

Kimberly E. Culley, Ph.D., CHFP, CSEP

Forensic Expert – Human Factors

OFFICE: (804) 816-9466
EMAIL: kimberly.culley@aperturellc.com

NOT FOR EXPERT DESIGNATION

EDUCATION, PROFESSIONAL BACKGROUND, CREDENTIALS, TRAINING SUMMARY

EDUCATION

2013 Ph.D. – Doctor of Philosophy, Human Factors

2009 M.A. – Master of Arts, Psychology - Industrial/Organizational focus

2004 B.S. – Bachelor of Science, Secondary Education - English

PROFESSIONAL BACKGROUND

Sep. 2025 – Present Forensic Expert – Human Factors (Aperture LLC)

- Evaluate what information was available in the environment and whether a person could detect, recognize, and respond to a hazard in time to prevent an incident
- Assess hazard recognition, safeguards, and safety practices across workplace, premises, construction, transportation, and product-related incidents
- Assess how system design, operational conditions, and risk controls shape human performance, decision making, and safety outcomes
- Evaluate organizational risk management, safety culture, training, supervision, policies, procedures, engineered safeguards, and corrective actions
- Look beyond "human error" to the systemic and organizational conditions that shape behavior, distinguishing individual actions from broader contributing factors
- Assess whether organizations relied on people to avoid hazards or built in controls to reduce risk at its source – because safety works best when systems are designed so ordinary people don't have to be perfect

May 2019 – Sep 2025 Chief Human Factors Engineer (U.S. Submarine Force, U.S. Navy)
April 2015 – May 2019 Force Improvement & Operational Safety Engineer (Leidos, Inc. - U.S. Submarine Force)

- Applied Human Factors principles to safety audits, system reviews, performance optimization, and submarine tactical guidance and training
- Contributed to Submarine Force and Navy-wide Safety Management Systems; established a formal Causal Factors and Root Cause Analysis program later adopted by Navy Surface and Aviation communities
- Served as the Human Factors Subject Matter Expert in high-profile mishap investigations, examining operator performance alongside supervisory practices, training, warning design, fatigue, communication, automation, culture, and risk management under operational pressure
- Supported investigations involving the USS Fitzgerald–MV ACX Crystal and USS John S. McCain–Alnic MC collisions, USS Connecticut grounding, Navy-wide aviation physiological episodes, a Landing Craft Air Cushion (LCAC) collision, and Strategic Weapons System adverse events

CREDENTIALS AND AWARDS

- Certified Human Factors Professional (Board of Certification in Professional Ergonomics; BCPE #2206)
- Certified Systems Engineering Professional (International Council on Systems Engineering; INCOSE #06741)
- Certified Playground Safety Inspector (National Recreation and Park Association #66594-401)
- Awarded the Department of the Navy Meritorious Civilian Service Award (2021, 2025) and Secretary of the Navy Safety Excellence Award, 2019
- Recently held Top Secret-SCI and Q clearances through the Department of Defense and the Department of Energy
- Authored or co-authored over thirty publications in an academic textbook; Navy Tactics, Techniques, and Procedures doctrinal publications; classified Department of the Navy reports; and peer-reviewed scientific journal articles, which have been cited over 180 times

SPECIALIZED TRAINING

- Certificate of Advanced Level Training in NTSB Cognitive Interviewing for Accident Investigators
- U.S. Coast Guard Crew Endurance Management Systems Expert Certification
- U.S. Navy Problem Solving Practitioner Certification
- OSHA 30-Hour General Industry Safety and Health
- OSHA 30-Hour in Construction Safety and Health
- EPA 24-Hour Hazardous Waste Operations & Emergency Response (HAZWOPER)
- International Association of Arson Investigators 29-Hour Fire Investigation Multi-Program
- Emergency Responder Safety / Institute US Dept of Transportation / Federal Highway Administration 10 Hour National Traffic Incident Management (TIM) Training Certificate
- RESPONSE Training – Driver Research Institute
- Certified Playground Safety Inspector 16-Hour Training and Certification
- Public Health, Emergency Responder, and FEMA Emergency Management coursework
- Safety and OSH training and certificates to include hazard identification, confined space, lockout / tagout, fall safety and ladders, bucket truck / boom truck / forklift / skid steer loader safety, biohazards, ergonomics
- Pedestrian, motorcycle, bicycle, and roadway safety and design principles
- Selected Expert Consensus Committee Member (Voting Member) – Professional standards and best practices development process revising ANSI / HFES 400 Standard
- Selected Member ASTM F1637 Task Group – Best practices development processing reviewing ASTM F1637-21 Standard Practice for Safe Walking Surfaces: Warnings and Sensory Cues

NOT FOR EXPERT DESIGNATION

EDUCATION

Ph.D.
2013

Doctor of Philosophy, Human Factors
Old Dominion University, Norfolk VA

Doctoral Dissertation: *Effects of Signal Ambiguity and Signal Location on Target Detection under Vary Degrees of Time Constraint*
Examined how time pressure, target object ambiguity, uncertainty, and visual location shape decision strategies in high-stakes detection tasks. Developed a behavioral method to differentiate optimizing vs. satisficing strategies, showing that moderate control over search time improved accuracy. Findings inform various human factors domains, including hazard, signal, warning, or target object detection in a forensic human factors context, security screening, threat detection, and detection of and response to ambiguous signals, and extend fuzzy signal detection theory to applied decision-making contexts.

Completed rigorous coursework in core Human Factors fields including: Human Factors Psychology, Advanced Human Factors, Ergonomics, Advanced Ergonomics, Methods for Rational Decision Making, Decision-Making Theory and Application, Sensation and Perception, Multimodal Displays, Human Performance Assessment, Human-Computer Interface Design, Analysis of Variance and Experimental Design, Regression and Correlational Design.

M.A.
2009

Master of Arts, Psychology (Industrial/Organizational focus)
Marywood University, Scranton, PA

Master's Thesis: *Suppression of Deception through Noneffortful Attention to Environmental Stimuli*
Examined the effects of environmental distractions on executive functioning and deceptive behavior. Demonstrated that exposure to compelling environmental stimuli reduces deceptive responding by taxing cognitive resources. Findings showed personality traits (e.g., Neuroticism, Agreeableness, Conscientiousness, Sensitivity) affect susceptibility to deception suppression, with implications for criminal justice, security, forensic interviewing, interrogation, credibility assessment, and employment testing.

Completed rigorous coursework in core Psychology fields including: Research Methods, Statistics, Physiological Psychology, Human Development, Personality Theories in Psychology, Psychopathology, Individual Psychotherapy, Learning Theories, Psychological Testing, Social Psychology, Industrial Psychology.

B.S.
2004

Bachelor of Science, Secondary Education (English)
University of Scranton, Scranton, PA

Comprehensive academic training in English literature, writing, rhetoric, and educational psychology, paired with evidence-based instruction in curriculum development, literacy strategies, assessment, and effective classroom management.

Gained extensive field-based experience studying how individuals learn, process information, and make errors—insights directly applicable to understanding how clients, witnesses, and jurors perceive instructions, recall events, and interpret information. Acquired advanced training and developed strong expertise in linguistics, rhetoric, and interpretive textual analysis, supporting nuanced evaluations of written and spoken statements, interview responses, depositions, and testimony for clarity, credibility, deception, and both subject and investigator bias.

