177): Since SNAEP training, I have joined the Human Systems Engineering Department at NAWCAD (NAS Patuxent River). NAWCAD is the epicenter for testing and evaluating next-generation aircraft and systems. My focus is on human-autonomy teaming and trust among aviators. As we push toward more autonomous systems, ensuring the human-machine interface is intuitive and understanding the fleet's response is going to be the defining challenge of our generation.

LT Quinn Kidder (AEP #176): I'm remaining at NAMI in Pensacola. Working at the source of aeromedical training is a unique privilege. I'm looking forward to taking my background in organizational behavior—specifically looking at the motivations behind counterproductive work behaviors—and applying it to the aviation training pipelines. How we manage stress, fatigue, and organizational climate in a training command directly dictates the safety culture those aviators will take to the fleet.

LCDR Michael Kukenberger (AEP #174): The overarching theme for all of us is readiness. No matter where we are stationed, our core mission is optimizing the human weapon system. We are stepping into the fleet at a time when technology is advancing faster than the human brain's ability to process it. Our job is to bridge that gap.

Final Thoughts

LCDR Michael Kukenberger (AEP #174): I came to the AEP community after spending nearly two decades as a social scientist within academia, building research, teaching, and applying organizational psychology across a wide range of organizations. Becoming an AEP gave me the chance to use that training and experience in support of a mission I can truly get behind. As AEPs, our role is to support the aviators and aircrew who take on some of the most complex and demanding work in the Navy. One of the most powerful parts of the SNAEP experience was training alongside brave and dedicated young men and women who chose a path of service that asks a great deal of them and their families. This training provided a deeper appreciation for the people our work is ultimately meant to support and reinforced the responsibility we have to make that work useful.

LCDR Kukenberger takes a moment to relax at home with his daughter and family dog.

BRAVO ZULU

LEXINGTO N, Massachusetts. The Aerospace Experimental Psychology Community holds their annual meeting at the MIT Lincoln Laboratory. Pictured (from left-to right). CDR Lee Sciarini, LT Brittany Nielson, LCDR Michael Natali, LT Kaila Vento, LCDR Michael Kukenberger, LT Rebecca NeSmith, LCDR Sarah Melick, CAPT Chris Foster, LT Quin Kidder, CAPT Tatana Olsen, LT Adam Braly, LT Alexandra Kaplan, CDR Joseph Geeseman, LT Alejandro Albizu, LT Edward Tsai, CDR Brennan Cox, LCDR Aditya Prasad, LT Sasha Brownsberger, LCDR Todd Seech.

Publications

Albizu, A., Jamison, L. K., Strong, K. D., Russell, K. M., Sibley, C. M., McGarry, S. P., Brown, N. L., Draheim, C. D., Foroughi, C. K., **NeSmith, R. L.**, **Melick, S. R.**, & Coyne, J. C. (In press). Eye-tracking factors during spatial ability task predict IRT-base item difficulty and naval flight training performance. *Applied Human Factors Engineering International*.

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Biggs, A. T., Jameson, J., **Seech, T. R.**, Markwald, R. R., & Russell, D. W. (2026). Leader and subordinate perceptions impact different elements of safety reporting. *International Journal of Occupational Safety and Ergonomics*, *32*(1), 125–131. https://doi.org/10.1080/10803548.2025.2509419

Borden, C. K., & **Vento, K. A.** (2026). No effect of mild urinary tract infection-like symptoms on psychomotor vigilance. *Aerospace Medicine and Human Performance*, *97*(4), 284–288.

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Kopecky, J., Vorm, E. S., & **Albizu, A.** (2026). *Intellectual readiness: final report*. (Report No. AD1351237; NRL/5580/MR—2026/2). Naval Research Labora tory. dtic.mil.

Priest, L., Meade, A., Moore, C., **Kidder, Q.**, & Peters, J. (In press). Citizenship or damage control? Interactions between organizational citizenship behavior, counterproductive work behavior, and abusive supervision. *International Journal of Organizational Theory and Behavior*.

