

Troy Hall

Multidisciplinary Defense & Technical Expert

USAF Retiree with 30+ years in armament, mechanical design, and cybersecurity. Experienced in education, governance compliance, and resilient system design, I leverage technical expertise and leadership to drive defense industry innovation.

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EXPERIENCE

Technical Lead | Hardware Simulation & Prototyping

Spearheaded the analysis, repair, and continuous improvement of a broad portfolio of electro-mechanical training simulators, including complex optical, laser-targeting, and weapon platforms.

Designed and prototyped upgraded hardware components using 3D modeling (CAD), 3D printing, and precision circuit board design and fabrication to resolve legacy equipment failures.

Engineered custom work-holding solutions and precision tooling to support high-tolerance manufacturing and assembly workflows.

Authored comprehensive engineering reports detailing mechanical and software engineering, production, and system integration procedures.

Systems & Security Specialist | Independent Contractor

Executed continuous monitoring and risk mitigation programs, aligning system defenses with Security Technical Implementation Guides (STIG) and Cybersecurity Risk Management Construct (CSRMC) principles.

Streamlined security audits and compliance reporting for highly regulated networks—including infrastructure supporting multinational defense industry, payment processing, and state/federal standards—using traditional and cutting edge tools.

Managed enterprise-level server virtualization and infrastructure upgrades to maintain high availability and strict security compliance across diverse operational environments.

Armament Systems Specialist | United States Air Force (Ret)

Directed the maintenance, inspection, and quality assurance of complex systems, maintaining operational readiness rate for high-value assets.

Led technical curriculum development and served as a senior educator and evaluator, designing instructional frameworks to assess and validate operator proficiency on complex hardware.

Directed technical teams in high-pressure settings, ensuring compliance with federal standards, engineering tolerances, and safety protocols.

SKILLS

Tactical Systems &

Simulation: Advanced proficiency in military-grade simulation, situational awareness, and battlespace management platforms; specialized in small arms/close air support protocols and technical training curriculum development.

Cybersecurity & Automation:

Orchestrated enterprise-level cybersecurity compliance and automated scripting across high-security frameworks, spanning international defense agencies, state-level educational boards, and private industry sectors.

Advanced Manufacturing:

Expert-level utilization of CAD/CAM software for precision engineering and the execution of complex manual and computer-controlled machining operations.

Project Leadership: Authored Standard Operating Procedures (SOPs), Authority to Operate (ATOs) and Cybersecurity Maturity Model Certification (CMMC); directed end-to-end life cycles from initial design through final engineering analysis.

EDUCATION

Western Dakota Technical College, Rapid City, SD

GRADUATE AND CONTINUING EDUCATION

Certified in Engineering Technology; Current coursework in Technical Studies and Computer Science.

Future Curriculum: Selected for the upcoming Gunsmithing Program (2027) to align with South Dakota's defense industry expansion.

National American University (NAU)

Bachelor of Science: Applied Information Technology

MyComputerCareer (MyCC)

A.A.S. IN NETWORK ADMINISTRATION AND CYBER SECURITY

Program Graduate: Cyber Security Engineer, Cyber Security Specialist, and Information Technology Security & Administration.

Lake Area Technical College

Coursework: Computer Information Systems (Network / Security Option)

Air University—Community College of the Air Force (CCAF)

A.A.S. DEGREES

Instructor of Technology and Military Science; Aircraft Armament Systems Technology.

CERTIFICATIONS & SPECIALIZED TRAINING

CompTIA: Security+ | A+ (Hardware & Software) | Network+ (Pending Certification)

PROJECTS

IZLID Capstone Project — *Electro-Mechanical Design & Prototyping*

Engineered and prototyped the IZLID electro-mechanical assembly, focusing on the Base-Cap microswitch interface. The project included precision CAD modeling, application of GD&T, CNC fabrication of a custom PCB, 3D printing of housing components, and integration of a Teensy microcontroller and custom firmware for functional verification.

HOBBIES & INTERESTS

Mentorship & Technical Instruction:

Dedicated to knowledge transfer and capacity building, with extensive experience designing instructional frameworks, mentoring technical teams, and simplifying complex concepts to empower others in mastering cybersecurity, mechanical engineering, and tactical systems.

Ethical Advocacy:

Champion the "Tread Lightly!" ethic, educating recreationists on environmental stewardship to protect natural resources while maintaining vital economic access for gateway communities.

Volunteer Leadership:

Direct volunteer teams in high-impact cleanup and reclamation projects, fostering cooperation between motorized enthusiast groups and federal land managers.