SECURITY CLEARANCES

Cleared for Top Secret/SCI information based on investigation completed by Office of Personnel Management

Cleared for Q information based on an investigation completed by the Department of Energy

NOT FOR EXPERT DESIGNATION

PROFESSIONAL ACCREDITATIONS, CERTIFICATIONS, AND AWARDS

Certified Human Factors Professional (BCPE #2206; credentialed 2018 - present)

Certified Systems Engineering Professional (INCOSE #06741, credentialed 2020 - present)

Certified Playground Safety Inspector (CPSI) (National Recreation and Park Association #66594-401, credentialed 2026 - present)

Selected Expert Consensus Committee Member (Voting Member) – Professional standards and best practices development process revising ANSI / HFES 400 Standard

Selected Member ASTM F1637 Task Group – Best practices development processing reviewing ASTM F1637-21 Standard Practice for Safe Walking Surfaces: Warnings and Sensory Cues

Department of the Navy Meritorious Civilian Service Award, 2021

Department of the Navy Meritorious Civilian Service Award, 2025

Secretary of the Navy Safety Excellence Award, 2019

Completed DAWIA Level III Engineering certification, 2020

Completed DAWIA Level III Science and Technology Management certification, 2021

Completed DAWIA Level I Facilities Engineering certification, 2020

Certificate of Advanced Level Training in NTSB Cognitive Interviewing for Accident Investigators

U.S. Coast Guard Crew Endurance Management Systems Expert Certification

Crafting Accurate and Impactful Testimonies (NW3C) Certificate

U.S. Navy Problem Solving Practitioner Certification, 2025

NYC Construction Safety Training LLC: OSHA 30 Hour General Industry Safety and Health

NYC Construction Safety Training LLC: OSHA 30 Hour in Construction Safety and Health

NYC Construction Safety Training LLC: EPA 24 Hour Hazardous Waste Operations and Emergency Response (HAZWOPER)

International Association of Arson Investigators 29-Hour Fire Investigation Multi-Program

Emergency Responder Safety / Institute US Dept of Transportation / Federal Highway Administration 10 Hour National Traffic Incident Management (TIM) Training Certificate

RESPONSE Software Training – Driver Research Institute

Emerald Literati Network Award for Excellence, Outstanding Reviewer 2013, Journal of Health Organization and Management

EMPLOYMENT HISTORY

Sep. 2025 - Present **Forensic Expert – Human Factors**
Aperture, LLC

Dr. Kimberly Culley, Ph.D., CHFP, CSEP, is a forensic human factors expert who evaluates whether organizations recognized foreseeable hazards and implemented reasonable safeguards and best practices across workplace safety, premises liability, construction, transportation, and product-related accidents. Her analyses examine how human performance interacts with engineered systems, organizational decision-making, and safety controls to influence incident development. She evaluates issues such as hazard recognition, OSHA and FMCSA compliance, safety management systems and risk registries, warnings and procedures, training and supervision, fatigue and workload, and the adequacy of administrative and engineered risk controls. Her analyses explain what a reasonable person could perceive, understand, and do given the system design, warnings, hazards, policies, practices, and standards of care. Dr. Culley distinguishes isolated individual actions from broader systemic or organizational contributors, evaluating foreseeability, human behavior, and reasonable safeguards—looking beyond “human error” to the systems that shape behavior.

NOT FOR EXPERT DESIGNATION

Dr. Culley's work integrates:

- Human performance analysis (attention, workload, fatigue, situational awareness)
- Organizational and safety culture assessment
- Systems engineering principles
- Root cause and causal factor analysis
- Safety management system evaluation
- Warning adequacy and risk communication analysis
- Corrective action effectiveness and sustainability

Her approach aligns with contemporary systems accident models that examine how layered defenses fail when latent organizational weaknesses interact with active human errors. She routinely evaluates whether administrative controls, engineered safeguards, training, procedures, supervision, and feedback mechanisms were sufficient, properly implemented, and reasonably foreseeable in mitigating risk.

For areas of practice such as human factors, premises liability, construction, product liability, transportation, and accident reconstruction matters, Dr. Culley provides expertise in:

- Foreseeability and risk recognition
- Adequacy of warnings and instructions
- Safety management system design and implementation
- Organizational negligence and risk tolerance
- Human-machine interface and automation design
- Fatigue and performance degradation
- Cultural and supervisory contributors to unsafe conditions
- Root cause versus surface-level explanations

Her analyses help distinguish isolated operator error from systemic safety breakdowns, clarify how risk was communicated and managed, and evaluate whether reasonable and industry-aligned controls were in place and effective. Dr. Culley's experience bridging operational practice, systems engineering, and forensic investigation positions her to support multidisciplinary expert teams in complex cases where human behavior, organizational decision-making, and engineered systems interact to produce loss events.

May 2019 - Sep 2025 **Chief Human Factors Engineer**
U.S. Submarine Force, U.S. Navy

Executed multidisciplinary forensic investigations into high-profile, complex, sensitive incidents, integrating human factors, cognitive psychology, systems engineering, human-system integration, and operational expertise. Conducted behavioral science assessment, comprehensive root cause analysis, and rigorous evidence analysis, with factual integrity. Produced evidence-based findings and authoritative reports that directly informed and guided strategic, legal, and operational decisions and policy reform across the U.S. Navy. Major investigations included:

- USS Fitzgerald (warship) collision with the container ship ACX Crystal off the coast of Japan
- USS John S. McCain (warship) collision with the oil tanker Alnic MC in the Strait of Malacca
- USS Connecticut (fast attack submarine) underwater collision in South China Sea
- Physiological episodes and Loss of Consciousness events in F/A-18 and T-45 aircrew
- Landing Craft Air Cushion (LCAC) collision off the coast of Florida
- Sociotechnical vulnerabilities in Strategic Weapons System

Authored doctrine integrating Human Factors into operational and tactical planning and execution

NOT FOR EXPERT DESIGNATION

Applied quantitative methods to develop risk identification/mitigation systems for submarine and surface forces

April 2015 - May 2019 **Force Improvement and Operational Safety Engineer**
Leidos, Inc. in support of U.S. Submarine Force, U.S. Navy

Applied Human Factors principles in safety audits, system reviews, and performance optimization initiatives

Served as subject-matter expert during comprehensive safety reviews and incident investigations

Integrated crew endurance and human performance modeling into force-wide risk programs

Supported the Navy's transition toward proactive safety culture practices

July 2013 - April 2015 **Human Factors/Human System Integration**
Kern Technology Group, LLC

Led HSI analyses for Naval research programs (e.g., STAMPS, CVN 78, Nimitz), focusing on fatigue, variability, and risk perception

Developed and validated performance metrics, trust-in-automation tools, and human variability models

Contributed to successful SBIR/STTR proposals and published in peer-reviewed journals

Sep 2012 - Jan 2013 **Human Factors Consultant (Temporary project-based position)**
TG Labs, Inc

Provided Human Factors expertise and recommendations for a medical device engineering project for treating benign prostatic hyperplasia (BPH). This device facilitates a BPH procedure that does not require cutting, cauterizing, heating, or removal of tissue

Applied ISO standards and Human Factors principles to display design and monitored ergonomic considerations during prototype development

Reviewed instructional materials for clarity and compliance with warnings and risk best practices

Aug 2010 - Dec 2013 **Human Factors Ph.D. Program**
Old Dominion University

PhD Student

- Human Factors with a focus on applied decision making, signal detection, fuzzy signal detection theory, risk perception, risk bias
- Doctoral Dissertation: *Effects of Signal Ambiguity and Signal Location on Target Detection under Vary Degrees of Time Constraint*

Research Assistant

- Conducted literature reviews and statistical analyses; drafted research proposals, reports, results, and discussions; composed manuscripts for publication; managed participant involvement in experiments

Psychology Department Instructor of Record

- Instructor of Record Fall 2011, Spring 2012, Fall 2012, Spring 2013
- Generated and presented lectures utilizing multimedia instructional materials, designed and administered assessments, facilitated classroom discussion, evaluated research proposals and other materials

March 2009 - Aug 2010 **Research Assistant**
Brigham and Women's Hospital/Harvard School of Public Health

Served on an epidemiological and environmental health team investigating the effects of environmental toxins on physiological, cognitive, and behavioral outcomes

NOT FOR EXPERT DESIGNATION

Managed field protocols, databases, and data quality for a children's health and environmental exposure study focusing on endocrine disruptors and epigenetics

Conducted psychometric testing, literature reviews, and contributed to research influencing policy on environmental toxin exposure

PUBLICATIONS

Culley, K.E. (2024). *Independent Human Factors Analysis of Head-on Collision between two Landing Craft, Air Cushion (LCAC) off the Coast of Florida*. [Controlled Unclassified Information, not publicly available]. Department of the Navy, United States Surface Force.

