

**MECHANICAL ENGINEERING DEPARTMENT
UNIVERSITY OF UTAH**

Resume 07-30-08

NAME David W. Hoepfner, Ph.D., P.E.

TITLE Professor, Department of Mechanical Engineering, University of Utah, Salt Lake City, Utah. 1985-Current.
Director, Quality and Integrity Design Engineering Center (QIDEC)-1985-Current.
Formerly-Chair of Department of Mechanical Engineering (May 1985-Sept.1992), University of Utah.

BIRTHDATE December 17, 1935

EDUCATION Bachelor of Mechanical Engineering, Marquette University, 1958
Master of Science in Metallurgical Engineering, University of Wisconsin, 1960.
Doctor of Philosophy, University of Wisconsin, 1963
(Concentration areas of study-Materials Engineering, Applied Mechanics, Fatigue and Fracture Mechanics, Statistics and Probabilities, Thesis in area of Fatigue Behavior).

**MEMBERSHIPS/
VOLUNTEER WORK** American Society of Mechanical Engineers (000531822)
American Institute of Aeronautics and Astronautics (M397-5703), Associate Fellow
American Society for Metals (010500)
American Society for Testing and Materials (H63307000)
National Society of Professional Engineers (102816072)
Sigma Xi-Honorary Research Fraternity, Univ. of Utah Chapter (63024015)
University of Utah Campus Christian Center, Executive Board
Instructor – Church School Class, Christ United Methodist Church for over 19 years.
Numerous officer positions in Methodist Church including board, treasurer, and trustee.
Eagle Scout-BSA, 1953.
Lodge Chief-Order of the Arrow, Honorary BSA organization. 1953-55.
Extremely active in U.S. Jaycees from 1964-1974. Jaycee president-Santa Paula, CA chapter, 1970/71, District Governor, made a Jaycee International Senator (International honorary group for Jaycees) for life-1973.

HONORS AND AWARDS: Waukesha High School Senior Class Treasurer-1952-53.

Eagle Scout, Boy Scouts of America-1952.
 Lodge Chief-Order of the Arrow-Boy Scout Honorary Society-1952-53.
 Ladish Company Scholar-1955-58; scholarship awarded for undergraduate studies in Mechanical Engineering.
 Ford Foundation Fellowship-1960-63; awarded to allow pursuit of Ph.D. degree.
 Wisconsin Alumnae Association Research Fellowship-1959-63; awarded to allow pursuit of M.S. and Ph.D. degree.
 Listed in American Men of Science
 Listed in Who's Who in Science and Engineering
 Listed in Outstanding Young Men of America
 Listed in Outstanding Educators of America
 AIAA Associate Fellow
 AIAA Distinguished lecturer, 1982-83.
 Selected as a U.S. Jaycees International Senator-1973.
 Nominated as U. of Utah Research Professor-3 times.
 Nominated as Utah Engineering Educator of the Year by Utah AIAA Chapter, 1991/92.
 Nominated as U. of Utah Distinguished Professor, 1992, 2003.
 Nominated as the Utah Engineering Educator of the year by the AIAA-1991.
 Nominated as the Utah Engineer of the year by the ASME-1997.
 AIAA Distinguished Lecturer (1987-88)
 Top 10% of UCLA Short Course Lecturers for several years (from over 300 instructors from industry, government, and academia)
 Selected as the outstanding Mechanical Engineering Professor in Teaching-1988.
 Nominated for outstanding Engineering Teacher for 1992/93 and 1999/2000 by Mechanical Engineering Dept.-2000.
 Nominated for J. Crichlow award of AIAA twice (1996 and 2003).
RECIPIENT OF THE 2005 UTAH GOVERNOR'S MEDAL FOR Outstanding Contributions to Science and Technology.
 Order of the engineer-May 13, 2006.
 Inducted to the Waukesha (Wisconsin) High School **WALL of FAME**, Sept. 29, 2006.
 Strathmore's Who's Who-Worldwide Edition-Strathmore's Who's Who. **Professional of the Year. Higher education-ME-2007.**
 Strathmore's Who's Who-Worldwide Edition-2008.
 Madison's Who's Who-Executive and Professional Registry-Lifetime member, 2007.
 Kipling's Who's Who in Leading Business Professionals, Global Register, Life member, 2007.
 Premier Who's Who, Premier Edition, 2007.

LICENSES

Dr. Hoepfner is a registered Professional Engineer in 3 states and the Province of Ontario.

**SIGNIFICANT START UP-
ACTIVITIES AT
UNIVERSITIES AND
TECHNICAL COMMUNITY**

- 1) Started the Structural Integrity and Materials Sciences program within the College of Engineering at U. Missouri - Columbia in 1974. This was the first Structural Integrity Program started at a University in North American and as far as is known in the world. It had extensive involvement with MAE (Mechanical and Aerospace Engineering), Bioengineering, Nuclear Engineering, Chemical Engineering, and Civil Engineering at UM-C. This program continued the development of HOLISTIC structural integrity based design initiated at Lockheed Aircraft Corporation.
- 2) Founded and obtained funding for the Structural Integrity, Fatigue, and Fracture Research Laboratories at U. of Toronto in 1979. Funding was provided from the Connaught Foundation and other U. of Toronto sources. Extensive funding also was provided by the Rolls Royce Aeroengine Division, Pratt and Whitney Canada, Ontario Hydro, the Natural Sciences and Engineering Research Council of Canada, and the NRC Institute for Aerospace Research. Extensive development of HOLISTIC structural integrity based design processes occurred during this period. Rolls Royce Aeroengine Division incorporated the practice in their critical parts plan during this period of time as well.
- 3) Started the Quality and Integrity Design Engineering Center at the U. of Utah in 1985. Funding was provided by the College of Engineering, the Utah State Centers of Excellence Program, Rolls Royce Aeroengine Division, FASIDE International Inc., the Artificial Heart Laboratory and National Institutes of Health. Boeing Commercial Aircraft Company, Lockheed Corp., and the U.S. Federal Aviation Agency. Extensive development of HOLSIP (holistic structural integrity based design) occurred during this period.
- 4) In 2000 a small group of persons working on HOLISTIC structural integrity processes (HOLSIP) decided to initiate a series of workshops. Dr. Hoepfner was asked to chair the first workshop on this emerging field. It was held in Park City, UT during March, 2002. Five workshops have now been held and the fifth one was held again in Park City, UT with Dr. Hoepfner as the chair. He has served on the planning committee of all workshops held to date.
- 5) During the last 20 years or so numerous companies and government bodies have introduced HOLSIP into their design, research and technology development activities, strategic planning, aircraft (airframe and engines), fleet management activities, and mission readiness activities. Dr. Hoepfner has

served as a consultant to many of these activities. The UK MOD (Ministry of Defense) through the RAF and RN have introduced these concepts to fleet management. They use an acronym ESVRE (Establish, Sustain, Validate, Recover, and Exploit) for managing their fleets based on HOLSIP. In addition, the Canadian DND (Department of National Defense), and NRCC (National Research Council of Canada) are using HOLSIP in all of their structural integrity design practices and strategic planning for research and technology development. The US FAA has begun adapting to this approach. In addition, the Australian DSTO and RAAF (Royal Australian Air Force) have adopted HOLSIP as a part of their activities and plan for more use in the near future. ALCOA Corp. is the most advanced in using HOLSIP activities in many areas of their business and, like Rolls Royce Aeroengine Division have provided much support for its development over many years.

6) During the period 1979-87 Dr. Hoepfner was the chair of the TURBISTAN working group. This all European Group, except for Dr. Hoepfner, was successful in developing standard load sequences for critical rotating discs in gas turbines. The funding for Dr. Hoepfner's activities during this extensive involvement was provided by the Cockburn Centre Endowment at U. of Toronto, the Rolls Royce Aeroengine Division of Derby, England, and the NRCC. More detail on it is found below.

7) Dr. Hoepfner has given many keynote lectures and papers at important national and international meetings and details are provided below.

