



## **DONALD K. EISENTRAUT, B.S.M.E., P.E., ACTAR**

### PROFESSIONAL BIOGRAPHICAL OUTLINE

#### **BACKGROUND**

Mr. Eisentraut holds a B.S. in Mechanical Engineering from Arizona State University, is a licensed Professional Engineer and is recognized as a leading accident reconstructionist and engineer in the field of collision injury reduction techniques. He is accredited as a Traffic Accident Reconstructionist by ACTAR (#1066) and as a certified Crash Data Retrieval System Operator. He has spent his 27-year career researching, designing, developing and improving ground and air vehicle occupant protection systems, including seats, seatbelt systems and inflatable restraints. In addition, he is experienced in forklift safety, accident investigation and restraint performance.

Mr. Eisentraut is well known as an expert in the forensic analysis of occupant protection and vehicle motion in crash environments. He provides expert testimony in litigation involving accident reconstruction and occupant protection. He has conducted training courses and presentations for military and commercial clients. He has published numerous technical papers, and also co-owns a patent for a vehicle safety seat system for passenger vehicles.

#### **SUMMARY OF EXPERIENCE**

- Designed and developed lifesaving crew seats and safety products currently in use in commercial and military aircraft
- Acted as designated project engineer for several projects related to commercial airline transport seating prototypes and military crash-resistant crewseats and restraints
- Conducted feasibility studies of crash-resistant seating of a commercial production helicopter
- Led engineering teams in the research, design, development and test efforts for critical improvements in aircrew survivability for the Navy, Army, Federal Aviation Administration and NASA
- Led project teams in the research of crashworthiness of seating and restraint systems
- Was instrumental in computer-aided design of production hardware
- Conducted multi-axis dynamic tests using anthropomorphic dummies
- Generated detailed specifications for military and commercial crew and passenger seating
- Known as an expert in research, development, testing and evaluation of seating and restraints systems and in the field of accident reconstruction
- Serves as senior consulting engineer on projects relating to accident reconstruction and occupant protection improvement, as well as assessment and simulation of occupant motion, injury mechanisms, and vehicle dynamics
- Certified as a Crash Data Retrieval Technician / Analyst for recovery and review of data from Event Data Recorders (EDRs), often referred to as “black boxes”



## AREAS OF SPECIALTY

- Accident Reconstruction
- Occupant Kinematics
- Aircraft Seating and Restraint Design
- Crashworthiness Research
- Vehicle Dynamics Analysis
- Occupant Protection Research and Testing
- Forensic Analysis
- Computer-Aided Design
- Ground and Air Vehicle Crash Testing
- Crash Data Retrieval (CDR) & Analysis

## EDUCATION

- B.S. Mechanical Engineering, Design Specialty, Arizona State University, Tempe, AZ, 1975
- Licensed Professional Engineer, Commonwealth of Pennsylvania
- Accredited Traffic Accident Reconstructionist, ACTAR #1066

## TRAINING

- Crash Data Retrieval System Operator, Collision Safety Institute, July 20, 2005
- Computerized Accident Simulation, Engineering Dynamics Corporation, January 28, 2000
- Computerized Accident Reconstruction, Engineering Dynamics Corporation, November 19, 1999

## PROFESSIONAL EXPERIENCE

### October 1989 – Present | ARCCA, Incorporated | Vice President

- Leads seating and restraint system research and development and accident reconstruction projects
- Analyzes and designs occupant protection systems
- Assesses occupant motion and vehicle dynamics in response to applied crash forces
- Performs computerized simulations to illustrate crash and safety components
- Performs data retrieval and analyses from vehicle on-board event data recorders (black boxes)

### October 1985 – October 1989 | Bell Helicopter Textron, Incorporated | Engineering Specialist

- Led projects focusing on crashworthy seating and restraint systems
- Designed occupant protection systems for commercial and military aircraft
- Conducted research and development projects on crashworthy seating and restraint systems
- Produced computer-aided designs of production hardware
- Performed multi-axis dynamic tests using anthropomorphic dummies
- Conducted feasibility studies for integration of crash-resistant seating in commercial production helicopters
- Provided engineering support for development of commercial production fleet restraints and seating components

### November 1982 – October 1985 | Simula Incorporated | Project Engineer

- Designed and developed occupant protection systems, as well as general aviation, commercial, and military safety products
- Designated Project Engineer for research into improvements in aircrew survivability, including design of airline transport seats and folding flight attendant seat improvements
- Designed and tested SH-3 crash-resistant crewseat and restraint for U.S. Navy

### January 1976-November 1982 | Goodyear Aerospace Corporation | Senior Engineer

- Led mechanical design support for airborne side-looking radar systems
- Involved in the design and analysis of lightweight structures for application to efficient crashworthiness designs

## PROFESSIONAL AFFILIATIONS

Society of Automotive Engineers (SAE)

## PATENTS

Co-inventor of Vehicle Safety Seat System in Passenger Vehicles, USSN 08/339,859, Patent Number 5553924, issued September 10, 1996

Co-inventor of Dual Stage Variable Load Energy Absorber for Vehicle Seating, U.S. Patent No. 8,162,374B2, April 24, 2012

Co-inventor of Dual Stage Variable Load Energy Absorber for Vehicle Seating, U.S. Patent No. 8,439,420B2, May 14, 2013.