Culley, K.E. (2023). *Force Improvement in Resilient Performance: Learning from Successes and Failures to Enable Rapid Recovery from Adverse Events and Continuity of Critical Operations*. [Controlled Unclassified Information, not publicly available]. Department of the Navy, United States Submarine Force.

Culley, K.E. (2022). *Independent Human Factors Analysis of USS Connecticut Grounding Incident to Identify Systemic Risk Factors.* [Classified, not publicly available]. Department of the Navy, United States Submarine Force.

Culley, K.E., & Mooney, K. (2022). COMSUBFOR Continuous Improvement Culture and Programs. *Naval Submarine League Review, June 2022.*

Culley, K. E. (2021). Submarine Operations Manual: The Human Element (Part II) *(COMSUBLANT/COMSUBPACINST C3120.26A CH-8 2 Mar 2021)* [Classified, not publicly available]. Department of the Navy, United States Submarine Force.

Culley, K. E. (2021). Mariners or machines: Who's at the helm? Shifting roles and responsibilities on Navy warships. In H. Lum (Ed.), *Human Factors Issues and the Impact of Technology on Society* (pp. 211–221). IGI Global. https://doi.org/10.4018/978-1-7998-6453-0

Culley, K.E. (2021). Data Dereliction: Another (Y) Axis of Evil. *Force Operational Notes Special Newsletter* [Controlled Unclassified Information, not publicly available]. Department of the Navy, United States Submarine Force.

Culley, K.E. (2020). Decision Science. *Submarine Flag Officer Training Symposium* [Controlled Unclassified Information, not publicly available]. Department of the Navy, United States Surface Force.

Culley, K. E. (2019). The Human Element (Part II). *Submarine Contact Management Manual (NTTP 3-21.23.10)* [Classified, not publicly available]. Department of the Navy, United States Submarine Force.

Culley, K. E. (2019). Human Factors. *Force Operational Notes Special Newsletter* [Classified, not publicly available]. Department of the Navy, United States Submarine Force.

Culley, K. E. (2019). The Human Element (Part I). *Submarine Operations Manual* [Classified, not publicly available]. Department of the Navy, United States Submarine Force.

Culley, K. E. (2019). Root Cause Analysis through a Human Factors Lens. *Force Operational Note* [Classified, not publicly available]. Department of the Navy, United States Submarine Force.

Culley, K. E. (2018). Automation. *Force Operational Note B* [Classified, not publicly available]. Department of the Navy, United States Submarine Force.

Culley, K. E., & Harkins, C. L. (2018). Mariners or machines: Who's at the helm? *United States Naval Institute Proceedings,* June 2018, 80–81.

U.S. Navy, United States Fleet Forces Command. (2017). *Comprehensive review of recent surface force incidents.* Department of the Navy.

Culley, K.E. (2017). The Human Element (Part I). *Submarine Contact Management Manual* (NTTP 3-21.23.10) [Classified, not publicly available]. Department of the Navy, United States Submarine Force.

NOT FOR EXPERT DESIGNATION

U.S. Navy, United States Pacific Fleet. (2017). *Comprehensive review of the T-45 and F/A-18 physiological episodes.* Department of the Navy.

Culley, K. E., Kern, D. J., & Phaneuf, M. (2015). Are a "can do" attitude and a can of Red Bull enough? Workload and fatigue in high-stakes, high-demand carrier sortie operations. *Procedia Manufacturing, 3,* 3062–3069.

Kern, D. J., & Culley, K. E. (2015). How do Submarine Force trainers use computer-based navigation systems? Applying cluster analysis to examine situated objectives in the employment of adaptive CBT. *Computers in Human Behavior, 49,* 313–323.

Culley, K. E., & Kern, D. J. (2015). Quantifying sociotechnical system resilience to support tradespace analyses. *Institute of Industrial Engineers: Industrial and Systems Engineering Research Sessions.* Nashville, TN.

Culley, K.E. (2014). Effects of signal ambiguity and signal location on target detection under varying degrees of time constraint. Doctor of Philosophy (PhD) dissertation, Old Dominion University]. In Copyright (TX0006766537). Old Dominion University Digital Commons.

Culley, K. E., & Kern, D. J. (2014). A model of human variability in viable ship design. *Technical Report: Office of Naval Research.*

Culley, K. E. (2013). Probabilistic purchasing: Consumer heuristics and biases. *2013 Neuropsychoeconomics Conference Proceedings.*

Culley, K. E., & Madhavan, P. (2013). The effects of affect and inspection duration on decision time and confidence. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 57*(1), 1122–1126.

Culley, K. E., & Madhavan, P. (2013). Trust in automation and automation designers: Implications for HCI and HMI. *Computers in Human Behavior, 29*(6), 2208–2210.

Culley, K. E., & Madhavan, P. (2013). A note of caution regarding anthropomorphism in HCI agents. *Computers in Human Behavior, 29*(3), 577–579.

Culley, K. E., & Madhavan, P. (2012). Affect and time pressure in a simulated luggage screening paradigm: A fuzzy signal detection theory analysis. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 56*(1), 338–342.

Culley, K. E., & Madhavan, P. (2012). The effects of emotional and racial priming on visual threat detection. *Virginia Journal of Science Abstracts, 63*(1).

Culley, K. E., Madhavan, P., & Brown, J. (2011). Effects of emotional priming on visual threat detection. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 55*(1), 747–751.

Culley, K. E., & Madhavan, P. (2011). When fear and sadness are good: The effects of anger, fear, and sadness on threat recognition during luggage screening. *Virginia Journal of Science Abstracts, 62*(1).

Culley, K.E. (2009). Induction of cognitive load by noneffortful attention to environmental stimuli and suppression of deception [Unpublished Master's Thesis]. Marywood University.

Culley, K. E. (n.d.) Why Safe Systems Fail. *Force Operational Note* [Classified, not publicly available]. Department of the Navy, United States Submarine Force.

Culley, K. E. (n.d.) Organizational Drift/Normalization of Deviation: Learning Organizations Borrow from Safety to Improve Mission Efficiency. *Force Operational Note* [Classified, not publicly available]. Department of the Navy, United States Submarine Force.

RESEARCH AND TESTING

Human Factors Expert – Naval Reactors and Naval Nuclear Laboratory Human Performance R&D

NOT FOR EXPERT DESIGNATION

Served as Human Factors subject matter expert supporting Naval Reactors and Naval Nuclear Lab in optimizing the interface between increasing automation and operator engagement aboard nuclear-powered warships. Lead research-informed efforts to balance technological advancement with the critical need for sustained operator proficiency, situational awareness, and decision-making capability in high-stakes operational environments.

Provided expert consultation to improve command and control practices for nuclear reactor operations teams, focusing on enhancing training protocols that prepare operators for casualty response and complex operational contingencies. Collaborated closely with the SES Director of Instrumentation and Control and multidisciplinary technical leads to develop best practices addressing human-automation interaction challenges and UX design, including mode awareness, automation transparency, trust calibration, and system reliability.