8) Dr. Hoepfner served as a member of the planning committee for the First International Symposium on Corrosion Fatigue held at the University of Connecticut in June, 1971. He gave the lead keynote paper at this meeting by request of the chairs of the symposium. The details are in the publications list below.

9) Was chair with Professor Uhlig of MIT of the sessions on Fretting Fatigue of the First International Symposium on Corrosion Fatigue in 1971 cited above in item 8. Continued efforts in fretting fatigue, one of the key elements of HOLSIP, and gave the keynote invited lecture at the first International Symposium on Fretting Fatigue held at the U. of Sheffield in Sheffield, England. Gave invited keynote lectures at all of these symposia. Details on paper related to these meetings are provided below. Served on the planning committee of the 2nd JSME/ASME International Conference on Materials and Processing 2005 held in Seattle, WA. Currently serving on the planning committee for the fifth international Symposium on Fretting Fatigue to be held in Montreal, Canada in 2007.

PREVIOUS EXPERIENCE

Endowed Cockburn Professor of Engineering Design and Director-Structural Integrity, Fatigue, and Fracture Research Laboratory, Department of Mechanical Engineering, Professor of Mechanical Engineering. Also, Director of the Cockburn Centre of Engineering Design, University of Toronto, 1978-1985, tenured position with endowment.

Professor, Department of Mechanical, Aerospace, Nuclear and Bioengineering, and Director of Structural Integrity and Materials Science Program, University of Missouri-Columbia (UM-C), 1974-1978 (tenured position).

Group Leader, Fatigue and Fracture Laboratory, Lockheed California Company, 1969-1974.

Research Metallurgist/Engineer, Mechanical Engineering, Battelle Memorial Institute, Columbus Laboratories, 1964-1969.

Assistant Professor, University of Wisconsin, 1963-1964.

Assistant Professor, California State University, Northridge, 1963.

Ford Foundation Fellow and Instructor, University of Wisconsin, 1959-1963. Wisconsin Alumnae Research Foundation (WARF) Research Assistant.

Instructor and Lecturer in Applied Mechanics, College of Engineering, Marquette University, 1958-1959.

Plant Engineer-Waukesha Foundry Company-Summer, 1958.

Scholarship student and Engineer in training, Ladish Company, 1955-1958.

COMMITTEES, BOARDS Committee member-Fifth International Symposium of Fretting Fatigue, to be held in Montreal, Canada, May, 2006.

Member of the Planning Committee of the 6th and 7th HOLSIP workshops held in Big White, B.C., CAN and Big Sky, MT in 2007 and 2008 respectively.

Chair, fifth international workshop on HOLISITIC Structural Integrity Processes, held at Park City, UT, Feb. 26-March 4, 2006.

Member, Planning Committee for the second, third and fourth International Workshop on HOLISTIC Structural Integrity Processes held respectively in Fernie, British Columbia, Canada (2003), Breckenridge, CO (2004), and Stowe, VT(2005).

Chair, first international workshop on HOLISITIC Structural Integrity Processes, held at Park City, UT.

Committee member Fourth International Symposium on Fretting Fatigue, to be held in Lyon, France, 2004.

Committee member, Third International Symposium on Fretting Fatigue, held in Nagoaka, Japan, May, 2001.

Member of Handbook Committee and Writer of two Sections, ASM handbook on Fatigue, volume 19, ASM, Metals Park, Ohio, 1997.

Chair-Second International Symposium on Fretting Fatigue held at the U. of Utah, September, 1998. **Co-Editor**, "Fretting Fatigue: Current Technology and Practices", ASTM STP 1367, ASTM, West Conshohocken, PA, 2000.

Former Chair, TURBISTAN Committee. Turbistan involves the following European companies and agencies: 1) Rolls Royce, 2) SNECMA, 3) MTU, 4) University of Aachen, 5) LBF, (Germany), 6) IABG, 7) NLR of the Netherlands, 8) CEAT-France, 9) RAE - England. (1980-1986).

Elected to a three year term as Chair of ASME Region XII Mechanical Engineering Department Heads, ASME MEDH meeting, Orlando, Florida, March 7-12, 1989-1992

Committee Member for ASM International Conference on Fracture, Fatigue, Failure Analysis, and Corrosion, held in Salt Lake City, Utah, December, 1985.

Member of Editorial Board of the International Journal of Fatigue, 1978-2003.

Chair-Mechanical Engineering Design Search Committee, 2001-2.

Member-ME Scholarship Committee, 1999-2001.

Academic Senate-University of Utah, 1997-2001.

Graduate Council-University of Utah, 1990-1992. (Chair Protemp).

Chair- Department of Mechanical Engineering Retention, Promotion, and Tenure Committee, 1992-1994.

Chair- College of Engineering Retention, Promotion, and Tenure Committee, 1993-1994.

Served on many academic committees at both the U. of M-Columbia, and the U. of Toronto while on the faculty there.

Committee on Rolls Royce Disk Burst Investigations Team (L1011; 1972-1980).

U.S. Navy Task Force on Titanium Hull Submarines, 1970-1976.

Working Group Member of AFOSR on Structural Integrity and Damage Tolerance-1992-5.

Member of the executive committee, ASTM Committee E 09 on Fatigue. 1972-80.

Chair - ASTM Committee on Fatigue Testing and Apparatus, 1970-1978.

Chair - ASTM Committee E 9, Task Force on Environmental Effects on Fatigue, 1968-1972.

Secretary-ASTM Committee E 9, Committee on Fatigue Research, 1968-75.

Courses taught over past ten years:

1. **ME EN 4050.** Concurrent engineering II. 2 credits. (Failure and Reliability Considerations in Design or Practical Reliability Engineering for Mechanical Engineers). Usually taught in spring term.
2. **ME EN 6500-5500.** Engineering Elasticity. 3 credits. Usually taught in alternate years in the fall term.
3. **ME EN 7060.** Fatigue and Creep Considerations in Engineering Design. 3 credits. Taught in alternate years in the fall term from 1986-2002. Now taught in alternate years in the fall term.
4. **ME EN 7070.** Tribology and Corrosion Considerations in Engineering Design. 3 Credits. Taught in alternate years in the spring term from 1986-2003. Now taught in alternate years in the fall term.
5. **ME EN 7530.** Engineering Fracture Mechanics. 3 Credits. Taught in alternate years in spring term.
6. **ME EN 5040/6040.** Quality Assurance Engineering - "Quality Control". 3 Credits. Taught in alternate years in spring term.
7. **ME EN 7960.** Special Topics in Mechanical Engineering-Fatigue crack propagation. 3 Credits. Taught in spring of 2002.
8. **ME EN 5960/6960-Special Topics in Mechanical Engineering-Engineering Ethics.** 3 Credits. Taught on numerous occasions over the past 21 years.
9. **ME EN 2400 Dynamics.** 4 Credits. Taught in spring term 1996. Also taught on many occasions over the years.
10. **ME EN 3300 Strength of Materials.** 4 Credits. Taught numerous times from 1985-1995. Also taught at other universities on many occasions.
11. **ME EN 5300 Advanced Strength of Materials.** 3 Credits. Taught numerous times from 1985-1998 and taught many times at other universities.
12. **ME EN 7500 Engineering Material Science.** 3 Credits. Taught in 1998 and numerous times from 1985-98.
13. **ME EN 5960 Special Topics in Mechanical Engineering.** Taught Engineering Ethics as an elective three times from 1988-1998.
14. **ME EN 6975 Research and Thesis: Master of Science.** Supervise students as needed virtually every term over past five years.
15. **ME EN 6955 Master of Engineering Project.** 1 to 4 Credits. Supervise students as needed. Currently supervising one student during summer of 2003.
16. **ME EN 7970 Ph.D. Dissertation.** 1 to 12 Credits. Supervise students as needed virtually every term over past 20 years.
17. **ME EN 7980 Faculty Consultation: Doctoral.** 3 Credits. Supervise students as needed.

