

# AEROSPACE EXPERIMENTAL PSYCHOLOGY

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Naval Aerospace Experimental Psychologists (AEPs) trace their roots to the National Research Council's Committee on Selection and Training of Civilian Aircraft Pilots. The Committee's initial efforts were in response to the lack of work in the field following the accelerated growth in commercial aviation after the First World War. Based on the recognition that the "human element" contributed to at least 50% of the accidents in Commercial Aviation and over 50% of the accidents in Military Aviation, the Committee sought to create a reliable approach to selecting the best candidates for pilot training. In July of 1940, members of the committee were funded by the Civil

Aeronautics Administration (CAA; a precursor to the Federal Aviation Administration), to establish the "Pensacola Project," a scientific investigation focused on understanding the selection criteria that should be used for recruiting, selecting, and testing military pilots. Based in Pensacola, FL, the project team included 15 civilian scientists from CAA, the National Research Council, Harvard, and other institutions. The team examined multiple factors predic-

tive of pilot performance, conducted numerous research projects simultaneously, and generated impressive numbers of reports and publications, which benefited both civilian and military institutions. Ultimately, the team produced a battery of three tests, which became

delivering skilled aviators required more effective selection criteria and training curricula than were currently available. To help the Navy address these challenges, the Bureau of Medicine and Surgery formally established an Aviation Psychology section in October 1942. By

the end of World War Two, uniformed Aviation Psychologists had proven their value not only by developing effective selection tests and training curricula but, also, by providing scientifically driven insights to solve a range of novel "Human System" challenges associated with building, operating and maintaining the Navy's fleet of



*Twentynine Palms, CA. (Left to Right) LT Sarah Sherwood (AEP #160), LCDR Brennan Cox (AEP #142), and LT Eric Vorm (AEP #149) evaluating unmanned vehicles for CASEVAC use.*

known as the Naval Aviation Questionnaire. This was the precursor to today's Aviation Selection Test Battery (ASTB), overseen by AEPs at the Naval Aerospace Medical Institute (NAMI) in Pensacola, and administered to over 10,000 candidates annually around the globe.

The Pensacola Project officially ended in May 1941, shortly before the U.S. entered World War Two, increasing the need for skilled aviators tenfold. Along with this need came the recognition that

aviation platforms. In 1947, the Navy established the Medical Service Corps (MSC), with the AEP designator listed among the Allied Sciences Section. AEPs were granted flight status in February 1966, and were authorized to wear wings in April 1967. This status is critical to ensuring the AEP community remains attuned and responsive to the warfighter's needs, and able to inform the research and development of new capabilities from the Operational perspective.

Today, the AEP mandate extends far beyond Naval Aviation. Founded on the cornerstones of continuous improvement, safety driven culture, and a deep understanding of teamwork, the community's enduring work with Naval Aviation enables AEPs to seamlessly support the integration of High Reliability Organization (HRO) principles into Navy Medicine's vital mission set. Remaining true to its *Core Missions* - selection, training, human factors and safety - the community delivers solutions to a range of operational medicine-focused challenges that confront the entire Navy/ Marine Corps. In order to maintain its ability to flexibly address evolving Naval guidance and emerging needs, the community has added *Supporting Missions*, like strategic planning, acquisition, and Human Systems Integration (HSI). Tak-



*Pensacola, FL. AEPs past and present attend graduation for our newest team-members in Pensacola. (Left to Right) Dr Eric Muth (AEP #109), LT Nicholas Armendariz (AEP #,163), LT Sarah Beadle (AEP #164), CAPT Michael Lowe (AEP #132), LT Alexandra Kaplan (AEP #165), and Dr Henry Phillips (AEP #119).*

ing these missions to heart, AEPs continue to apply their scientific expertise to develop innovative solutions, use their acquisition skills to transform these solutions into new capabilities, and employ their analytic abilities to develop doctrine, policy, standards and strategy that improve the warfighting capability of Sailors, Marines, and the platforms they operate.

To commission as an AEP, candidates typically enter as a direct accession. In addition to meeting the standard Navy entry requirements, applicants seeking to become an AEP must also meet rigor-

ous educational and physical requirements. To become an AEP, candidates without previous military experience require a PhD in a human performance-focused field of study, typically, in human factors, industrial/organizational psychology, neuroscience, or an interdisciplinary program emphasizing human factors or behavioral sciences. Candidates with at least four years of commissioned service relevant to the AEP Core Missions and a Master's Degree from a human performance-focused program may also apply. Because the majority of AEP billets include the requirement to "Fly Navy," physical requirements begin with an annual medical recommendation for aviation duty (i.e., a flight physical). Once accessed into the MSC, and following Officer Development School, candidate AEPs - also known as "Student Naval AEPs (SNAEPs)" attend the Aero-medical Officer (AMO) Course at the Naval Aerospace Medical Institute (NAMI) in Pensacola, FL. AMO training includes 17.5 weeks of Naval Introductory Flight Evaluation (NIFE) training, followed by a SNAEP

-specific curriculum. During NIFE, SNAEPs must master aviation ground school, aviation survival training, and complete a fixed wing and rotary wing flight syllabus. The SNAEP curriculum includes seven weeks of postdoctoral level, AEP-specific training. AMO training culminates with graduation and receipt of the AEP "wings of gold." As part of this time-honored tradition, graduates receive their Naval Aerospace Experimental Psychologist designation number, enshrining their entrance into the community and signifying their preparation to "hit the deckplates running" at their first assignment.

