

# McHenry Consultants, Inc.

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## Resume of Brian G. McHenry

### Professional Experience

**1980 to date.** Vice President, Staff Scientist, Research Associate, McHenry Consultants, Inc., Cary, North Carolina.

Technical duties: Investigation and reconstruction of over 900 motor vehicle accidents including applications of the SMAC, CRASH, HVOSM and CVS/ATB computer programs; Research applications, including development and refinement of the SMAC, CRASH, HVOSM and CVS/ATB computer programs and the design and implementation of auxiliary pre-processing and post-processing routines; analysis of contributing factors in motor vehicle accidents; preparation of graphic displays including computerized animations for illustrating reconstruction results and engineering principles in motor vehicle accidents; accident scene and vehicle documentation and measurements; photography including processing and printing; documentation of technical data related to motor vehicle and highway specifications, design features and corresponding test results; state of the art literature reviews.

**1979 to 1980.** Engineering Technician, Research Engineers, Inc., Research Triangle Park, North Carolina. Technical duties: Operation of SMAC, CRASH and HVOSM computer programs in the reconstruction of motor vehicle collisions; analysis of contributing factors in motor vehicle collisions including vehicle defect analysis; preparation of graphics to illustrate reconstruction results and engineering principles in motor vehicle collisions; photography, including processing and printing of black-and-white and color film; search for and documentation of technical data related to motor vehicle and highway specifications, design features and corresponding test results.

### Publications

- [1] "**National Crash Severity Study - Quality Control - Task V: Analysis to Refine Spinout Aspects of CRASH**", Contract DOT-HS-6-01442, January 1981 (with R. R. McHenry)
- [2] "**Effectiveness of Design Criteria for Geometric Elements - Follow-up HVOSM Studies of Highway Curb Impacts**", Report FHWA-11-9575, November 1981 (with R. R. McHenry; J.C. Glennon; T. R. Neuman).
- [3] "**HVOSM Studies of Cross-Slope Breaks on Highway Curves**", Contract DOT-FH-11-9575, PB33 191619; May 1982 (with J.C. Glennon, T.R. Neuman and R. R. McHenry).
- [4] "**HVOSM Studies of Highway Cross Slope Design**", Contract DOT-FH-11-9575, PB86 114840; Oct 1983 (with J.C. Glennon, T.R. Neuman)
- [5] "**Prediction of the Sensitivity of Vehicle Dynamics to Highway Curve Geometrics by Using Computer Simulation**", January 1983, Transportation Research Board Record 923, (with J.C. Glennon; T.R. Neuman).
- [6] "**Comparison of Simulation Programs - Task E Progress Report**", Contract DOT-FH-11-9575; April 1983
- [7] "**HVOSM Studies of Highway Centerline Crowns**", Contract DOT-FH-11-9575' October 1983 (with J.C. Glennon, T.R. Neuman).
- [8] "**A Revised Damage Analysis Procedure for the CRASH Computer Program**", SAE paper No. 861894, Presented at the 30th STAPP Car Conference, October 1986; also published in 1986 SAE Transaction, Vol. 95, Journal of Passenger Cars; also published in SAE book Reconstruction of Motor Vehicle Accidents: A Technical Compendium; SAE publication PT-34. (with R.R. McHenry)
- [9] "**Safe Geometric Design for Minicars**", March 1987; Contract # FHWA/RD-87/047; PB89-185037; Highway Safety Research Center, University of North Carolina, Chapel Hill, N.C. (with F.M. Council, D.W. Reinfurt, R. N. Knoblauch, J.R. Stewart)
- [10] "**Simulation Models of Vehicle Dynamics**", presented November 1987, National Conference on Future Improvements to and Supplemental Guidance for AASHTO Policy on Geometric Design of Highways and Streets; Published April 1992, Transportation Research Board Circular "Beyond the Green Book".
- [11] "**SMAC-87**", SAE Technical Paper No. 880227, Presented at the International Congress and Exposition, Detroit, Michigan, March 1988; also published in 1988 SAE Transactions, Vol 97; Journal of Passenger Cars; (with R. R. McHenry).
- [12] "**HVOSM-87**", SAE Technical Paper No. 880228, Presented at the International Congress and Exposition, Detroit, Michigan, March 1988 (with R. R. McHenry).
- [13] "**Effects of Restitution in the Application of Crush Coefficients**", SAE Paper No. 970960, 1997; also published in SAE book Crash Reconstruction Research: 20 Years of Progress (1988-2007), PT-138, also published in 1997 SAE Transactions, Vol 106; Journal of Passenger Cars; (with R. R.. McHenry).
- [14] "**SMAC-97 - Refinement of the Collision Algorithm**", SAE Paper No. 970947, 1997; also published in 1997 SAE Transactions, Vol 106; Journal of Passenger Cars; (with R. R. McHenry).
- [15] "**CRASH-97 - Refinement of the Trajectory Solution Procedure**", SAE Paper No. 970949, 1997; also published in 1997 SAE Transactions, Vol 106; Journal of Passenger Cars; (with R. R. McHenry).
- [16] "**RICSAC-97 - A Reevaluation of the Reference Set of Full Scale Crash Tests**", SAE Paper No. 970961, 1997; also published in 1997 SAE Transactions, Vol 106; Journal of Passenger Cars; (with R. R. McHenry).
- [17] "**McHenry Accident Reconstruction**", 1998-2003, McHenry Software, Inc. (with R. R. McHenry).
- [18] "**The Algorithms of CRASH**", Southeast Accident Reconstruction Society Annual Conference, Cocoa Beach, Fl. (<http://www.mchenrysoftware.com/SECCC%20Presentation.pdf>)