This role involved applying cognitive performance frameworks and empirical human factors methodologies to guide the design of future naval nuclear systems and training programs that preserve and enhance human skill retention, mitigate automation-induced complacency, and support resilient operator performance under dynamic conditions. The results of this study are being applied to nuclear reactor control design onboard a $126.4 billion portfolio of strategic nuclear assets.

Human Factors Subject Matter Expert – CNO-Directed 7th Fleet Comprehensive Review of Recent Surface Force Incidents

Appointed as the Human Factors Subject Matter Expert (SME) for the Chief of Naval Operations (CNO)-directed 7th Fleet Comprehensive Review Team investigating U.S. Navy surface fleet operations and high-profile surface fleet mishaps, including the USS Fitzgerald and USS John S. McCain collisions which resulted in the deaths of seventeen sailors, and the USS Antietam grounding incident. Led independent Human Factors analyses focusing on the interplay between human operators, system interfaces, and operational context within complex, high-risk naval environments.

Conducted detailed assessments of Human Systems Integration (HSI) and cognitive ergonomics, with an emphasis on navigation system design, information display, and interaction modalities. Evaluated critical factors affecting operator situational awareness and decision making, including mode awareness, automation transparency, and trust calibration in automated systems. Utilized multi-method approaches combining qualitative data (e.g., witness interviews, command climate assessments) and quantitative data (e.g., incident reports, performance metrics) to develop a comprehensive understanding of systemic vulnerabilities and latent risk factors contributing to these mishaps. The investigation highlighted systemic human and organizational factors contributing to operational failures:

- Erosion of fundamental skills: Declines in seamanship and watchstanding practices reduced crew situational awareness and decision-making effectiveness
- Cultural and cognitive factors: A “can-do” mindset led to normalization of risk, prioritization of operational demands over safety, and rationalization of degraded standards
- Deficient risk management: Inadequate identification, assessment, and mitigation of hazards increased vulnerability to errors
- Training and competence gaps: Insufficient realistic training and evaluation limited crews’ ability to respond under high-pressure, complex scenarios
- Command and control issues: Communication breakdowns and leadership lapses amplified the impact of errors
- Poor system design and implementation: Inadequate HSI and UX consideration when designing and implementing system interface changes and associated training packages
- Deficient implementation of automation, consideration of operator interface or training, mode awareness, automation transparency, trust in automation

This review illustrates how latent organizational weaknesses, cultural pressures, and cognitive biases interact to produce high-consequence errors. It underscores the importance of:

- Systematic human performance monitoring and evaluation
- Development of safety-focused organizational culture
- Training and assessment that simulate real-world operational stressors
- Robust command, communication, and risk management structures

NOT FOR EXPERT DESIGNATION

Delivered frequent, high-level briefings to senior flag officers—including four-star admirals—communicating complex human factors findings in actionable terms to inform strategic decision making. Developed and proposed a suite of evidence-based recommendations targeting identified deficiencies in training, procedural design, leadership practices, and human-machine interface configurations. The findings provide a model for analyzing accidents in complex sociotechnical systems, with direct relevance to forensic investigation of human error, organizational drift, and safety-critical operations.

Research and Technical Support for Performance Excellence in High-Hazard, High-Reliability National Nuclear Security Enterprise

Conducted applied research to investigate the development and sustainment of performance excellence cultures in complex, high-consequence operational domains, including National Nuclear Security Administration (NNSA) activities at U.S. national security sites. This work focused on identifying and addressing systemic, cultural, and human performance factors that influence organizational resilience, operational safety, and mission effectiveness.

Designed and executed field-based studies involving on-site qualitative and quantitative analyses of organizational culture, leadership practices, and barriers to success in high-reliability organizations (HROs). Employed ethnographic methods, structured interviews, and observational techniques to assess work execution environments and the human-system interface at the point of task performance. Findings informed the development of intervention strategies to enhance local accountability, situational awareness, and proactive identification of leading indicators of risk.

Conducted systemic analyses of organizational processes and support functions to assess their alignment with core mission objectives and value-added contributions to production environments. Participated in root cause analyses and post-event investigations, applying systems thinking and human reliability analysis to identify opportunities for corrective action and organizational learning. Outcomes were used to drive sustained behavioral change and system-level improvements in safety and performance.

Independent Human Factors Analysis of Strategic Weapons System Events to Support Strategic Risk Mitigation

Conducted a comprehensive Human Factors-focused analysis of Strategic Weapons System (SWS) events, executed in parallel with a US Strategic Command Comprehensive Review. The Trident II Strategic Weapon System is deployed aboard ballistic missile nuclear powered submarines and involves Trident D5/D5LE Submarine Launched Ballistic Missile (SLBM); Reentry System; supporting Shipboard systems; warhead delivery systems; support infrastructure; and command, control, and communications (C3). This analysis employed systems-based human performance evaluation methodologies to identify cognitive, organizational, and procedural contributors to recurring and emergent vulnerabilities within the Strategic Forces operational framework.

Findings from the analysis were utilized to inform the development of targeted yet broadly impactful corrective actions and mitigation strategies. The work provided a unique, human-centered lens that enhanced the understanding of latent system weaknesses and sharpened the focus of subsequent force-wide interventions in high-stakes, classified domains and contributed directly to the refinement of strategic force posture, operational risk management, and organizational resilience for a program that serves as the most survivable leg of the U.S. nuclear deterrence triad, carrying a SLBM per unit cost of $30.9 million and providing secure second-strike capability.

Independent Human Factors Analysis of USS Connecticut Nuclear Powered Fast Attack Submarine Grounding Incident to Identify Systemic Risk Factors

Conducted a Human Factors-centered analysis of the USS Connecticut grounding event, with the objective of identifying underlying cultural, cognitive, and systemic contributors to unrecognized and unmitigated risk prior to the incident involving approximately 130 personnel and a $3 billion asset striking an underwater seamount. The analysis applied principles from human performance science, systems thinking, and organizational behavior to investigate latent vulnerabilities beyond the scope of technical failure.

The findings provided a complementary perspective to the formal Safety Investigation Board report, amplifying its conclusions by surfacing deeper organizational and cultural contributors to degraded system resilience. The analysis directly informed the development of additional improvement initiatives aimed at strengthening organizational effectiveness, operational safety, and warfighting readiness.

Independent Human Factors Study and Analysis of U.S. Navy Landing Craft Air Cushion (LCAC) Collision

NOT FOR EXPERT DESIGNATION

Conducted a study and analysis of a head-on collision between two U.S. Navy landing craft (LCACs) off the coast of Florida that left three dozen Marines and sailors with broken bones, lacerations, and traumatic brain injuries. This investigation identified systemic, organizational, and cultural contributors to the mishap beyond individual operator error. The review emphasized human performance, decision making, team dynamics, and operational resilience within complex, high-risk systems.

Key human factors themes resulting from the investigation included:

- Human Performance and Cognitive Bias: Identification of confirmation, availability, and assumption biases in planning and execution; failures in assertive backup and shared situational awareness; and degraded decision making under stress and fatigue.
- Organizational Drift and Normalization of Deviation: Evidence of risk-tolerant behaviors, procedural noncompliance, and gradual erosion of safety margins driven by production pressure and inadequate enforcement of operational standards.
- Communication and Team Dynamics: Breakdown in formal communication protocols, lack of standardized information exchange, and ineffective leadership under ambiguous and time-pressured conditions.
- Training and Competency Gaps: Insufficient depth and dimensionality in qualification and proficiency programs; reliance on rote or slide-based training rather than experiential learning; limited emphasis on automaticity in emergency response.
- Systemic and Cultural Factors: Enterprise-level shortfalls in planning, risk calibration, mentorship, and accountability, compounded by resource scarcity and loss of institutional knowledge.
- Recommendations: Establishment of independent oversight, formal risk registries, external evaluations, fatigue management protocols, and improved lessons-learned integration to drive enduring cultural and systemic change.

