Thomas Barth Ph.D. tom@tbarexpert.com

WORK EXPERIENCE

Job Title: **Consultant, Owner**
Company: TBar Expert LLC March 2025 to present
Boulder, Colorado

Consultant/Contract Engineering: I am a Subject Matter Expert in the areas of Crash Investigation, Crash Survivability, Emergency Response, Battery Safety, Safety Management Systems and Regulatory Compliance.
Current contract/consulting roles:

- Technical Advisor/Engineer: ESA contract developing battery safety plans/response for the Port Authority of New York and New Jersey
- Research Advisor: NFPA Fire Protection Research Foundation, Electric Vehicle Toolkit
- Technical Expert Panels: UL, NFPA, IAFC research projects and working groups

Job Title: **Chief, Special Investigations Branch, Office of Highway Safety:** Jan 2021 to March 2025
Senior Investigator and Biomechanics Engineer: Jan 2011 to Jan 2021
Agency: National Transportation Safety Board (NTSB), Washington DC
(Duty Station: Denver Colorado)

Current position as Chief: I supervised a team of 7 investigators for transportation crashes or other safety events such as fire/explosions and bridge collapses. The investigations focused on national safety priorities in areas of emerging technology and regulatory oversite of highway transportation systems.

- Managed the full investigation process from on-scene evidence, post-event development of the probable cause, analytical findings, and transportation safety recommendations.

Previous NTSB position as Investigator: I served as Survival Factors Group Chairman (GC), Investigator-In-Charge (IIC), and biomechanics engineer for large scale transportation disasters and other incident investigations focused on occupant protection and evacuation, emergency response, and lithium-ion battery fires for private and commercial vehicles.

- Survival Factors Group Chairman > 15 major accident highway and railroad investigations
- IIC, GC, or specialist investigator for > 50 highway and railroad investigations
- Core contributor to NTSB Special Reports SR2001 (Safety Risks to Emergency Responders from Lithium-Ion Battery Fires in Electric Vehicles), HIR-24-03 (Fire on Battery Electric Transit Bus), and SR1501 (Commercial Vehicle Onboard Video Systems)

Job Title: **Director of Research and Development, Regulatory Compliance**
Company: AmSafe Inc. January 4, 1999 to December 17, 2010
Phoenix, Arizona, USA and Toulouse, France

I was the technical director and public face of the company leading the development, certification, and product launch for the novel product line of airbag systems for commercial airliners and general aviation (GA) aircraft. This greatly expanded the technical scope of the company, requiring research in vehicle crash and occupant safety, novel regulatory compliance, risk assessment, failure analysis, and new mechanical and electrical technologies such as pyrotechnic pressure vessels, crash sensors, and energy storage (li-ion batteries).

Job Title: **Senior Development Engineer**
Company: TRW Airbag Systems GmbH May 1996 to December 1998
Aschau am Inn, Germany

I was the project leader developing automotive airbag inflators. I created system reliability models, and safety and failure modes analysis using qualitative and quantitative solutions. I performed design of experiments and statistical analysis to characterize the performance of dynamic systems.

WORK EXPERIENCE (continued)

Job Title: **Senior Project Engineer**
Company: Simula Inc. March 1993 to April 1996
Phoenix, Arizona, USA

I was a product development engineer for aircraft and military vehicle systems. The systems were crash impact safety, occupant seating and restraints, and ballistic armor protection (transparent and lightweight composite). I conducted applied research on energy absorbing dynamic systems for injury biomechanics.

Job Title: **Project Engineer**
Company: TRW Vehicle Safety Systems January 1990 to March 1993
Mesa, Arizona, USA

I was a project engineer developing automotive inflatable restraint products (airbag modules, gas gen., initiators). I directed suppliers in creating components (sheet metal stampings; plastics injection molding; aluminum and zinc casting; laser welding; inertia welding). I conducted statistical experiments and performed FMEA and Reliability analysis.

EDUCATION

Cranfield University	PhD, School of Applied Science, 2009
Cranfield, Bedfordshire England	Thesis: Aircraft Crash Survivability from Viscous Injury in Vertical Impacts
Colorado State University	B.S. in Mechanical Engineering, 1989
Fort Collins, Colorado, USA	Thesis: Lightweight Composite Structures (Solar Car) Project: Automobile Conversion to Methanol Fuel
Regis Jesuit High School,	Diploma 1985
Denver Colorado	

PATENTS and AWARDS
I have 3 U.S. and 4 German Patents on aircraft safety systems, airbag systems electrical protection, and airbag technology. I have 5 group awards and 10 individual recognition awards for NTSB work on crash investigations and public hearings, safety workshops, and report development for emerging technologies. This includes the 2020 Dr. John K Lauber Science and Engineering Award (Individual), and the Safety and Technology of the Year 1999 award from Aviation Week Magazine for the AmSafe Aircraft Airbag Inflatable Restraint (company award).

PUBLICATIONS and CONFERENCE PRESENTATIONS
I have more than 70 technical papers and conference presentations from 1995 to the present. Recent topics are infrastructure, vehicle automation and system safety, and electric vehicle fires for passenger cars and battery electric transit buses. The events include invitations as an SME and Keynote speeches. (Full list available upon request.)

INTERVIEWS FOR PRINT, RADIO, TELEVISION, and ONLINE
I have more than 30 interview citations or appearances as an SME for transportation safety and emerging technology since 2005. Throughout my career I've been selected as a public facing representative for issues such as electric vehicles (over last 5 years), motorcoach and school bus safety (2014-2018), and vehicle occupant safety and airbag technology (2000 to 2010). (List available upon request.) This included my role as a featured scientist in the full length documentary film "Plane Crash" broadcast by Discovery Channel (USA), BBC Channel 4 (UK), and Pro-Sieben (Germany), released April 2012.

ORGANIZATIONS (Current and past)
Society of Automotive Engineers (SAE), Battery Safety Council, Battery Safety Steering Committee, Federal Interagency Lithium Battery Working Group; Federal Interagency Committee on EMS; International Society of Air Safety Investigators (ISASI), Aerospace Medical Association (ASMA), General Aviation Manufacturers Association (GAMA), SAFE Association, American Helicopter Society (AHS)

Technical Committees and Working Groups: International Association of Fire Chiefs (IAFC) Battery Committee, UL Fire Safety Research Institute and NFPA: Electric Vehicle Fire Testing Technical Panel and Electric Transit Bus Fire Prevention and Risk Management Technical Panel, SAE Hybrid and EV First and Second Responder Task Force, SAE Hydrogen Vehicle working Group, Global Technical Regulation for Electric Vehicles, GTR-20.