Presentations

Drabish, A. C. (Co-Chair), Rizzardo, C. A. (Co-Chair), Landers, R. N. (Discussant), & **Vento, K. A.** (2026, April 30–May 2). *Extended-reality applications for selection and training assessments* [Symposium]. So ciety for Industrial and Organizational Psychology Annual Conference, New Orleans, LA, United States.

Drabish, A. C., Rizzardo, C. A., & **Vento, K. A.** (2026, April 30–May 2). *Construct validation of two VR-based assessments of self-regulation* [Symposium presenta tion]. Society for Industrial and Organizational Psychology Annual Conference, New Orleans, LA, United States.

Heimark McCloughan, H., Barnson, B., Clough, H., Shivers, B. L., Silder, A., **Vento, K. A.**, Weisenbach, C. A., & Latour, A. (2026, July). *Multimodal approach to eval uating a Naval Aircrew Human Performance Program: Lessons learned from literature, SMEs, and practice* [Oral presentation]. Aircrew Performance Summit - Medical University of South Carolina 2026, Charleston, SC, United States.

Knapp, J. (2026, May). *Crew Resource Management* [Oral presentation]. 2026 United Airlines Human Fac tors Round Table, Denver, CO, United States.

McCloughan, N. H., **Vento, K. A.**, Buell, K., & Weisenbach, C. (2026, May). *Pilots and aircrew perceptions of a human performance program* [Oral presentation]. Aerospace Medical Association Annual Scientific Meeting, Denver, CO, United States.

McCloughan, N. H., **Vento, K. A.**, Buell, K., Ritchney, K., Shivers, B., & Weisenbach, C. (2026, February). *Field assessment of pilots and aircrew enrolled in a human performance program* [Oral presentation]. 2026 US Naval Aeromedical Conference, Naval Air Station Pensacola, FL, United States.

Rizzardo, C. A. (Co-Chair), Drabish, A. C. (Co-Chair), & **Ven to, K. A.** (2026, April 30–May 2). *Advances in meas urement of self-regulation and attentional control* [Symposium]. Society for Industrial and Organiza tional Psychology Annual Conference, New Orle ans, LA, United States.

Rizzardo, C. A., Drabish, A. C., & **Vento, K. A.** (2026, April 30–May 2). *Testing and developing immersive psy chometric assessments: Stress and self-regula tion scenarios* [Symposium presentation]. Society for Industrial and Organizational Psychol ogy An nual Conference, New Orleans, LA, United States.

Vento, K. A., McCloughan, N. H., Buell, K., & Weisenbach, C. (2026, February). *Thematic analysis of pilots and aircrew perceptions of a human performance program* [Oral presentation]. 2026 US Naval Aeromedical Conference, Naval Air Station Pensacola, FL, Unit ed States.

Weisenbach, C., McCloughan, N., McIver, I., & **Vento, K. A.** (2026, May). *Pelvic floor dysfunction incidence among U.S. aviation active-duty military personnel* [Poster presentation]. Aerospace Medical Associa tion Annual Scientific Meeting, Denver, CO, United States.

Awards

Defense Meritorious Achievement Award
CDR Brennan Cox

2025 MHS Allied Health Leadership Excellence Award
LCDR Mike Natali

AY25-26 Teacher of the Year for Majors Curriculum
LCDR Jennifer Knapp

MEET AN AEP

LT Alejandro "Stranger" Albizu, Ph.D., AEP #173, talks about his journey from grad school to the Navy

What is your Academic Background?

While in high school, my family was deployed to the small island of Aruba. At that time, Aruba became one of the world leaders in sustainable energy use. Eventually, I was able convince our headmaster at the International School of Aruba to allow a few other students and I to build our own energy-producing wind turbine for the school. Our achievements in this area afforded us a visit from the King of the Netherlands. With this, I knew that I wanted to continue to apply science and technology toward meaningful pursuits.