The analysis integrates principles from forensic human factors, cognitive performance, safety culture, and organizational resilience, offering a model for post-incident reconstruction and systemic error prevention within complex operational domains.

Human Systems Integration Advisor – Conventional Prompt Global Strike (CPGS) Program

This study examined human performance challenges and user experience (U/X) consistency across multiple weapons platforms within the Conventional Prompt Global Strike (CPGS) Program. Expert consultation was provided to the Human Systems Integration team to identify and analyze factors influencing operator trust in automation, mode awareness, and transparency in automated systems.

The effort emphasized integrating automation design specifications and human factors principles into training development, using insights from lessons learned and human-centered design methodologies. Findings supported the need for systematic evaluation of automation interaction and training effectiveness to improve operator comprehension, reduce human-system mismatches, and enhance overall mission performance and resilience.

Research and Application of Cognitive Engineering and Decision Science for Operational Risk Reduction

Designed and implemented Cognitive and Decision Science interventions grounded in quantitative analyses, empirical research, and professional expertise to mitigate near miss events and eliminate Class A mishaps in high-risk military operational environments. Interventions were formulated based on human performance data, accident trend analyses, and cognitive task modeling, with a focus on improving decision making under uncertainty, reducing cognitive load, and supporting situational awareness in dynamic, high-consequence contexts.

Quantitative outcome evaluation demonstrated a substantial and sustained reduction in the frequency and severity of Operational Class A mishaps following the implementation of cognitive interventions. Specifically, incident data revealed a statistically significant decline in annual Class A mishaps from a baseline mean of 1.93/year (SD = 1.55) during 2001–2015, to a post-intervention mean of 0.40/year (SD = 0.55) from 2016–2023.

Efficacy of Biologically Tuned Lighting to Enhance Alertness and Well-Being in Continuous Operation Environments

NOT FOR EXPERT DESIGNATION

Facilitated implementation and provided oversight of a research study evaluating biologically potent lighting interventions to enhance alertness and circadian alignment among personnel on a high-security 24/7 watchfloor. The study assessed the efficacy and feasibility of spectrally engineered lighting in 47 individuals working 12-hour shifts, measuring outcomes including alertness, sleep, mood, and quality of life. Participants were exposed to short-wavelength enriched (SW+, melanopic EDI: 294 lux) or attenuated (SW–, melanopic EDI: 103 lux) lighting conditions delivered via visually similar light boxes (CCT: 3000–3375 K; photopic illuminance: 260–296 lux). The SW– condition yielded increased on-shift alertness, improved perceived performance and quality of life, reduced caffeine use, and shortened sleep onset latency. The SW+ condition demonstrated more modest benefits, including improved mood and sleep.

Findings support spectrally tuned lighting as a promising, non-pharmacological strategy to enhance performance and well-being in shiftwork environments without compromising visual comfort or health. Circadian-informed light intervention should be considered in dimly lit or blue-depleted work environments.

Study of Antisubmarine Warfare Command and Tactical Forces Performance in Detecting, Classifying, and Providing Timely Reporting of Information on Submarines and Other Contacts of Interest

Led analyses of Sonar Operator performance for Integrated Undersea Surveillance System mission, which encompasses the operations of detection, localization, and tracking of submarines, as well as the collection of acoustic and hydrographic information.

Utilized signal detection theory and fuzzy signal detection theory to identify decision scenarios requiring targeted training interventions.

Study of Fatigue and Endurance for PEO Carriers/USS GERALD R. FORD (CVN-78) and NIMITZ Air Departments

Utilized tools such as SAFTE/FAST fatigue monitoring and prediction software, MARTHA software, and U.S. Coast Guard Crew Endurance Management principles to evaluate human performance during high risk, high op tempo, high consequence evolutions.

Developed recommendations for improved performance and safety rooted in optimization of crew endurance; applied decision making; organizational culture; environmental factors including thermal stress, noise, and glare; and individual and team situational awareness.

Study of Acoustic Counter Detection Tactical Decision Aid

Participated in the development of a submarine acoustic counter detection tactical decision aid to assist team decision making when monitoring potential low-signature undersea adversaries and maintaining acoustic stealth during dynamic, complex, high stakes missions and tasks.

Evaluated user interfaces that support accurate risk perception and appropriate calibration of user trust in automation/decision aids for stochastically evaluating local ocean environmental conditions to detect, localize, and evaluate vulnerability to anti-access/area denial (A2/AD) threats.

Human Factors and Decision Science SME – OPNAV Learning to Action Board (L2AB)

Selected by OPNAV N711 (Navy Education Strategy and Policy Branch) to serve as a Human Factors and Decision Science subject matter expert supporting the development of the OPNAV Learning to Action Board, an initiative addressing systemic barriers to organizational learning within the Navy.

Conducted Root Cause Analysis from a Human Factors perspective to identify critical factors undermining the Navy's effectiveness in capturing, disseminating, and applying lessons learned. Emphasized holistic systems analysis to examine interdependencies across organizational processes impacting learning and performance outcomes.

Delivered multiple briefings to senior Flag officers and Senior Executive Service leaders, including the United States Fleet Forces Deputy Commander, Vice Chief of Naval Operations (VCNO), and Deputy Naval Secretary, articulating research findings and actionable recommendations aimed at fostering a culture of continuous learning and operational excellence.

A Study of Submarine Force usage computer-based navigation trainer systems: Applying cluster analysis to examine situated objectives in the employment of adaptive computer-based training

NOT FOR EXPERT DESIGNATION

A "jobs-to-be-done" analysis was conducted to inform training and assessment techniques in support of U.S. submarine navigation training to ensure that the transition of technologies supports critical organizational needs and objectives, particularly when the utilization of a single technology is employed to achieve various goals.

The current study investigated the jobs-to-be-done by the navigation trainer across various organizational stakeholders, using data from 481 training events representing every recorded navigation trainer use in the U.S. Submarine Force during a typical training month. Each of the training activity clusters (Schoolhouse, Commander, Responsive, Staff training) revealed a specific organizational context and utilization goal. These clusters illustrate the repurposing of the same technology tool across different user groups, in order to accomplish the various purposes or jobs required by the fleet, including learning, practice, and assessment; the cluster analysis provided a rich description of how the trainer was being used in each job context.

This jobs-to-be-done analysis identifies how stakeholders are using already-deployed technologies and capabilities across a variety of situated contexts and informs best practices for versatile use of computer-based training technology tools.

Human Factors Subject Matter Expert – VCNO/COMPACFLT-Directed Comprehensive Review of the T-45 and F-18 Physiological Episodes

Appointed as the Human Factors SME to the Vice Chief of Naval Operations (VCNO) and Commander, Pacific Fleet (COMPACFLT)-directed Physiological Episode (PE) Comprehensive Review Team, charged with investigating Physiological Events occurring within the Naval Air Enterprise (NAE), focusing specifically on the F/A-18 and T-45 communities. Provided expert guidance on Human Factors considerations related to both the immediate events of the PEs and the broader organizational processes governing trend analysis, incident adjudication, and risk management within the NAE. Applied systems thinking and human performance principles to identify latent systemic vulnerabilities, cognitive and ergonomic stressors, and human-machine interface issues contributing to these events.