In addition to the courses listed above I have taught many other ME EN classes at UU and other universities. Included in this list would be the following: Thermodynamics, Fluid Mechanics,

Finite Element Analysis, Statics for Engineers, Mechanical Behavior of Solids, Mechanical Component Design, Introduction to Engineering Design, and many design projects for undergraduate students with emphasis on senior projects. While at the University of Toronto I directed over 150 undergraduate senior projects and senior theses as a part of my mechanical engineering department duties as well as those associated with the Directorship of the Cockburn Centre of Engineering Design.

PREVIOUS AND CURRENT GRADUATE STUDENTS SUPERVISED BY DAVID W. HOEPPNER, P.E., PH.D.

DATE	TITLE	STUDENT	DEGREE/UNIVERSITY
1974	NDT Study of Aluminum P.M. Properties	L.W. Lucas	M.S. Project, U. of Missouri-Columbia
1974	Fretting Fatigue of Metals	Roger Reeve	M.S., U. of Missouri-Columbia
1975	The Effect of Microstructure on the Fatigue Properties of A .40/.50 Carbon Steel	Jerry Alan Wear	M.S., U of Missouri-Columbia
1975	The Effects of Microstructure on the Fatigue Life of Titanium	Dale A. Wilson	M.S., U. of Missouri-Columbia
1975	The Design Analysis of Wooden Writing Instrument Pocket Clips	Lawrence Lubbert, Jr.	M.S. Project, U. of Missouri-Columbia
1975	Sustained Load Crack Growth in A553B-1 Steel under Neutron Irradiation in a Water Environment	M.C. Gupta	M.S., U. of Missouri-Columbia
1976	The Effect of a Frequent-Environment Synergism on the Fatigue-Crack Growth of SA533B-1: A Nuclear Pressure Vessel Steel	John Panhuisse, III	M.S., U of Missouri-Columbia
1976	Influence of Microstructural and Load Wave Form Control on Fatigue Crack Growth Behavior of Precipitation Hardening Stainless Steel	Kevin R. Kondas	Ph.D., U of Missouri-Columbia
1976	The Effect of Environment and Frequency on the Fatigue Behavior of Welded Pressure Vessel Steel	Cheung Poon	M.S., U. of Missouri-Columbia
1976	The Residual Fatigue Life of 1020 Steel and 7075-T6 Aluminum as a Function of Initial Flaw Size	Vidyut P. Shah	M.S., U of Missouri-Columbia

1976	The Effect of Crystallographic Orientation on Fatigue and Fretting of Copper Single Crystals	Gary C. Salivar	M.S., U of Missouri-Columbia
1976	The Effect of Mean Stress and R Ratio on the Fatigue Behavior of Turbine Alloys	Sharon L. Cole	M.S., U of Missouri-Columbia
1977	The Effect of Frequency, Environment, and R Ratio on the Fatigue-Crack Growth of a Nuclear Pressure Vessel Steel	Art Braun	M.S., U of Missouri-Columbia
1977	Effect of Surface Roughness on Fretting Fatigue Behavior of 7475-T61 Aluminum	Ray Jordan	M.S., U of Missouri-Columbia
1977	Microstructural and Environmental Effects on Fretting Fatigue	Roger K. Reeves	Ph.D., U of Missouri-Columbia
1977	The Evaluation of Fatigue Crack Growth in a Nuclear Pressure Vessel Steel	Andrew Tsai	Ph.D. U. of Missouri-Columbia
1977	The Effect of Hardness and Different Materials on the Fretting Fatigue Behavior of Ti-6Al-4V	William K. Watts, Jr.	M.S., U of Missouri-Columbia
1977	“Water Chemistry Control and Operation of Simulated Operation of Simulated Reactor Environment for Fatigue Crack Growth Behavior Studies of Nuclear Pressure Vessels Steel	John Hoeller	M.S., U. of Missouri-Columbia
1978	A Statistically Based Investigation of Microstructural Effects on the Fatigue Properties of Titanium and Titanium Alloys	Dale A. Wilson	Ph.D., U of Missouri-Columbia
1978	The Statistical Analysis and Presentation of Fatigue-Crack Growth Rate Data	Larry M. Mueller	M.S., U of Missouri-Columbia
1978	Corrosion Assisted Fatigue in 2024-T851 Aluminum Alloy	Michael E. Mayfield	M.S., U of Missouri-Columbia

1978	Fatigue and Fretting Fatigue of Polycrystalline Copper	Eugene R. Nickel	M.S., U of Missouri-Columbia
1978	Environmental Effects on the Mechanism of Fretting Fatigue in 7075-T6 Aluminum	Cheung J. Poon	Ph.D., U of Missouri-Columbia
1979	Characterization of Metal Damage Through Infrared Technology	Sharon L. Langenbeck	Ph.D., U of Missouri-Columbia
1979	Pitting and Fatigue Crack Initiation of 2124-T851 Aluminum in 3.5% NaCl Solution	James M. Cox	M.S., U of Missouri-Columbia
1979	A Statistically Based Analysis of the Effects of Frequency and Environment on the Fatigue Characteristics of SA 533B-1 Steel	Gary Salivar	Ph.D., U. of Missouri-Columbia
1979	Fretting Fatigue Stress Simulation	Jung S. Chung	M.S., U of Missouri-Columbia
1982	A Statistical Approach to Miner's Rule	D. A. Hull	M.E., U of Toronto
1982	A New Apparatus for Studying Fretting Wear	David Kusner	M.A.Sc., U of Toronto
1982	The Design and Development of an Experimental Apparatus for Fracture Mechanics Based Fretting Fatigue Studies with Electro hydraulic Closed Loop Servo-Control of Axial Load, Normal Load and Slip Amplitude	Doug S. Mann	M.A.Sc., U of Toronto
1983	An Investigation into the Effects of Welding-Induced Residual Stresses and Microstructural Alterations on the Fatigue Crack Growth Behavior of Commercial Purity Titanium	D. C. Wu	M.A.Sc., U of Toronto
1983	The Thermodynamic Aspects of Fracture and a Mathematical Method to Analyze Plane Elasto-Plastic Systems	Fred L. Gates	Ph.D., U of Toronto
1983	An Investigation into the Fatigue/Creep Crack Growth Characteristics of 2.25 Cr-1Mo Steel	Patrick Sooley	M.A.Sc., U. of Toronto

1983	Real-Time SEM Observation of Fatigue-Induced Slip in Polycrystalline Copper and Alpha-Brass	F. M. Smith	B.A.Sc., U of Toronto
1983	Corrosion Fatigue of 7075-T76 Aluminium 1 1/2 Dogbone Specimens	A. R. MacDonald	M.A.Sc., U of Toronto
1983	Corrosion Fatigue Behaviour of Ti-6Al-4V in Simulated Body Environments	Marko Yanishevsky	M.A.Sc., U of Toronto
1983	A Statistically Based Investigation into the Effect of Grain Flow Orientation on the Fretting Fatigue Characteristics of Forged AMS6415 Steel	C. K. W. Yeung	M.A.Sc., U of Toronto
1983	A New Apparatus for Making In-Situ Observations of the Fatigue Process in Metals	Sandro Missana	M.A.Sc., U of Toronto
1984	The Development of an Automated Crack Growth Threshold Test System to Characterize IMI 685	G. C. Smith	M.A.Sc., U of Toronto
1984	The Effect of Extrinsic Load Parameters on the Elevated Temperature Fatigue of Life of Engineering Metals	F. P. Dean	M.E., U of Toronto
1984	Perspectives and Insights on the Cyclic Load Response of Metals	David W. Cameron	Ph.D., U of Toronto
1984	An Investigation into Test Frequency Effects on the Corrosion Fatigue Crack Growth Threshold of 7075-T6 Aluminum Alloy Using a Personal Computer Based Automated System	Elizabeth C. L. Mann	M.A.Sc., U of Toronto
1984	Determination of Stress Intensity Factors for Three Dimensional Crack Problems with Differential Stiffness Method	Z. Song	M.A.Sc., U of Toronto
1984	Using Lamination to Enhance Rotating Disc Damage Tolerance	W. J. Unger	M.A.Sc., U of Toronto
1985	An Investigation of the Fatigue Crack Growth Rate Characteristics of Titanium Alloy IMI829	Patrick M. Sooley	Ph.D., U of Toronto
1985	Computer Assisted Corrosion Fatigue Crack Growth Rate Testing Under Spectrum Loading	G. F. Ziebenhaus	M.A.Sc., U of Toronto
1986	Study of the Effects of Dwell Time on the Fatigue Crack Propagation Rate in Ti-6Al-4V Alloy	P. Beaudet	M.A.Sc., U of Toronto

