

Eugene William Bartel
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Personal: Married, two sons.

Education: Bachelor of Science, 1966, Carnegie Institute of Technology
Major: Electrical Engineering
Special Emphasis on Computer Systems

Master of Science, 1967, Carnegie Institute of Technology
Major: Electrical Engineering
Graduate project involved extensive circuit theory and design evaluation.

Doctor of Philosophy, 1971, Carnegie-Mellon University
Major: Electrical Engineering
Thesis Topic: The Investigation of Recovery Time in the Electrical Discharge Machining Process and the Consequences of the Influence of the Recovery Time Between Discharges.

The research involved an evaluation of the phenomena associated with the recovery of a spark discharge plasma and the thermal heat flow from the plasma gases.

Experience: **Electrical Engineering Consultant & Fire Investigator**
1989 to Present: **Bartel, Rudolf & Associates**
1968 to Present: **Bartel Engineering**

I have been actively involved in private consulting since 1968, both on my own and in conjunction with many other experts including Dr. A. S. Weinstein, Mr. Rowland C. Rudolf III and the late Dr. Everard M. Williams, Dr. J. P. Romualdi, and Dr. T. O. Hockenberry,. I am a Registered Professional Engineer, a Certified Fire Investigator, and a Board Certified Forensic Engineer. The consulting work includes investigations into the cause and origin of numerous fires with respect to possible electrical causes, many electrical shock incidents, and court litigation to settle disputes regarding product related damage. I have worked with three professional groups - one at Carnegie-Mellon University known as TEC Consulting and two other outside groups - Forensic Consultants and Romualdi, Davidson & Associates. I am presently involved in a partnership, Bartel, Rudolf and Associates, with Mr. R. C. Rudolf, who has worked with me on many fire

and accident Investigations. My experience includes examination and analysis of television sets, washing machines, dryers, stereo systems, can openers, coffee makers, humidifiers, computer systems, telephone systems, door openers, palletizers, grinding machines, mixers, deep fryers, film processors, furnaces, air conditioners, power regulators, motors, gas engines, boats, trucks, automobiles, tractors, refrigerators, ranges, microwave ovens, rolling mills, presses, stamping machines, distribution & transmission lines, and many more. I have been listed in the Transportation and Products Legal Directory, in The Best Lawyers in America's Directory of Experts and in Who's Who in Engineering and Professionals. My list of clients included Bell of Pennsylvania, General Electric, Zenith Radio Corporation, Westinghouse, Allegheny Ludlum Steel Corporation, The Chessie System, Inc., the RCA Corporation, Emerson Electric Company, and numerous other companies, private individuals and organizations.

1985 to 1992:

**Senior Research Engineer
Electrical and Computer Engineering
Data Systems Storage Center, Carnegie-Mellon University
Pittsburgh, Pennsylvania.**

Responsibilities with the department of Electrical and Computer Engineering typically include teaching one course a semester, typically at the undergraduate level and advising and counseling student in regard to their curriculum and elective courses. Responsibilities in the Data Systems Storage Center include working with graduate students to assess and evaluate their thesis experiments to provide continuity for future efforts involving the same equipment, to interact with industrial sponsors to expedite their use of the Center's equipment and facilities, to expand existing facilities to enhance the Center's capabilities in all aspects of magnetic research. Most recent work included involvement in thin film recording head evaluation and characterization, the assessment of magnetic storage media in regard to erasure and noise levels, the investigation into magnetic core steel losses in transformer steel, the automation of several magnetic characterization test setups, and a study of the effects that different magnetic fields have upon the erasure of hard magnetic disks.

1980 to 1985:

**Assistant Director of the Robotics Institute and
Senior Research Engineer in Electrical Engineering
Carnegie-Mellon University,
Pittsburgh, Pennsylvania.**

Responsibilities as the Assistant Director of the Robotics Institute included administration over all office and laboratory space, coordinating the purchase of necessary scientific equipment for the institute research, assist in the project work relating to the Flexible Assembly Cell and to coordinate the establishment of a Sensors Lab and working closely with the Industrial

Relations group, the Smart Sensors Laboratory and Ben Franklin Project on Robotic Coal Mining. Responsibilities as a Senior Research Engineer in Electrical Engineering included the United States Bureau of Mines research into the use of a Digital Time Domain Reflectometry system to locate electrical faults in mining cables, supervision of technical support personnel, laboratory space and electronic equipment, coordination of all building activities and maintenance and student counseling, advising and teaching.