This study and comprehensive review examined the root cause and causal factors associated with a statistically anomalous rise in physiological episodes (PE) among T-45 and F-18 aircrew. PE incidents rose to 71 per 100,000 flying hours, an increase in the rate so sharp that flight instructors refused to get into their jets to train new student pilots. Physiological episodes are characterized by a pilot's body adversely reacting to the intense flight pressures, combined with issues with the aircraft. PE can cause cognitive impairment, numbness, tingling, lightheadedness, behavioral changes, fatigue, spatial disorientation, and loss of consciousness that may be life-threatening for pilots. The study examined:

- Organizational factors, including command, control, and communications
- PE analysis and trends
- PE corrective actions and processes
- Aircrew breathing-air systems and onboard oxygen generation systems
- Cabin pressurization systems
- Cockpit environmental monitoring and alerting systems
- Physiological factors, including aircrew monitoring
- Aircrew procedures, training, qualification, and proficiency
- Maintenance infrastructure and procedure verification and validation (V&V)
- Medical training, emergency response, and research
- PE lessons, including those from other government agencies and countries

Developed actionable recommendations aimed at enhancing data integration, improving human-centric event analysis protocols, and refining adjudication processes to better capture and mitigate Human Factors risks. Supported efforts to institutionalize Human Factors-informed methodologies within the NAE's operational safety and health monitoring frameworks, thereby advancing proactive identification and prevention of physiological episodes in high-risk aviation environments.

NOT FOR EXPERT DESIGNATION

Human Performance and Organizational Learning Research Advisor – Navy Tiered Learning Systems Initiative

Served as the principal research advisor and subject matter expert in Human Performance, Cognitive Systems, and Organizational Learning for the flag/SES-led Tiered Learning Systems initiative—an enterprise-wide effort to design and institutionalize a data-informed Continuous Improvement framework across Navy operational domains. This initiative extended prior empirical research I led within the Submarine Force, applying interdisciplinary principles from Human Factors, Decision Science, and Organizational Resilience to the development of scalable, evidence-based learning architectures.

Research contributions emphasized the identification and mitigation of systemic contributors to human error and performance variability through the application of validated behavioral and cognitive models. Core lines of inquiry included:

- Examining mechanisms of bias in operational and organizational decision making
- Evaluating risk calibration and adaptive performance under uncertainty
- Developing human-centered methodologies to enhance recognition, response, and recovery in dynamic, high-stakes environments

Findings informed the theoretical and applied underpinnings of the Navy's evolving learning and safety ecosystem by translating empirical results into actionable organizational design principles. This work advanced force-wide modernization of performance management, safety culture, and organizational learning systems through a research-driven, systems-oriented approach.

Study of Monte Carlo and Tradespace Analyses to Enable Strategy Optimization in Complex Sociotechnical Systems

Sociotechnical system resilience refers to the capacity of a work system to sustain performance and adapt under variable, degraded, or unexpected conditions. This study conceptualized resilience as a measurable property of the system's latent adaptive capacity—specifically, the number of viable task pathways, the diversity of personnel capabilities, and the flexibility of team composition in response to disruptions.

By modeling alternative strategies for task execution, the research quantified resilience in terms of available adaptation strategies and their associated time and manpower tradeoffs. These models enabled the examination of how systems balance operational speed, workload, and safety when under stress or time pressure.

This framework provides a method for forensically reconstructing human-system interactions to identify where adaptive capacity failed or succeeded in mitigating performance breakdowns. Quantifying resilience in this way enhances the ability to assess latent organizational vulnerabilities, inform system design, and strengthen operational continuity in complex, high-risk environments.

Effects of Signal Ambiguity and Signal Location on Target Detection under Varying Degrees of Time Constraint, Utilizing the Fuzzy Signal Detection Theory Framework

This research investigated the effects of signal ambiguity, signal location, and time constraint on decision-making performance in a simulated aviation security screening task, applying the fuzzy signal detection theory (FSDT) framework. The study also sought to develop and validate a quantitative methodology for distinguishing satisficing versus optimizing decision-making strategies through observed behavior rather than self-report. One hundred participants were randomly assigned to either a local fixed-interval time constraint condition (4000 ms exposure per image) or a global self-terminating condition, and were tasked with identifying potential weapons embedded in x-ray images of luggage. Stimuli varied systematically in degree of target category membership (unambiguous signal, unambiguous non-signal, or ambiguous) and target location (central vs. eccentric).

Results revealed several important findings. Despite having more time available, participants in the global self-terminating condition frequently engaged in satisficing strategies and demonstrated shorter search durations yet higher sensitivities compared to those in the local fixed-interval condition. Target location effects were consistent across conditions, with participants detecting centrally located targets more accurately than eccentrically located ones, underscoring attentional biases toward central display regions. Signal ambiguity also significantly affected decision making: ambiguous signals produced more liberal response criteria, particularly under fixed-interval constraints. Examination of search duration suggested that participant control over inspection time enhanced performance, with optimal sensitivity occurring around 3500–4500 ms, a

NOT FOR EXPERT DESIGNATION

window that aligns with current TSA operational standards. However, performance did not continue to improve with additional search time beyond this threshold.

Overall, this research demonstrates that decision making in high-stakes visual search tasks is shaped by the interaction of signal characteristics, temporal constraints, and individual decision strategies. The findings extend FSDT as a useful framework for quantifying behavioral decision tendencies, highlight practical constraints on optimizing versus satisficing in time-pressured contexts, and suggest that modest operator control over inspection duration may improve detection without sacrificing efficiency. Implications for aviation security, human factors assessment, and training of security personnel are discussed.

Modeling Human Variability in Viable Ship Design

Decisions made early in ship design directly influence both lifecycle cost and operational performance, with crew factors representing a significant portion of total ownership cost. This research integrated human-centered design principles into the naval design process to better model the human role within complex systems.

Degraded effectiveness was analyzed in terms of how declines in individual task performance contribute to collective performance losses, how team-level task execution deteriorates under operational stress, and how factors such as skill gaps, workload redistribution, and backup behaviors influence recovery and mitigation efforts. This study focused on the team as a critical component of the sociotechnical system, examining how composition, workload distribution, and adaptability affect performance under varying operational conditions. Degraded team performance—resulting from skill gaps, task reallocation, or coordination breakdowns—can often be traced as a root cause of system-level failure. Conversely, human operators also serve as key sources of resilience, providing flexibility, prioritization, and adaptive decision making under stress.

Understanding these human contributions allows for anticipatory design as well as the ability to reconstruct performance variability, identify latent vulnerabilities, and inform strategies that strengthen operational resilience.

Suppression of Deception through Non-effortful Attention to Environmental Stimuli

Investigated whether noneffortful attention to compelling environmental stimuli can suppress deception by imposing cognitive load. Thirty-one participants responded to sensitive personal questions before and during exposure to multisensory auditory and visual stimuli. Personality factors—including trait arousability, social desirability, the Highly Sensitive Person (HSP) construct, and the Big Five traits—were assessed to examine their moderating role. Results indicated that exposure to environmental stimuli significantly reduced deception, as participants' post-test responses were more truthful compared to pretest responses. Higher scores on Neuroticism, Agreeableness, and HSP, as well as being male, predicted increased truthfulness, while lower Conscientiousness also related to reduced deception. These findings suggest that noneffortful attentional capture by environmental stimuli diminishes cognitive resources needed for self-regulation and impression management, thereby attenuating deception. Implications extend to applied contexts such as criminal justice, employment testing, and security settings, where novel, ethical, and non-invasive methods of deception suppression are needed.