1986	An Investigation into the Fatigue Crack Growth Characteristics of a Single Crystal Nickel-Base Superalloy	D. C. Wu	Ph.D., U of Toronto
1986	An Experimental Investigation of the Behaviour of Ti-6Al-2Sn-4Zr 2Mo Subjected to Biaxial Fatigue at an Elevated Temperature	W. G. Hellier	M.A.Sc., U of Toronto
1987	Improvements to an In-Situ Fatigue Apparatus Capable of Generating Qualitative and Quantitative Information Regarding the Fatigue Process in Metals	R. R. Stephens	M.S., U of Utah
1988	Fatigue Crack Growth in Ti-6Al-4V Subjected to the Turbistan Loading Sequence	D. Salmon	M.S., U of Utah
1988	The Effects of Dwell Time on Material Behavior in Titanium Alloy IMI 829.	Z. Song	Ph.D., U of Utah
1988	Crack Propagation Thermodynamics	J. S. Short	Ph.D., U of Utah
1988	Quantitative Representation of Microstructural Contributions to Fatigue Crack Growth	F. M. Smith	Ph.D., U of Utah
1988	The Design and Fabrication of a Spin Testing Facility	D. E. Gerbec	M.S., U of Utah
1989	An Investigation into the Fatigue Crack Growth Behaviour of an IMI 829 Titanium Rotating Disc Material	D. A. Hull	Ph.D., U of Toronto
1990	Fractographic Analysis and Microstructural Investigation of a Cast Nickel-Base Superalloy (MAR M247) Tested Under Fatigue and Creep Loading Conditions	J. Yan	M.S., U of Utah
1990	Fractographic Analysis of Two High Performance Alloys Designed for Use in Aircraft Gas Turbine Engines	A. D. Paulson	M.S., U of Utah
1990	The Effect of Microstructure on Fatigue Crack Growth Behavior in Nodular Cast Irons	M. Xia	M.S., U of Utah
1990	Failure Analysis of Front Wheel Hubs Used in Heavy Duty Trucks	L. Ma	M.S., U of Utah

1990	Fretting-Fatigue Study of 2090-T8E50 Alloy Sheets After Artificial Aging	X. Yao	M.S., U of Utah
1990	Surface Integrity and Fatigue Effects on In Vitro Degradation of Biomer	M. Sinnott	M.S., U of Utah
1991	Permeability of Heart Diaphragms	J. Pauley	M.S., U of Utah
1991	Accelerated Wear Development on the 27 Millimeter St. Jude Artificial Heart Valve in the Mitral Position for Use in an Artificial Heart	J. Juretich	M.S., U of Utah
1991	In-Situ Short Fatigue Crack Characterization of a Nickel-Base Superalloy at Ambient and Elevated Temperature	R. R. Stephens	Ph.D., U of Utah
1991	Investigations of the Fretting Fatigue Mechanisms on 7075-T6 Aluminum Alloy and Ti-6Al-4V Titanium Alloy	S. Adibnazari	Ph.D., U of Utah
1991	Uniaxial and Biaxial Stress Concentrations Due to Small, Flat Bottomed, Conical Indentations on the Surface of a Solid Cylindrical Bar	M. L. Thomsen	M.S., U of Utah
1992	Reliability of Bearings for Artificial Hearts	R. Fratto	M.S., U of Utah
1992	Fatigue Crack Propagation in Silicon Nitride	D. C. Salmon	Ph.D., U of Utah
1992	Effect of Anisotropic Behaviour Upon Fatigue Crack Propagation in Rotating Disk	D. E. Gerbec	Ph.D., U of Utah
1992	No Thesis	M. Moesser	M.S., U of Utah
1992	No Thesis	A. Sabbagh	M.S., U of Utah
1992	Effects of Minor Loading Sequences on Aluminum Alloys	A. Paulson	Ph.D., U of Utah
1993	Evaluation of Graphite/Epoxy Laminate ARCS Subjected to Bending	K. Franklin	M.S., U of Utah

1993	Development of a Computer Controlled Compliance Based Fatigue Crack Growth Rate Data Acquisition System	D. D. Swartz	M.S., U of Utah
1993	Design Methodology	D. Macferran	Ph.D., U of Utah
1993	Aluminum Alloy Fretting in Air and a Vacuum	C. Elliott III	Ph.D., U of Utah
1993		D. Culliton	M.S., U. of Utah
1994	Pitting Effects on the Corrosion Fatigue Life of 7075-T6	L. Ma	Ph.D., U of Utah
1994	Finite Element Analysis of a Riveted Joint	S. Kinyon	M.S., U of Utah
1994	Strain Accumulation Behavior of Titanium Alloys	M. Thomsen	Ph.D., U of Utah
1994	The Role of Fretting on the Fatigue Behavior of Ti-6Al-4V Orthopaedic Implant Material	V. Chandrasekaran	M.S., U of Utah
1994	The Effects of Exfoliation Corrosion on the Fatigue Response of 7075-T651 Aluminum Alloy	T. Mills	M.S., U of Utah
1995	Effect of Anisotropy on Corrosion Fatigue	M. Blinn	Ph.D., U of Utah
1995	Corrosion Pitting Fatigue	L. Grimes	M.S., U of Utah
1995	Effect of Realistic Environments on Aircraft Structures	J. Kramer	M.S., U of Utah
1995	Temperature Effects on Corrosion Fatigue Crack Growth	D. Magda	Ph.D., U of Utah
1996	Multiaxial Fatigue Behavior of Gas Turbine Materials	J. Yan	Ph.D., U of Utah
1996	Effect of Fretting Fatigue on Behavior of Riveted Aircraft Joints	M. Moesser	Ph.D., U of Utah

1996	Fatigue Behavior of Short Cracks as affected by Prior Corrosion Exposure.	A. Hoepfner	M.S., U of Utah
1996	The Effect of Frequency on the Fretting Fatigue Behavior of 7075-T651 Aluminum Alloy in Lab Air and Vacuum Environments	D. Culliton	Ph.D., U of Utah
1996	No Thesis	A. Shah	M.S., U. of Utah
1997	Effect of Exfoliation Corrosion on Fatigue Strength	T. Mills	Ph.D., U of Utah
1997	Effect of Realistic Chemical Environments on Fatigue Crack Growth	David Swartz	Ph.D., U of Utah
1997	Fretting Fatigue of IN100	J. Ledesma	M.S., U of Utah
1997	Effects of Fretting Corrosion on the Fatigue Behavior of Modular Orthopaedic Implants	Chandrasekar an Venkatesan	Ph.D. U. of Utah
1998	Effect of Variable Amplitude Loading on Fretting Fatigue	S. Kinyon	Ph.D., U of Utah
1998	Fretting Fatigue	Paul Clark	M.S., U. of Utah
2000	Reliability of X-ray tubes	David Critchley	M.S., U. of Utah
2000	Summary of Fatigue and Quality Case Studies	Todd Van Orman	M.S., U. of Utah
2000	Effect of Corrosion and Prior Cold Work on Fatigue of Rivet Holes in Aircraft Joints	Yeoung-In Yoon	Ph.D., U. of Utah
2000	Effect of Prior Corrosion on Cold Worked Holes Fatigue Behavior	Yeoung-In Yoon	Ph.D., U. of Utah
2001	Pitting Corrosion Fatigue	Paul Clark	Ph.D., U. Of Utah
2002	Fretting Fatigue	A. Shah	Ph.D., U of Utah