Once I reached undergrad at Florida State University, my fascination with the promise of technological solutions to complex problems led me to join a non-invasive brain stimulation lab as a research assistant. In the lab, I had the opportunity to conduct research in translational applications of non-invasive brain stimulation for combat veterans with aberrations in functional neural networks, using electroencephalography to identify neural oscillatory targets for brain stimulation.

Given these experiences, I wanted to continue to understand the complexities of the human brain in a Neuroscience PhD program. Naturally, I applied to several labs that focused on non-invasive brain stimulation. In my exploration, I knew I found the right mentor when he said "I'm looking for a graduate student I wouldn't mind grabbing a beer with". Under his mentorship at the University of Florida, I was lucky enough to be selected as an NSF graduate research fellow to investigate methods of optimizing the therapeutic effects of non-invasive brain stimulation which became the basis of my dissertation. It was that much more rewarding that after my defense, my mentor and I went to the bar to grab a beer.

From a young age, LT Albizu dreamed of converting complex physiological data into actionable operational insights.

How did you learn about the AEPs?

Most of my academic trajectory has happened entirely by mistake. As I alluded in my opening statement, I was a military brat but military service was a family tradition that I was proud to uphold. In undergrad, I originally planned to commission as an Air Force pilot after graduating. However, my recruiter missed the deadline to get my package to the board in my senior year so I took that as a sign to pursue my passion for science.

Once I neared the end of my PhD program, I began searching for military jobs for Neuroscience PhDs. The first I found that might be a fit was as an Army Research Psychologist (71F). When I went to visit the recruiter, I accidentally walked into the Navy recruiter's office and mentioned I was interested in a research psychology position. They told me about the AEP community being able to fly while doing science. I knew this was my dream job and signed up right away!

What was the most challenging part of AEP training?

I would say that performing the emergency procedures and radio calls in the cockpit were challenging. They were deceptively simple during practice at home or in the simulator. Noticing the subtle warning signs while trying to monitor all the other aspects of the aircraft quickly led to tunnel vision and my rehearsed radio calls

LT Albizu (top left) pictured with his NIFE class.

turned into tongue twisters as soon as I keyed the mic.

Experiencing that task saturation firsthand was invaluable. It perfectly underscored the intense cognitive and physiological demands placed on our aviators and highlighted exactly why the AEPs are essential for identifying, measuring, and ameliorating these challenges.

What was your most memorable moment during training?

The first thing that comes to mind is the aerobatics in the T-6, like riding a high-speed rollercoaster where you are in complete control of the tracks. Feeling the physical onset of the Gs and looking out over the horizon during a barrel roll is an unforgettable experience.

A close second was performing auto-rotations in the TH-73. I had never flown in a helicopter so it was an exciting introduction to cut the engine off midflight and essentially freefall our way into a safe landing.

LT Albizu aboard LPD-26 with the Artemis II capsule.

What are you working on now?

I am currently at the Naval Research Laboratory in Washington, DC. I am serving as a division officer and military deputy for the Information Technology division.

While I oversee a very diverse research portfolio from AI to robotics, I am also conducting my own projects to leverage my expertise in non-invasive brain stimulation to accelerate training in Naval flight students. This billet has been an outstanding opportunity to conduct bench-level science while expanding my leadership abilities.

What is something other people are surprised to learn about you?

A story that many of my fellow AEPs have said is surprising (or even sometimes unbelievable) is: why I came to the annual AEP meeting with a broken arm. The reason was that I had to save a small child from a burning building, sacrificing my dominant arm in the process.

While my sacrifices were heroic and I was so humble not to mention this story or point out my cast, the community—to this day—suspects an alternative story.

What is the best part of being an AEP?

The best part of being an AEP is two-fold:

First, the range of opportunities you have access to is unrivaled. We are not confined to a single discipline or a traditional laboratory setting. From undersea to space and cyber space (and everything in between), you can do it all.

Second, is that the level of impact you can have is massive. We are not just conducting bench-level science for the sake of publishing papers, we are directly molding and shaping the future Fleet.

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