Study on Early-Life Neurotoxicant Exposure and Adolescent Cognitive-Behavioral Outcomes

Investigated the effects of prenatal and postnatal exposure to neurotoxic metals (lead, manganese, mercury, arsenic) and organochlorines (PCBs, DDE, HCB) on adolescent cognition, executive function, attention, and behavior. The longitudinal cohort (n=788) was drawn from communities adjacent to a PCB- and metal-contaminated Superfund site, with archived biological specimens and developmental data from birth through age 13. The study examined how early-life environmental exposures shape later behavioral regulation, learning capacity, and decision-making processes. Findings contribute to understanding developmental and environmental risk factors linked to impaired decision making, attention deficits, and behavioral dysregulation.

PROFESSIONAL SERVICE, ENGAGEMENT, CONFERENCES, PRESENTATIONS

Selected Consensus Committee Member (Voting Member) – Revision of American National Standards Institute (ANSI) / Human Factors and Ergonomics Society (HFES) 400 Standard, Human Readiness Level Scale in the System Development Process (2026 – present)

NOT FOR EXPERT DESIGNATION

Chosen to participate in the formal consensus standards development process responsible for revising HFES 400, a professional human factors engineering standard addressing human-system design, safety considerations, and human performance in complex systems. Responsibilities include expert technical review, comment, and voting on proposed revisions that inform industry best practices and professional human factors guidance. Participation in HFES 400 standards revision process reflects recognized expertise contributing to the development of professional practice standards.

ASTM International — Member

Member of ASTM Committee E34 on Occupational Health

Member of Safety and Committee F13 on Pedestrian/Walkway Safety and Footwear

Technical committee interests aligned with human factors, safety, and pedestrian/walkway safety

Strategic and Advisory Roles

Provided formal Human Factors training to senior-level Naval personnel, including multiple U.S. Vice Chiefs of Naval Operations (VCNOs) and U.S. Chief of Naval Personnel (CNP)

Contributing Member, Navy Human Factors Oversight Council (2020–2025)

Contributing Member, Navy Human System Integration Working Group (2019–2025)

Contributing Member, Navy Human System Integration Council (2019–2025)

Contributing Member, Navy Decision Making Superiority Group (2023–2025)

Cross-Industry Engagement

Presented Human Factors and Performance Excellence content at High Reliability Organization Leadership Workshops for Oil and Gas Industry Executives (April 2024, October 2024)

Presented on Root Cause Analysis and Causal Factors in Near Miss Investigations for Two National Nuclear Security Sites

Peer Review and Editorial Service

Emerald Literati Network Award for Excellence, Outstanding Reviewer 2013, *Journal of Health Organization and Management*

Invited reviewer for *Journal of Cognitive Engineering and Decision Making*

Invited reviewer for *Human Factors: The Journal of the Human Factors and Ergonomics Society*

Invited reviewer for Human Factors and Ergonomics Society 2016 International Annual Meeting for the System Development Technical Group

Reviewer for Human Factors and Ergonomics Society 2026 International Annual Meeting

Invited reviewer for *Journal of Health Organization and Management*

Applied Human Factors, Operational Safety, and Performance Excellence Presentations and Instruction

Developed and delivered training curriculum to senior-level personnel and staff at:

- Office of the Chief of Naval Operations Learning to Action Board
- Office of Naval Research Operational Safety Gap Analysis Forum
- Brazilian Submarine Force (international)
- FVEY Safety Summit (Australia, Canada, New Zealand, United Kingdom)
- Navy Human Systems Integration Council
- Navy Fleet Operational Safety Board
- Naval Safety Command
- Naval Safety Summit

NOT FOR EXPERT DESIGNATION

- Navy Data Analytics Working Group
- Naval Medical Leader and Professional Development Command Leader Development Forum
- Naval Submarine Medical Research Laboratory
- Navy Leader Development Framework Forum
- Leader Development Continuum Council, Naval War College
- United States Fleet Forces Command
- Naval Air Force, U.S. Pacific Fleet
- Naval Air Force, U.S. Atlantic Fleet
- Naval Surface Force, U.S. Pacific Fleet
- Naval Surface Force, U.S. Atlantic Fleet
- Military Sealift Command
- Naval Expeditionary Combat Command
- Naval Nuclear Laboratory
- Naval Reactors
- Naval Medical Professional Development Center
- Undersea Warfare Development Center
- Navy Inspector General
- Naval Air Warfare Center – Training Systems Division
- Naval Submarine Base New London
- Naval Submarine Base Kings Bay
- Naval Base Kitsap
- Naval Station Norfolk
- Navy Problem Solving Practitioner Workshop
- USS San Francisco (fast attack submarine)

Conference and Scholarly Contribution

Member, Human Factors and Ergonomics Society (HFES)

Member, Board of Certification in Professional Ergonomics (BCPE)

Member, International Council on Systems Engineering (INCOSE)

Member, Psychonomics Society

Member of Human Factors and Ergonomics Society Technical Groups:

- Forensics Technical Group
- Cognitive Engineering and Decision Making Technical Group
- Occupational Ergonomics Technical Group
- Perception and Performance Technical Group
- Product Design Technical Group
- Safety Technical Group
- Surface Transportation Technical Group
- Sustainability Technical Group

Member, International Council on Systems Engineering (INCOSE) Technical Communities:

NOT FOR EXPERT DESIGNATION

- Transportation
- Systems Engineering Quality Management (SEQM)
- Systems Engineering and Lawmaking
- System of Systems
- Social Systems
- Risk Management
- Resilient Systems
- Power & Energy Systems
- Natural Systems
- Integration, Verification, & Validation
- Infrastructure
- Human System Integration
- Critical Infrastructure Protection and Recovery
- Complex Systems
- Competency
- Adaptive and Adaptable Systems
- Engineering and Management
- Automotive
- Decision Analysis
- Defense Systems
- System Safety

Attended Human Factors and Ergonomics Society Annual Meeting (2025)

Topics included: Human factors in offshore wind; task interdependence in safety-critical environments; fatigue management practices for offshore shiftwork; artificial intelligence in partially automated vehicles; trust and automated vehicles; pedestrian crossing; cognitive security; risk perception; pedestrian fall analysis and investigation; accident reconstruction methodologies; time pressure; construction signs; forensic human factors

Reviewer for Human Factors and Ergonomics Society ASPIRE Conference 2026

- System Development
- Macroergonomics
- Individual Differences
- Human Performance Modeling
- Occupational Ergonomics

Attended RESPONSE User Forum hosted by Driver Research Institute (2026)

Presented at Department of Defense Human Factors Engineering Technical Analysis Group Annual Meeting (2025, 2020)

Attended National Training and Simulation Association ModSim World (2023)

Attended National Training and Simulation Association Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC), 2020

Board of Certification in Professional Ergonomics – Exam Question Writer (2019, 2025)

Presented at Human Factors and Ergonomics Society Annual Meeting (2012, 2011)

Presented at 90th Annual Meeting of the Virginia Academy of Science (2012)

NOT FOR EXPERT DESIGNATION

Chair, Automation and Human Performance Student Forum, Human Factors and Ergonomics Society Perception and Performance Technical Group (2012)

Co-chair, Multimodal Displays Session, Human Factors and Ergonomics Society Perception and Performance Technical Group (2011)

CONTINUING EDUCATION AND TRAINING

National Transportation Safety Board: Cognitive Interviewing for Accident Investigators – BASIC Certificate

National Transportation Safety Board: Cognitive Interviewing for Accident Investigators – ADVANCED Certificate

Theories of memory and recall; influences on eyewitness memory; interviewer techniques to enhance interviewee recall; impact of social dynamics on interview; using interview information in accident investigations; cognitive interview method to obtain more accurate and complete information from eyewitnesses and critical personnel in accident investigations

Department of Homeland Security/U.S. Coast Guard Crew Endurance Management – BASIC Certification

Department of Homeland Security/U.S. Coast Guard Crew Endurance Management – EXPERT Certification

Formal program of practices (the Crew Endurance Management System) for controlling risk factors that affect crewmember performance and shipboard safety in the commercial maritime industry. Scientifically based, systematic approach to maximizing crew performance and safety by increasing awareness of factors impacting endurance and improving conditions that affect endurance, thereby enhancing physical stamina and mental alertness. Focuses on managing endurance risk factors such as sleep quality, circadian entrainment and stability, environmental conditions, emotional state, stress level, diet, and physical conditioning. CEMS has been implemented and evaluated on Coast Guard cutters, air stations, small boat stations, and commercial vessels, demonstrating its effectiveness at improving crew endurance and mission effectiveness.