2002	Corrosion Fatigue-Pitting	Michael Risik	M.S., U. Of Utah
2003	A Single Cylinder Approach to In Situ Study of Fatigue Cracks	Larry Smiltneek	M.S., U. Of Utah
2003	Fracture Mechanics Based Methodology-co supervisor with Professor Larry Reaveley in Civil Engineering	Paul McMullin	Ph.D.-C.E., U. of Utah
2003	Failure Assessment of Landing Gears	Bryce Harris	M.S.-U. of Utah
2004	Effect of Microstructure on Pit-To-Crack Transition of 7075-T6 Aluminum Alloy	Kimberli Jones	Ph.D., U. of Utah
2006	Environmental Effects on Fatigue	Carlos Ariscoretta	M.S., U. of Utah
2005	Fretting Fatigue	Sachin Shinde	Ph.D., U. of Utah
2004	Fretting Fatigue	Fatih Oktem	M.S., U. of Utah
2008-2010	Corrosion Fatigue and Fatigue Modeling	Carlos Ariscoretta	Ph.D. U. Of Utah
2007	Corrosion fatigue behavior of ship structures and materials-Royal Thai Navy Fellowship Student	Padungktat Kwannikom	M.S. U of Utah.
2007	Corrosion fatigue behavior of ship structures and materials- Royal Thai Navy Fellowship Student	Passakorn Duangmnan	M.S. U of Utah.
2008	Corrosion/Corrosion Fatigue of Landing Gear Steels	Bryce Jolly	M.S. U. of Utah
2008	Corrosion/Corrosion Fatigue of Landing Gear Steels	Bryan Terry	M.S. U. of Utah
2008-2010	The Effect of Fatigue Cracks on Fastener Flexibility, Load Distribution and Fatigue Crack Growth	Zachary Whitman	Ph.D. U. of Utah

Post Doctoral Associates Funded and Supervised

1978-81	Dr. Cheung Poon	University of Toronto
1980-85	Dr. Gabriel Ogandale	University of Toronto
1987-90	Dr. Zhening Song	University of Utah

1989-92	Dr. Robert Stephens	University of Utah
1992-95	Dr. Saeed Abidnazari	University of Utah
1992-Current	Dr. Charles Elliott	University of Utah
2000-2003	Dr. Paul Clark	University of Utah
2004	Dr. Kimberli Jones	University of Utah
2007-08	Dr. Kenta Yamigawa	University of Utah, Funded by Japanese Government

Visiting Scholar -Mr. Takao Okada, NAL (now JAXA), Tokyo, JAPAN-2003-2004

Visiting Scholar-Pekka Hautala- U. of Helsinki, Finland, Fall 2005.

UNDERGRADUATE (B.S.) THESES SUPERVISED BY DAVID W. HOEPPNER

DATE	TITLE	STUDENT	DEGREE/UNIV.
1979	Design and Construction of a Hydraulic Power Supply	J.W. Elward, D.J. Read	4 th Year Design Project, U. of Toronto
1979	Human Energy Storage with a Compressed Air Medium	A.R.B. Leeksa, R.Hoy	4 th Year Design Project, U. of Toronto
1979	Hydrogen Engine Design	J. Leung, J. Warden	4 th Year Design Project, U. of Toronto
1979	Total Hip Prosthesis Performance Test System	R. Marks, et.al.	4 th Year Design Project, U. of Toronto
1980	Neutron Embrittlement Effects on Fatigue Behaviour of Structural Materials	S.J. Lee	B.S., U. of Toronto
1980	The Design of Microcomputer Control Data Acquisition System for Computer Aided Material Testing	M.A. Hastings	B.S., U. of Toronto
1980	A Statistical Investigation of Fatigue Crack Growth in the Threshold Region	E.A. Gallagher	B.S., U. of Toronto
1980	Photoelastic Demonstrator for Overhead Projector	C.C. Budreau	4 th Year Design Project, U. of Toronto
1980	A Design Case Study on DC-10 Cargo Door Latching Systems	J.J. Carcasole	4 th Year Design Project, U. of Toronto

			Toronto
1980	Hydrogen Engine Design	C.C. Cummins	4 th Year Design Project, U. of Toronto
1980	Design and Construction of a Sound, Heat, Fume Containment for a Hydraulic Power Supply	P.R. Forgang	4 th Year Design Project, U. of Toronto
1980	Design and Construction of an Engine Dynamometer	R.A. Kostra, J.D. Mittle	4 th Year Design Project, U. of Toronto
1980	Motorcycle Front Suspension System	F.G. Lion, T.P. Sanderson	4 th Year Design Project, U. of Toronto
1980	Design and Construction of a System to View Fatigue in Situ in a Scanning Electron Microscope	C.G. Searles	4 th Year Design Project, U. of Toronto
1980	Design and Fabrication of a Spin-Testing Facility	G.C. Smith	4 th Year Design Project, U. of Toronto
1980	Design and Construction of a Micro-computer Controlled Robot Arm Prototype for Space Applications	B. Sooley	4 th Year Design Project, U. of Toronto
1980	The Design of a Cracked Calibration Block for Ultrasonic Inspection	H.S. Vogt	4 th Year Design Project, U. of Toronto
1980	Educational Fatigue Demonstration Machine	B.W. Wachon, et.al.	4 th Year Design Project, U. of Toronto
1981	The Retardation Effect of Variable Ampliturde Loading on Fatigue-Crack Propagation	Conrad Yeung	B.S., U. of Toronto
1981	An Investigation into the Initiation of Propagation of Fatigue Cracks from Corrosion Pits in A1S1 C1045 Steel	J.R. Weekes	B.S., U. of Toronto
1981	A Study of Fatigue Crack Growth Behaviour of Grey Cast Iron	Patrick Lam	B.S., U. of Toronto
1981	Centrifugal and Thermal Stress Analysis of a Rotating Disk of Variable Thickness	William Lui, Derek Tang	4 th Year Design Project, U. of Toronto
1981	An Arrestment Device for a Mine Conveyance	Casandra Cook	4 th Year Design Project, U. of Toronto

			Toronto
1981	Design and Construction of a Fuel Efficient Vehicle for Energy in the Shell Fuelathon Competition	B. Bourne, W. Pillgrem, S.H.Y. Pui, E.P. Wunder	4 th Year Design Project, U. of Toronto
1981	Improved Ore Blade Design	N.E. Chase	4 th Year Design Project, U. of Toronto
1981	Ambulation for the Handicapped	A. Chong	4 th Year Design Project, U. of Toronto
1981	Communication Interface for the Cerebral Palsey	P. Daldos, et.al.	4 th Year Design Project, U. of Toronto
1981	Zone Refiner Design and Construction	J.S. Elder	4 th Year Design Project, U. of Toronto
1981	Pushbutton Tap System	B.R. Kingsland	4 th Year Design Project, U. of Toronto
1981	Surge Detection in Centrifugal Compressors by Vibration Analysis	M.R. Knonpczynski	4 th Year Design Project, U. of Toronto
1981	Prosthetic Heart Valve	W. Kosterman, et. al.	4 th Year Design Project, U. of Toronto
1981	Automatic Bicycle Transmission	B. La Barbers, J.V. Sisson	4 th Year Design Project, U. of Toronto
1981	Joystick Activated Device to Assist the Handicapped in Drawing	C.M. MacKenzie	4 th Year Design Project, U. of Toronto
1981	Hammer Testing Device	K.M. Rieger	4 th Year Design Project, U. of Toronto
1981	Dual Action Drum Pedal	J.D. Stauff	4 th Year Design Project, U. of Toronto
1982	Fracture Mechanics Deliberations of Lugs	Albert Li	B.S., U. of Toronto