1973 to 1980:

**Senior Research Engineer
Assistant Professor of Electrical Engineering (1973-1977)
Carnegie-Mellon University, Pittsburgh, Pennsylvania**

(Assistant Head of Department from 1973 to 1976) Responsibilities included sharing administrative duties with the Department Head, supervising laboratories, physical facilities, and technical personnel, student counseling, and curriculum preparation. Faculty duties included teaching and research into many areas: e.g. Mass Transit Security, Power Distribution Systems, Automotive Semiconductor Reliability, and Electrical Discharge Machining.

Primary responsibility was with a project, sponsored by the United States Bureau of Mines, to investigate the use of Time Domain Reflectometry to locate electrical faults in mining cables. The investigation employs a microprocessor controlled system which analyzes the Time Domain waveform and pinpoints the location of the fault in long cable runs.

Secondary responsibilities rested with a project to evaluate the noise on power distribution lines. The noise data taken from the distribution lines was subjected to analysis to determine its cause. The results were intended to be used by the Department of Energy to determine if and how distribution lines could be used as a communication network.

1971 to 1973:

**Research Associate, Carnegie-Mellon University
Pittsburgh, Pennsylvania.**

Co-principal investigator on a project conducted between the Transportation Research Institute and the Electrical Engineering Department. Responsibilities include the planning, preparation, and evaluation of methodology and technology to be used in a demonstration security and surveillance project for the city of Chicago, preparation of detailed reports on transit system operations, development of a "state of the art" summary of existing security and surveillance devices that can be applied to transit systems. One of the intentions of this project was to provide a security standard for all mass transit systems.

1970 to 1971: **Project Researcher, Carnegie-Mellon University
Pittsburgh, Pennsylvania.**

I was responsible for the construction, evaluation, and implementation of an extensive data gathering system that provided the information necessary for the completion of my thesis research. The project involved extensive circuit designing and testing to produce an experimental setup that could provide the data regarding the minute recovery interval following an electrical spark discharge.

1967 to 1970: **Project Engineer, Siltronics, Inc.,
Oakmont, Pennsylvania.**

Advised and participated in the research, design and development of a drastically new type of Electrical Discharge Machine. Responsibilities included pulsed circuit design and component selection for the high power pulsed circuitry needed for an Electrical Discharge Machine. I also participated in a sales program which entailed delivering several lectures regarding the Electrical Discharge Machining process and question and answer sessions regarding the machining process.

1966 to 1967: **Project Engineer, Carnegie Institute of Technology
Pittsburgh, Pennsylvania**

Worked and conducted research in conjunction with Ingersoll Milling Machine Company, Rockford, Illinois.

**Additional
Experience:**

I have also participated in GUIDE and PONSI projects for the American Council on Education. The GUIDE project involved the evaluation of Military Training Courses for college credit. The PONSI project involved evaluation of industrially sponsored courses for possible college credit. These evaluations have included trips to the United Arab Emirates and India. I have served as a member of the National Productivity Review Advisory Board, as the membership secretary for the ASTM committee (F-28) on Robotic System Standardization, as a member of the Robotics Task Force for the Standard Oil Company of Ohio, and as a faculty advisor in Robotics to the U.S. Bureau of Mines.

**Professional
Associations:**

Registered Professional Engineer in Pennsylvania, PE-029463-E, and in South Carolina, PE-24856
Certified Fire Investigator, CFI No. 29-041 by the International Association of Arson Investigators (IAAI)

Board Certified Forensic Examiner (BCFE) by the American College of Forensic Examiners,
Member of the Institute of Electrical and Electronic Engineers (IEEE),
Member of the National Fire Protection Association (NFPA),
Member of the American Society for Testing of Materials (ASTM),
Member of the American Board of Forensic Examiners (ABFE),
Diplomat of the American College of Forensic Examiners (FACFE),
Member of the National Society of Professional Engineers and the Pennsylvania Society of Professional Engineers, and
Member of the International Association of Arson Investigators (IAAI)

I have participated extensively in seminars presented by various chapters of the International Association of Arson Investigators since I received by Certified Fire Investigators Certificate. I have even taught a course in the electrical aspects of fire investigation at one of these seminars.