NYC Construction Safety Training LLC: OSHA 30 Hour General Industry Safety and Health

NYC Construction Safety Training LLC: OSHA 30 Hour in Construction Safety and Health

NYC Construction Safety Training LLC: EPA 24 Hour Hazardous Waste Operations and Emergency Response (HAZWOPER)

International Association of Arson Investigators 29-Hour Fire Investigation Multi-Program

Emergency Responder Safety / Institute US Dept of Transportation / Federal Highway Administration 10 Hour National Traffic Incident Management (TIM) Training Certificate

RESPONSE Software Training – Driver Research Institute

Certified Playground Safety Inspector 16-Hour Training and Certification

National White Collar Crime Center (NW3C)

- What to Say or Not Say: Crafting Accurate and Impactful Testimonies
- The Impact of Generative AI on ICAC Investigations and Prosecutions
- Linguistic Forensic Science: A Primer for Cybercrime Investigators, Digital Forensic Examiners, & Prosecutors
- Don’t Gamble with Counterfeit Auto Parts
- Turning Tower Data into Actionable Intelligence
- Overview of Internet of Things (IoT) for Investigators and Examiners: What’s in Your Toolkit

U.S. Navy Office of Warfighting Advantage Problem Solving Practitioner – Certificate

Methodology rooted in the scientific method to identify and understand root causes; prioritize viable and sustainable solutions; develop actionable plans and milestones; establish controls to prevent recurrence or unintended consequences; five core phases: Define, Measure, Analyze, Improve, and Control (DMAIC); integrates mindsets, skillsets, and toolsets to help teams solve problems at scale

Office of Warfighting Advantage Problem Solving Practitioner – Train the Trainer Certificate

American Association for the Advancement of Science: An Update on Strengthening Forensic Science in the US

NOT FOR EXPERT DESIGNATION

Law Enforcement Innovation Center: Introduction to Non-Confrontational Investigative Interviewing Approach

National Center for Policing Innovation: After-Action Review and Reporting: An Introduction

Kansas State University

- Same Level Falls
- Skid Steer Loader Safety

Oregon OSHA

- Accident Investigation
- Hazard Identification and Control
- Job Hazard Analysis
- Confined Space Safety
- Everyday Ergonomics
- Lockout/Tagout
- ATV Safety

NYC Construction Safety Training LLC

- Bucket Truck Safety Training
- Boom Truck Safety Training
- Forklift Safety Certification
- Powered Industrial Vehicles

American Society of Safey Professionals

- Fall Safety and Ladder Protection
- General Considerations for Organizations on Managing Infectious Diseases
- Biohazards: Risk Assessments and Protective Apparel Solutions

National Center for Rural Road Safety

- Achieving Safety Results by Addressing Behavioral Issues
- An Overview of the Factors and Processes to Increase Organization Safety Culture
- Communication Roadblocks and How to Overcome Them
- Public Health Approaches to Population-Level Behavior Change

National Highway Traffic Safety Association

- Bicycle Safety for Law Enforcement
- Motorcycle Safety for Law Enforcement
- Pedestrian Safety for Law Enforcement

National Highway Institute

- Transportation Cybersecurity
- Flagger Training
- Geometric Design of Safe Speeds
- Introduction to the Safe System
- Performance-based Design and Evaluation of Interchanges
- Road Safety Fundamentals
- Overview of Roadside Safety
- Bicycle Facility Design

NOT FOR EXPERT DESIGNATION

- Principles and Tools for Road Weather Management

SAE International

- ADAS and Accident Reconstruction
- An Update on ADAS Testing and Research

Emergency Responder Safety Institute

- Blocking Procedures at Roadway Incidents
- Advance Warning
- High Visibility Innovations
- Emergency Lighting Awareness
- Move It or Work It
- Termination
- Manual on Uniform Traffic Control Devices (MUTCD 2011 Version)
- Special Hazards
- Special Circumstances: Safe Operations for Vehicle Fires
- Traffic Incident Management – Incident Command & Management

International Association of Arson Investigators, Inc

- The Scientific Method for Fire and Explosion Investigation
- Site Safety: Personal Protective Equipment
- Fundamentals of Residential Building Construction
- The HAZWOPER Standard
- Preventing Occupational Exposures to Carcinogens at the Fire Scene
- Site Safety Assessment
- Photovoltaic Cells and Systems
- Fire Investigator Scene Safety
- NFPA 1033 & 921 Updates
- Vacant and Abandoned Buildings - Hazards and Solutions

FEMA Emergency Management Institute

- Fundamentals of Risk Management
- Decision Making and Problem Solving
- Technical Writing
- Introduction to Homeland Security Planning
- Incident Command System (ICS)
- Introduction to National Incident Management System (NIMS)
- Incident Command System for Single Resources and Initial Action Incidents
- National Response Framework, an Introduction
- Introduction to Hazardous Materials

Indiana Department of Homeland Security Training

- Effective Communication
- START Triage

NOT FOR EXPERT DESIGNATION

Louisiana State University National Center for Biomedical Research and Training, Academy of Counter-Terrorist Education: Terrorism Prevention and Deterrence—An Overview for All Disciplines

Texas A&M Engineering Extension Service/Integrative Center for Homeland Security: Basic EMS Concepts for WMD Incidents

University of Minnesota, School of Public Health: Mass Dispensing Sites, a Primer for Volunteers

American Red Cross: Psychological First Aid

Norfolk, VA Department of Public Health: Mass Fatality Response for Medical Reserve Corps

Defense Acquisition University

- Introduction to Science and Technology Management
- Intermediate Science and Technology Management
- Leadership in Science and Technology Management
- Fundamentals of Test and Evaluation
- Fundamentals of Systems Acquisition Management
- Production, Quality, and Manufacturing Fundamentals
- Prototyping and Experimentation
- Fundamentals of Systems Engineering
- Applied Systems Engineering in DoD Acquisition, Part I and Part II
- Advanced Systems Engineering
- Reliability, Availability, and Maintainability
- Fundamentals of System Sustainment Management
- Team Management and Leadership
- Risk Management
- Modeling and Simulation for Test and Evaluation
- Systems Engineering for Systems of Systems
- Intermediate Systems Acquisition, Parts A and B
- Cost Analysis
- Technical Reviews
- Modular Open Systems Approach
- Technology Readiness Assessment
- Intellectual Property and Data Rights
- Technology Transfer
- Cybersecurity through DoD Acquisition
- Designing for Supportability in DoD Systems
- Performance Based Logistics
- Introduction to Earned Value Management
- Contract Planning
- Contract Execution
- Contract Management
- Fundamentals of Earned Value Management
- Fundamentals of Acquisition for Facilities Engineering

NOT FOR EXPERT DESIGNATION

- Intermediate Facilities Engineering
- Information Systems Acquisition
- Life Cycle Logistics Fundamentals
- Program Management Tools, Part I and Part II
- Contracting Officer Representative (COR) Training
- Contracting Officer Representative (COR) with a Mission Focus
- Contracting Officer Representative (COR) in a Contingency Environment

NOT FOR EXPERT DESIGNATION