1982	Surface Finish Effects on the Fatigue Life of 1020 Steel	Patrick McConnell	B.S., U. of Toronto
1982	An Investigation into the Dovetail Post Failures of General Electric J85-15 Turbojet Eighth Stage Compressor Discs	William Unger	B.S., U. of Toronto
1982	Design of an Infinitely Variable Transmission for a Combine	Albert Li, Lawrence Kwan	4 th Year Design Project, U. of Toronto
1982	Hammer Tester – Design and Construction	Charles Charron	4 th Year Design Project, U. of Toronto
1983	Rotating Disc/Moving Model Automotive Aerodynamic Test Facility	John Allen	CED 401 Design Project, U. of Toronto
1983	Design and Optimization of Spin Pit Testing	J.G. Argiropoulos	CED 401 Design Project, U. of Toronto
1983	High Speed System for Assaying Bacterial Growth Plates	Z. Astramowicz	CED 401 Design Project, U. of Toronto
1983	Robot Manipulator	J.M. Garcia, K.H. Wong	CED 401 Design Project, U. of Toronto
1983	Hybrid Vehicle Drivetrain Design	William G. Henderson	CED 401 Design Project, U. of Toronto
1983	High Speed Bacteria Growth Assayer	B.W. Hennenfent	CED 401 Design Project, U. of Toronto
1983	The Design of a Torsion Adaptor Mechanism	Howard M. Johnson	CED 401 Design Project, U. of Toronto
1983	Design of a Digitally Controlled Fuel Injection System Using a Hot-wire Anemometer Air Flow Meter	R.J. Douglas Reeves	CED 401 Design Project, U. of Toronto
1983	Design of a Gasoline Vapourizing Carburetor	Sean Andre Rockarts	CED 401 Design Project, U. of Toronto
1983	Hybrid Vehicle Design Engine Coupling	Joseph R. Scott	CED 401 Design Project,

			U. of Toronto
1983	Foetal Rabbit Incubation Apparatus	B.K. Moser-Shearer, M.M. Zurowski	CED 401 Design Project, U. of Toronto
1983	Hydraulic Service Manifold Coupling	Alvin Thomas	CED 401 Design Project, U. of Toronto
1983	Design and Construction of an Abrasive Cut-Off Saw	Fraser Smith	CED 401 Design Project, U. of Toronto
1983	A High Speed Raster Graphics Processor	Henry Stracovsky	CED 401 Design Project, U. of Toronto
1983	Computer Assisted Spectrum Fatigue Testing	Gordon F. Ziebenhaus	CED 401 Design Project, U. of Toronto
1983	Effect of Stress State on Fatigue	H. Gordon Hamilton	B.S., U. of Toronto
1983	An Investigation Concerning Torsional Fatigue in 6061-T6 Aluminum Alloy	Howard M. Johnson	B.S., U. of Toronto
1983	Real-time SEM Observation of Fatigue-Induced Slip in Polycrystalline Copper and Alpha-Brass	Fraser Smith	B.S., U. of Toronto
1983	An Investigation Concerning the Fretting Fatigue Effects of AMS 6415 Steel and Al 7075-T6 Aluminum Fretting Pads on AMS 6415 Steel Specimens	Silvano Venuto	B.S., U. of Toronto

Recent (2000-current) Grants and Contracts of David W. Hoepfner, P.E., Ph.D.

TITLE	AGENCY	AWAR D BEGIN & END DATES	TOTAL AWARD FOR ALL YEARS	PROJEC T NUMBER	PRINCIPAL INVESTIGATOR & CO-PI
Testing to Evaluate the Effects of Electroless Nickel Coating with Regard to the Fretting Fatigue Behavior of 2XXX Aluminum Alloy	Alcoa Aluminum	5/1/00-12/31/00	\$18,874	50500666	P.I -David Hoepfner-
Multiaxial fatigue studies	Sverdrup Technology Arnold Air Force Base	6/1/00-9/30/01	\$50,000	54900488	P.I -C. Elliott. Co P.I.-D. Hoepfner
Multiaxial fatigue studies	Sverdrup Technology Arnold Air Force Base	9/30/02-9/30/03	\$100,000	54900488	P.I -C. Elliott. Co P.I.-D. Hoepfner
Corrosion Fatigue Structural Demonstration Program	Lockheed Martin Aeronautics	7/1/00-4/30/03 to be extended to 6/30/03	\$1,023,914	54900478	P.I.- David Hoepfner- Co.P.I.-Paul Clark

Past grants and contracts of David W. Hoepfner, P.E., Ph.D. He was the principal investigator on all of these listed below.

SPONSORING AGENCY/ INDUSTRY	DURATION	AMOUNT	TITLE
U.S. Federal Aviation Administration	3 years Ended June 1995	\$391,696.00	The Role of Fretting Corrosion and Fretting Fatigue in Rivet Hole Cracks.

U.S. Department of Transportation	4 months (Ended 9/30/92)	\$9,977.00	Preliminary Studies on the Role of Fretting Corrosion and Fretting Fatigue on Aircraft Rivet Hole Cracking
Boeing - Wichita, KS	5 months (Ended 1/29/93; see below) NOTE: This is expected to be a multi-year effort funded at approximately \$100,000.00 per year beginning 2/93.	\$12,000.00	Planning, Testing, and Development Methodology for Evaluation of Corrosion and Fatigue.
Boeing Commercial Airplane Company, Seattle, WA	1 st year (Ended 12/92)	\$99,803.00 (Total was \$152,564.00)	Testing and Research Related to the Effect of Chemical Environment (Corrosion) and Load Spectra on the Prediction of Behavior of Aircraft Materials.
Boeing Commercial Airplane Company, Seattle, WA	2 nd year ended December 1993	\$92,000.00	Testing and Research Related to the Effect of Chemical Environment (Corrosion) and Load Spectra on the Prediction of Behavior of Aircraft Materials.
Boeing Commercial Airplane Company, Seattle, WA	3 rd year ended December 1994	\$98,000.00	Testing and Research Related to the Effect of Chemical Environment (Corrosion) and Load Spectra on the Prediction of Behavior of Aircraft Materials.
Boeing Commercial Airplane Company, Seattle, WA	4th year ended December 1993	\$104,000.00	Testing and Research Related to the Effect of Chemical Environment (Corrosion) and Load Spectra on the Prediction of Behavior of Aircraft Materials.
Rolls Royce, plc. Derby, England	1 year NOTE: Rolls Royce funded approximately \$1,000,000.00 of research at University of Utah under David W. Hoeppepner from May 1985-1993	\$101,901.00 (2 year total \$207,492.00)	Modeling Short Crack Growth in IMI 834 Titanium Alloy.

Boeing - Wichita, KS	3 months (Ends June 1993)	\$37,000.00	Planning, Testing, and Development Methodology for Evaluation of Corrosion and Fatigue.
Air Force Office of Scientific Research (5-28034)	1 year	\$102,677.00	Pitting Corrosion Fatigue Modeling

Note that during the period of 1985-2003 David Hoepner had extensive amounts of research funding from numerous companies and government agencies. A detailed listing of these can be provided. In addition to the items listed above the following agencies provided funding during the period 1985-1992 as Dr. Hoepner transitioned from the University of Toronto to the University of Utah:

Utah State Centers of Excellence for the development of the Quality and Integrity Design Engineering Center-\$22,000.00

Lockheed Aircraft Corporation-\$18,000.00

MTS Systems Corp. (Two scholarships to students totaling \$45,000.00)

Garrett Auxiliary Power Division (now Honeywell Turbine Division)-Phoenix, AZ - \$220,000.00

Consolidated Metco, Portland, OR-\$35,000.00

Gates Rubber Company, Denver, CO -\$88,675.00

Smith and Nephew Richards, Memphis, TN-\$37,000.00

Martin Marietta Corp., Denver, CO-\$130,509.00

Federal Aviation Administration-7 years of contracts at approximately \$14,000.00 per year to deliver a workshop here at the UU on Aircraft Structural Fatigue for FAA certification engineers and other country certification authorities.