Outside Interests:

I was a registered USSF referee for six years and I have earned my class "D" soccer coaching license. I coached youth and travel soccer teams from 1983 to 1993 and have served as the Recording Secretary, the Treasurer, the Vice President, and the President of the Montour Youth Soccer Association.

Patents:

#4,767,469 - Electrical Discharge Scribing for improving core loss of grain-oriented silicon steel.
#4,780,155 - Capacitive Electrical Discharge Scribing for improving core loss of grain-oriented silicon steel.

Honors:

Eta Kappa Nu - Electrical Engineering Fraternity.
Sigma XI - National Research Fraternity.
I have been recommended and listed in The Best Lawyers in America's Directory of Experts and in Who's Who in Engineering and Professionals.

Publications:

"Industrial Robotics and Potential Applications to Mining", Eugene W. Bartel, Proceedings of the 1983 American Mining Congress Convention, September 1983.

"Control of Mass Transit Vandalism and Other Crime: Everard M. Williams, Robert Shellow, Eugene W. Bartel, Proceedings of the 5th International Conference on Urban Transportation, September, 1971.

"Crime in Rapid Transit Systems: An Analysis and a Recommended Security and Surveillance System", Robert Shellow, James P. Romualdi, and Eugene W. Bartel. Proceedings of the 50th Annual Highway Research Board

Conference, January, 1974.

"Security of Patrons on Urban Public Transportation Systems". Robert Shellow, Eugene W. Bartel and James P. Romualdi. Transportation Research Report No. 6, Carnegie-Mellon University, July, 1975.

"Crime and Perception of Crime on a Metropolitan Mass Transit System". Eugene W. Bartel, Wils L. Cooley and Robert Shellow. Proceedings of the Industrial Application Society 1975 Annual Meeting, September, 1975.

"An Electronic Surveillance/Response System to Reduce Crime on a Mass Transit Facility". Wils L. Cooley, Eugene W. Bartel, and Robert Shellow. Proceedings of the Industrial Application Society 1975 meeting, September, 1975.

"The Arcing Phenomenon in Electrical Discharge Machining and its Effects on the Machining Process". Eugene W. Bartel and Terry O. Hockenberry. Proceedings on the Conference on Electrical Methods of Machining: Forming and Coating, Institute of Electrical Engineers, London, England, November, 1971.

"Trailing Cable Fault Location Using Automated Time Domain Reflectometry", Proceedings of the U.S. Bureau of Mines 1979 Energy Conference.

"The Location of Electrical Cable Faults Using Automated Time Domain Reflectometry", Proceedings of the IEEE 1979 Cleveland Electronics Conference.

Papers and Reports:

"TDRM Testing", Bureau of Mines, United States Department of the Interior, Mineral Health and Safety Technology, Report November 1980.

"TDRM Testing", Bureau of Mines, United States Department of the Interior, Mineral Health and Safety Technology, Report August 1981.

"Reliability Definition and Testing of Automotive Semiconductor Devices", Proceeding of the 1975 Automotive Electronics Conference. Eugene W. Bartel, Roger Dworak and Donald L. Feucht.

"A Systematic Approach to Mass Transit Security".
Everard M. Williams, Robert Shellow, and Eugene W.
Bartel. 1972

"Existing Security Measures Employed by the Chicago
Transit Authority". Eugene W. Bartel, Wils L. Cooley,
and Robert Shellow. 1972

"A Survey of Security Devices and Techniques". Eugene W. Bartel, Wils L.
Cooley, and Robert Shellow. 1973

"A Summary of Crime Statistics on the Chicago Transit".
Robert Shellow, Ervin S. Roszner, Rita Dym, and John
Pazour. 1973

"Development of Crime Profiles Regarding Transit Crime".
Robert Shellow, Ervin S. Roszner, Eugene W. Bartel,
Wils L. Cooley.

Improvement of Mass Transit Security, June 1973. Robert
Shellow, Eugene W. Bartel and Wils Cooley.

"TDRM Testing", 1978. Eugene W. Bartel, A. G. Jordan,
Michael Fox and Edward Borgoyne.