## PUBLICATIONS

Yannaccone, J. R., A. Cantor, **D. K. Eisenbraut**, et al. (2005). *Occupant Protection from Cargo in Armored Vehicles (SAE 2005-01-0879)* Selected for inclusion in *SAE Transactions 2005*. SAE 2005 World Congress. Detroit, Michigan

Joganich, T. G., M. L. Markushewski, Cantor, A., L.A. D'Aulerio, Whitman, G.R., J. R. Yannaccone, **D.K. Eisenbraut**. (2000). *Effect of Cognitive Workload on Automatic Restraint System Usage (SAE 2000-01-0174)*. Selected for inclusion in *SAE Transactions*. SAE 2000 World Congress. Detroit, MI, Society of Automotive Engineers.

Cantor, A., W. H. Muzzy III, **D. K. Eisenbraut**, et al. (1995). *Assessment and Control of Dynamic Overshoot with Automotive Seating During Vertical Impacts (SAE 951084)*. Proceedings of the IX International Conference on Vehicle Structural Mechanics and CAE, Troy, MI, Society of Automotive Engineers.

Cantor, A. and **D. K. Eisenbraut**. (1990). *"The Seat Belt Defense."* Trial Lawyers Section Digest - No. 16.

**Eisenbraut, D. K.** and R. Zimmerman. (1983). *Crashworthy Cyclic Control Stick*, USAAVRADCOM-TR-83-D-23, U.S. Army Research and Technology Laboratory, Ft. Eustis, VA.

## PRESENTATIONS

- April 2002** Cannon, M., **D. K. Eisenbraut**, Shanahan, D. (2002) *Assessment of Timely Lockup of Web-Sensing Restraint Retractors (No. 2002-01-1548)*. presented at Society of Automotive Engineers' General Aviation Technology Conference and Exhibition, Wichita, Kansas.
- October 2003** **Eisenbraut, D.K.** (2003). *Rear End Collisions and Seat Performance*. Annual Conference of the New Jersey Association of Accident Reconstructionists. Atlantic City, New Jersey.
- 1999** **Eisenbraut, D. K.**, (1999). *The Seat Belt Defense: Computerized Occupant Kinematics*, presented at the Transportation Megaconference IV, New Orleans, LA, American Bar Association Tort and Insurance Practice Section.
- November 1998** **D. K. Eisenbraut.** (1998). *Applied Crash Worthiness*, presented at the Occupant Crash Protection Training Course at the Naval Air Warfare Center (NAWC), Patuxent River, MD, November 1998.
- 1997** Whitman, G. R., K. A. Brown, A. Cantor, L. A. D'Aulerio, **D. K. Eisenbraut**, et al. (1997). *Booster-with-Shield Child Restraint Case Studies (SAE 973307)*. Second Child Occupant Protection Symposium (A special joint session sponsored by Stapp, AAAM, and IRCOBI). Lake Buena Vista, FL, Society of Automotive Engineers.
- 1997** Markushewski, M.L., A. Cantor, W. H. Muzzy III, L. A. D'Aulerio, G.R. Whitman, K.A. Brown, **D. K. Eisenbraut.** (1997). *Assessment of Asymmetrical Anchor Points and Load-Limiting Loops with the Lap Portion of Automotive Occupant Restraints*. 35th Survival and Flight Equipment SAFE Association. Phoenix, AZ.
- 1997** **Eisenbraut, D. K.**, W. H. Muzzy III, et al. (1997). *Assessment of Timely Retractor Lockup in Automotive Seat Belt System (SAE 971515)*. Proceedings of the Tenth International Conference on Vehicle Structural Mechanics and CAE, Troy, MI, Society of Automotive Engineers.
- November 1994** Cantor, A., W. H. Muzzy III, **D. K. Eisenbraut**, et al. (1994). *Occupant Dynamic Response to Vertical Acceleration (+Gz) With Automotive Seating*. Proceedings of the November 1994 Materials Technology for the 21st Century International Congress and Expo. Chicago, IL.
- 1993** Muzzy, W. H., A. Cantor, **D. K. Eisenbraut**, et al. (1993). *Seat Back Yielding and Collapse: A Danger to Occupants During Real World Collisions*. 1993 Bioengineering Conference, American Society of Mechanical Engineers.
- 1989** **Eisenbraut, D. K.**, (1989). *UH-1N Crash-Resistant Crewseat*, oral presentation to American Helicopter Society at Lichten Award Competition.