In addition, Dr. Hoepner was the co-principal investigator of several large grants to the Artificial Heart Laboratory here at the UU. He also was one of the Directors of Engineering at the Artificial Heart Laboratory during the period of 1985-1994. He was in charge of all matters concerned with Reliability and Quality. He was involved in numerous grants with NIH researching the development of the total electro-hydraulic heart and ventricular assist devices (VAD). He also served on several review panels connected with artificial hearts and VADs. In addition, he served on a panel working with NIH on the Bjork-Shiley 60° Convexo-concave artificial heart valve failure issues from 1987-94. He delivered numerous workshops at NIH, FDA, Abbot Labs, Ottawa (Ontario) Artificial Heart Institute, and others on reliability and quality issues in engineering design.

Grants and Contracts from 1974-1994:

SPONSORING AGENCY/INDUSTRY	YEAR	AMOUNT	TITLE
Office of Naval Research	1974-78	\$308,415	Research on Fretting Fatigue and Corrosion Fatigue
Lockheed California Co.	1974-77	\$95,587	Fracture Research - Optimization of Behavior through Microstructural Control
Naval Ship Engineering	1976-77	\$61,985	
Electric Power Research Institute	1975-78	\$824,407	The Effect of Cyclic Load Chemical Environment, Load Wave Form, and Nuclear Irradiation on the Fatigue Crack Growth Behavior of Pressure Vessel Steels
U.S. Army Research Office	1975-78	\$88,925	Fretting Fatigue and Corrosion Fatigue of Metallic Materials
Alcoa Research Foundation	1975-77	\$10,000	Studies on Microstructural Effects in Fatigue
U.S. Air Force Office of Scientific Research	1976-79	\$90,000	Corrosion Fatigue of Aircraft Structural Materials
National Science Foundation	1975-77	\$42,000	Undergraduate Equipment Grant – Mechanical Behavior of Materials
McDonnell Douglas Aircraft Co.	1976-77	\$50,000	Fatigue Testing
Smith and Lovelace Engr. Co.	1976	\$500	Failure Analysis
Cameron Iron Works	1977-78	\$60,000	Fatigue of Gate Valve Materials
NSERC Operating and Capital Equipment	1979-84	\$509,872	Fatigue
EMR	1979-82	\$31,000	
Ontario Hydro	1979-82	\$84,200	
FAA	1979-82	\$55,134	
WKM	1979-80	\$55,200	
Pratt & Whitney	1979-83	\$176,550	
Turbodyne	1979-81	\$13,500	
Bicknell Foundation	1980-81	\$10,000	
Detroit Edison	1980-81	\$15,000	
Rolls Royce, Ltd.	1980-83	\$139,965	

Connaught, U. of Toronto	1981-83	\$585,140	SEM
NAE/DSS	1982-83	\$43,630	
BILD	1982-83	\$46,000	
MTS – Fellowship	1982-83	\$7,500	
Ontario Hydro	1982-83	\$19,800	High Temperature Phase III
Pratt & Whitney Canada	1982-85	\$30,000/yr	Corrosion Fatigue
National Aeronautical Establishment	1982-85	\$139,514	Retirement for Cause
Natural Sciences and Engineering Research Council of Canada (NSERC)	1982-85	\$205,000	Fatigue
Rolls Royce, Ltd.	1982-83	\$62,000	Fatigue
McAllister Fund	1982-84	\$12,500	
Pratt & Whitney Canada	1983-84	\$20,000	Fretting Fatigue
Rolls Royce, Ltd.	1983-84	\$166,000	Crack Nucleation and Propagation, Single Crystal Model, Multiaxial Fatigue
NAE	1983-84	\$90,000 (2 yrs)	Damage Tolerant Disk Design
Ontario Hydro	1983-84	\$97,000 (3 yrs)	Corrosion Fatigue
Defense Research Establishment Pacific	1983-84	\$50,000	Damage Tolerant Engine Design – AGARD
FAA	1983-84	\$17,000	Aircraft Structural Fatigue Course at U. of Toronto
Rolls Royce, Ltd.	1983-85	\$52,720/yr	Crack Generation
Rolls Royce, Ltd.	1983-85	\$42,360/yr	Fracture Model/FCC
Rolls Royce, Ltd.	1983-85	\$77,590	Spin Pit
Pratt & Whitney Canada	1983-85	\$55,000	Fretting Fatigue
NSERC	1983-85	\$59,600	Fretting Fatigue
Spectravac Inc	1983-84	\$5,482	
Pratt & Whitney Canada	1984-85	\$30,000	Biaxial Fatigue
Pratt & Whitney Canada	1984-85	\$45,000	Thermomechanical Fatigue
Ontario Hydro	1984-85	\$33,000	Corrosion Fatigue
Defense Research Establishment	1984-85	\$52,000	

Garrett Aux/Allied Signal	1985-88	\$117,249	
Garrett Aux/Allied Signal	1985	\$117,249	
Rolls Royce Limited	1985	\$41,643	Development of a Quantitative Fracture Model for FCC Superalloys
Research Instrumentation Fund	1985	\$8,000	Upgrade of Mechanical Test Facility of the College of Engineering
FAA	1985 (for courses taught in 1987)	\$28,080	Aircraft Structural Fatigue Course
Lockheed Advanced Aeronautics Co.	1985	\$23,229	Development of Titanium Alloys for Advanced Aerospace Applications
Rolls Royce Aeroengine Division	1985-86	\$58,573	The Effect of Anisotropic Material Behavior upon Fatigue Crack Propagation in Rotating Discs
Rolls Royce Limited	1985-86	\$64,155	Crack Generation and Propagation Studies on Disc and Blade Materials
Biomedical Research Support Group	1986	\$5,200	Evaluation and Durability of Artificial Hearts
Biomedical Research Support Group	1986	\$7,700	Research on Development of Test Standards for the Evaluation of Reliability-Durability of Artificial Hearts
Rolls Royce Limited	1986-87	\$73,988	“Development of a Quantitative Fracture Model for FCC Alloys”
MTS Systems Corp.	1986-87	\$10,000	One-half of a fellowship for a graduate student
Garrett Aux/Allied Signal	1986-88	\$114,876	Anisotropic Material
Rolls Royce Limited	1987-88	\$56,303	“The Effect of Anisotropic Material Behavior upon Fatigue Crack Propagation in Rotating Discs”
Rolls Royce Limited	1987-88	\$20,754	“Quantitative Representation of the Microstructural Contribution to Fatigue Crack Nucleation and Growth”
Rolls Royce Limited	1987-88	\$17,920	“Material Damage Mechanisms and Size Effects on the Fatigue Behavior Titanium Alloy under Dwell Conditions of IMI 829”
Rolls Royce Limited	1987-88	\$19,963	“Crack Propagation

			Thermodynamics”
MTS Systems Corporation	1987-88	\$10,000	One-half Fellowship for a graduate student
Biomedical Research Group	1987-88	\$8,250	“Durability and Reliability Testing of Artificial Heart Components”
Rolls Royce Limited	1987-90	\$211,642	“Modeling Short Crack Growth in a Nickel Base Superalloy”
Rolls Royce Limited	1987-90	\$142,370	
Rolls Royce Limited	1987	\$27,000	
Rolls Royce Limited	1987	\$208,216	Titanium Alloys
Rolls Royce Limited	1987-89	\$27,000	
National Institute of Health-Co principal inv.	1987-93	\$6,000,000	“Development of Implantable Electrohydraulic Total Artificial Heart”
U.S. Air Force, Ogden Air Logistics Center	1988	\$5,000	Fatigue Testing
Brown and Sharpe	1988	\$20,000	Metrology Equipment proposal
Ottawa Heart Institute Co-principal investigator	1988-92	\$3,200,000	Development of an Electrohydraulic Ventricular Assist Device
Center of Excellence	1988-90	\$210,000	Center of Excellence QIDEC
Rolls Royce	1988-90	\$169,370	Modeling Short Crack Growth
Eastman-Christensen	1989	\$4,800	K _{IC} Determination
Federal Aviation Administration	1989	\$30,372	Aircraft Structural Fatigue
Dept. of Economics	1989-91	\$60,000	Center for Quality/Integrity
Garrett Auxiliary	1989	\$220,000	Evaluation and Testing
Rolls Royce Limited	1989	\$63,241	
Brown & Sharp Metro	1989	\$6,750	
GTE Lectureship Program	1989	\$4,000	
Wash. DC/Basic Energy	1989	\$108,946	
Wash. DC/Energy System	1989	\$107,458	
Garrett Aux/Allied Signal	1989	\$14,000	
Utah/Dept of Comm. Economics	1989	\$60,000	QIDEC