## Publications (cont.)

- [19] "**Occupant Kinematics in Forensics: Evaluating the Appropriateness and Applicability of an ATB Application**", Presented 2002 ATB Users' Conference, Patuxent River, MD (<http://www.mchenrysoftware.com/McHenry.pdf>)
- [20] "**SMAC2003 – The Automatic Iteration of SMAC**", SAE Paper No. 2003-01-0486, presented at 2003 SAE International Congress, Detroit, MI, March 2003 (with R.R. McHenry).
- [21] "**Head Injury Criterion and the ATB**", Presented at the 2004 ATB Users' Conference, September, 2004, Salt Lake City, UT (<http://www.mchenrysoftware.com/HIC%20and%20the%20ATB.pdf>)
- [22] "**Evaluating Computer Modeling, Simulation & Animation**", Presented at 21<sup>st</sup> IATAI Conference, Bloomington, IL, Sept 2007 ([http://www.mchenrysoftware.com/McHenry\\_IATAI\\_2007\\_Presentation.pdf](http://www.mchenrysoftware.com/McHenry_IATAI_2007_Presentation.pdf))
- [23] "**A Short History of Nearly Everything! (...about McHenry and Computers in Highway Safety)**", **Collision Magazine**, Volume 6, Issue 2 - Fall 2011
- [24] "**CRASH Damage Analysis**", Raymond R. & Brian G. McHenry, McHenry Software, 2014 NAPARS Conference, Portland, Maine, Sept 2014
- [25] "**The Proper Use of Simulation Technology for Collision and Rollover Reconstructions**", Brian G. McHenry, McHenry Software, May 2015, 2015 IPTM Special Problems
- [26] "**A Review of the Development and Validation of Simulation Tech for Accident Reconstruction**", Brian G. McHenry, McHenry Software, Dec 2015, Collision Magazine, Volume 10, issue 2

## Awards

- **2003: Excellence in Oral Presentation**, SAE International, for presentation entitled "**SMAC2003: The Automatic Iteration of SMAC**" at the SAE World Congress, March 2003

## Seminars, Presentations, Special Projects

- **Jan 2017**, Hired by Jaguar UK to create a spiral jump stunt for the 2018 Jaguar E-Pace Rollover Rollout Stunt July 2017
- **May 2015**: Keynote Speaker on "**The Proper Use of Simulation Technology for Collision and Rollover Reconstructions and Highway Safety**", 2015 Institute of Police Technology & Management (IPTM) Special Problems, Clearwater Beach, FL
- **Sept 2014**: Speaker on "**Crush Damage and Energy**", National Association of Professional Accident Reconstruction Specialists (NAPARS) Conference, Portland, Maine
- **May 2011**: Speaker at the 2011 ARC-CSI conference, "**A Short History of Nearly Everything! (...about McHenry and Computers in Highway Safety)**", May 2011, Las Vegas
- **October 2008**: Instructor at 3 day **McHenry Accident Reconstruction Seminar 2008**, Raleigh, NC
- **Sept 2007**: "**Evaluating Computer Modeling, Simulation & Animation**" Presentation at the 21<sup>st</sup> IATAI Conference
- **March 2007**: "**Forensic Engineering**" presentation at ASME Eastern NC Section meeting
- **Sept 2004**: Presented Paper "**Head Injury Criterion and the ATB**", at the 2004 ATB Users' Conference, Salt Lake City, UT
- **April 2003**: Instructor at 3 day **McHenry Software Training 2003**, Raleigh, NC
- **May 2002**: Instructor at 3 day **McHenry Software Training 2002**, Raleigh, NC
- **April 2002**: Presented paper "**Occupant Kinematics in Forensics: Evaluating the Appropriateness and Applicability of an ATB Application**" at the 2002 ATB Users' Conference, Patuxent River, MD
- **August 2001**: Presented paper "**The Algorithms of CRASH**" at the Southeast Accident Reconstruction Society Annual Conference in Cocoa Beach, FL.
- **November 2000**: Instructor at 3 day **McHenry Accident Reconstruction Seminar 2000**, Los Angeles, CA
- **December 1999**: Speaker on "**SMAC Computer Program**", at Society of Automotive Engineers (SAE) TOPTEC "Accident Reconstruction - State of the Art", Costa Mesa, CA.
- **March 2000, May 1999**: Served on Federal Highway Expert Panel for "**Effects of Highway Design on Rollover**", Highway Safety Research Center, Chapel Hill, NC, , Federal Highway Contract DTFH61-98-C-00057
- **1998**: Hired by CBS News program 48 Hours News to reconstruct and explain the Princess Dianna automobile crash on broadcasts in June and August of 1998.
- **March 1999**: Instructor for a 5 day Accident Reconstruction Seminar, Road Accident Research Unit (RARU), The University of Adelaide, Adelaide, Australia
- **October 1998**: Instructor at 3 day **McHenry Accident Reconstruction Seminar, 1998**, Raleigh, NC
- **May 1998**: Hired by CBS News to reconstruct the Princess Di accident for the television program "**48 Hours**". Presented results and answered questions in interview broadcast on June 11, 1998 and August 31, 1998.
- **Various 1998-2000**: Consultant to National Traffic Safety Board (NTSB) for special projects including the simulation of school bus/tractor trailer collisions.
- **May 1994**: Instructor for a 5 day Accident Reconstruction Seminar, Road Accident Research Unit (RARU), The University of Adelaide, Adelaide, Australia

## Education

- North Carolina State University, Raleigh, North Carolina, part-time 1980-83; Engineering, Computer Science
- University of Buffalo, Buffalo, New York, 1975 to 1978, Engineering, Computer Science, Photography, Graphic Arts, Accounting
- University of Michigan. Ann Arbor, Michigan, 1974 to 1975, Engineering Physics