At each stage of their career, AEPs are encouraged to pursue professional development opportunities. These opportunities include participating in the variety of courses and schools offered by the Navy, Department of Defense

(DoD), and partner organizations; taking leadership roles in professional organizations - including the U.S. Naval AEP Society (USNAEPS); and completing the rigorous certification process necessary to gain acquisition credentials. The AEP community recognizes that delivering innovative science is necessary but not sufficient to providing warfighters with cutting-edge capabilities. Translating scientific discoveries into useful products, be it materiel or knowledge, is crucial to ensuring that innovative research progresses through the DoD's acquisi-



*Reno, NV. AEPs at the 92nd Annual Aerospace Medical Association's Scientific Meeting.*

tion process, ultimately to be fielded to our warfighters. Success in this arena requires a deep understanding of, and experience with, the DoD's acquisition lifecycle processes. As such, acquisition training, certification, and expertise is a priority for AEPs. Beginning with SNAEP training, which dedicates a portion of the curriculum to acquisition-focused topics, the AEP community continuously seeks to advance its collective ability to navigate the acquisition process at all stages. There is a deep pride in the fact that over 70% of the community possesses acquisition experience and certification.

At present, there are 26 AEPs assigned to a wide array of positions and locations around the world. These AEPs serve in a variety of roles, from bench



level research to senior leadership positions, in Navy and in Joint roles. While there is no set career trajectory following receipt of their wings, AEPs are typically assigned to a research-focused billet, supporting Navy Medicine, Naval Aviation or the broader Navy/Marine Corps team. From there, AEPs continue to expand their scope of responsibility, taking assignments as department heads, program managers, product directors, deputy directors, and directors across a range of research and research funding organizations. At senior levels,



*LT Aditya Prasad (AEP #156) completes a training flight in a TH-57.*

AEPs are found in leadership roles, overseeing total workforce teams comprised of civilians, military and contractors, driving policy and strategy that informs the delivery of capabilities to the Navy/Marine Corps and the larger Joint team.

The combination of *Core* and *Supporting* missions allows the AEP community agility in addressing strategic guidance and emerging needs. As one example, the CNO's NAVPLAN 2021 calls for a dominant Naval Force, enabled by new training approaches and technologies. Responding to a need to train Naval aviators "better, faster, and cheaper," a team of AEPs is applying their aeromedical research and acquisition expertise to develop, implement, and validate a new flight training syllabus employed as part of the Chief of Naval Air Training's (CNATRA) Naval Aviation Training Next (NATN) initiative.

As a second example, in response to the COVID-19 pandemic and the logistics challenges associated with delivering medical supplies, AEPs were able to



*Pensacola, FL. (COVER) AEPs present and past at the last in-person annual AEP Meeting in Pensacola before COVID-19.*

pivot ongoing Artificial Intelligence research projects to deliver a range of COVID-specific response models to the Combatant Commands and organizations beyond the DoD, including Health and Human Services. Included in these deliverables were the models used to forecast hospital and ventilator capacity within the DoD and private healthcare systems. As a final example, one of the



*(Left to Right) LCDR Michael Natali (AEP #150), LCDR Joseph Geeseman (AEP #148), LT Eric Vorm (AEP #149), LCDR Stephen Eggan (AEP #143) study Human Machine Interface challenges with carrier-based unmanned system operations, aboard USS Truman (CVN 75).*

Surgeon General's four priorities focuses on ensuring the force is optimally manned. Working with their Army and Air Force partners, AEPs developed a

capability to select personnel best suited for being Unmanned Air Vehicle Operators, leading to the establishment of the Navy's first Warrant Officer Unmanned

Air Vehicle Operator community – bringing the community full circle to its roots, 21<sup>st</sup> Century style!

While small in number, the AEP community is a force multiplier when it comes to providing innovative and impactful capabilities to

the warfighter. From continuously refining the ASTB, to delivering next generation training capabilities, to developing and overseeing the strategy and policy governing military medical research and development, AEPs continue to leverage their aeromedical research & acquisition expertise to ensure Naval Forces are staffed, trained, equipped & ready to win the fight tonight, tomorrow, and in the future.

Visit <https://navyaep.com/> to learn more about the Aerospace Experimental Psychology community.