Gates Rubber	1989-90	\$88,675	Dual Stroke Testing
Lockheed	1989-90	\$24,800	Testing of Titanium Heat Treat Specimens
MTS	1989-90	\$15,000	MTS Equipment
Garrett Aux/Allied Signal	1989-90	\$14,000	
Salt Lake Community College	1989	\$2,535	Specimen Testing
National Science Foundation w/ Dr. Meek	1990-91	\$42,109	Research-Mechanical Engr.
Brown & Sharp Metro	1990	\$2,858	
National Science Foundation	1990	\$42,109	Research/Mechanical Engr.
Rolls Royce Limited	1990-92	\$208,216	Titanium Alloys
Boeing Commercial	1991-92	\$152,564	Corrosion
Dept. of Comm./Economics	1991	\$211,880	
Boeing Commercial Airplane	1991	\$101,466	
Boeing Commercial Airplane	1991	\$52,761	Corrosion
Boeing Commercial Airplane	1991	\$99,803	Corrosion
Boeing Commercial	1992-93	\$92,000	Effects-Corrosion/Load Spectrum
Boeing Commercial	1992-94	\$249,921	Evaluation of Corrosion
FAA	1992	\$125,091	
FAA	1992	\$100,516	
Martin Marietta Corp.	1992	\$130,509	
DOT	1992	\$9,977	Rivet Hole Cracking
FAA	1992	\$125,091	Rivet Hole Cracking
Boeing Commercial Airplane	1992	\$249,921	Evaluation of Corrosion
Boeing Commercial Airplane	1992	\$92,000	Corrosion/Load Spectrum
Dept. of Transportation	1992	\$9,977	Rivet Hole Cracking
FAA	1992-93	\$125,091	Rivet Hole Cracking
U.S. Air Force	1993-97	\$399,000.00	Material Degradation and Aerospace Vehicle Fatigue

FAA	1993	\$50,000	Fatigue Testing
FAA	1993	\$156,531	Aircraft Rivet Hole
Conmet	1993-94	Testing Wheel Hub Specimens	\$10,315

CONSULTING Dr. Hoepfner has consulted with all major airframe and aircraft engine companies of North America as well as all divisions of DOD, NIH, NASA, DOT, and the FAA as well as numerous foreign manufacturers and aircraft regulatory agencies as well as medical device manufacturers and regulators. Dr. Hoepfner was the originator and principal lecturer in a workshop entitled "Aircraft Structural Fatigue". This workshop was a two week affair conducted for the US FAA and other airline certification bodies from around the world. He conducted this workshop from 1978-92. Part of Dr. Hoepfner's consulting over the past 5 years has been to give many briefings to USAF, USN personnel on Corrosion and Corrosion Fatigue of Aging Aircraft. As well, Dr. Hoepfner has consulted extensively on activities related to artificial hearts, heart valves, ventricular assist devices, orthopaedic implants, and other medical devices. He has consulted with companies and the FDA, and NIH and has served on several national and international review panels on these medical devices. He has served as the lead technical expert witness on high profile aircraft and biomedical cases such as the Sioux City DC 10 catastrophe (UA 232) and recent fire fighting tanker crashes. He has done extensive consulting with Boeing, Lockheed Martin, USN, USAF, NASA, and Pratt and Whitney Canada. He also has consulted extensively with the Canadian Department of National Defense as well as the National Research Council of Canada. He also has conducted workshops on fatigue, damage tolerance, corrosion, corrosion fatigue and related areas applied to aircraft including both airframes and engines at Canada's Quality Engineering Test Establishment and NRC-IAR. In addition, Dr. Hoepfner worked extensively with Rolls Royce Aeroengine Company (Derby, England) from 1973-1996. He also has consulted with the British Ministry of Defense as well as NATO in various capacities. A significant activity was his chairing the **TURBISTAN** working group of Europe from 1980-88. This group developed the first fatigue standard spectrum for evaluating fatigue behavior of cold and hot discs in gas turbine engines.

SHORT COURSES

Dr. Hoepfner developed, coordinated and was the principal lecturer for 14 courses entitled, "Aircraft Structural Fatigue" for the **U.S. Federal Aviation Administration**, Transport Canada, and International Aviation personnel. This class was delivered at both the University of Toronto (1978-85) and the University of Utah (1985-1992).

Dr. Hoepfner and Dr. John DeLuccia have developed and presented a workshop on "**Corrosion of Aging Aircraft**" at UCLA, Los Angeles since 1991. This workshop is continuing and was recently presented at the Naval Air Station-Alameda, CA. In addition it was presented at the Naval Aviation Depot at both San Diego, CA and Jacksonville, FL in 1999. It also is still being presented once per year at UCLA in Los Angeles, CA.

Dr. Hoepfner and Dr. John DeLuccia in 2002 presented two workshops on "**Corrosion of Aging Aircraft and Systems**" at the National Research Council of Canada in Ottawa, Ontario, Canada.

Dr. Hoepfner and Dr. John DeLuccia recently presented a workshop on "**Corrosion of Aging Aircraft and Space Systems**" at NASA-Johnson Space Center to various Engineering Personnel after the Columbia Accident Review

Report Recommend upgrading in this area as well as others.

Dr. Hoepfner has been the organizer and principal lecturer for several short courses on "**Practical Considerations in Structural Fatigue and Damage Tolerant Design of New and Aging Aircraft**," held in Park City, and Salt Lake City, Utah from 1992-2001. Participants have included all major airframe and Aeroengine manufacturers, certification authorities, operators and aircraft maintenance and inspection personnel and worldwide military personnel.

Dr. Hoepfner has lectured since 1971 in the SAE course entitled, "**Fatigue Concepts in Design**". He was one of six lecturers in the course. His lectures focused on issues on fatigue design, mechanisms of fatigue, fatigue of structural materials, corrosion fatigue, and fretting fatigue. The course ended in 2001 after a 30 year run.

Dr. Hoepfner has lectured since 1970 in the UCLA short course entitled, "**Structural Integrity of New and Aging Aircraft**". His lectures focus on fatigue design, mechanisms of fatigue, fatigue of structural materials, damage tolerance concepts, corrosion fatigue, and fretting fatigue. In Sept. 2006 he lectured in a version of this course for the U.S. FAA and Transport Canada at UCLA. This course has been offered at many on site locations for both industry and government over its run.

Dr. Hoepfner lectured in the course entitled "**Applied Fracture Mechanics**" held at Union College and sponsored by ASME, 1970-1981.

Dr. Hoepfner has presented short courses at many government agencies and industrial firms in the United States, Canada, England, Japan and Korea. This includes NIH, FDA, DOD agencies, NASA, DOT, FAA, and numerous industries.

Dr. Hoepfner has organized and presented many workshops on reliability of medical devices for industry and governments of the US and Canada.

PUBLICATIONS and PRESENTATIONS

Ariscoretta, C., Hoepfner, D.W., "Statistical Factorial Modeling for Corrosion Fatigue of Aluminum Alloy", Submitted to Corrosion Science for publication, 2008.

Jones, Kimberli Shinde, Sachin R., Clark, Paul N., Hoepfner, David W. "Effect of Prior Corrosion on Short Crack Behavior in 2024-T3 Aluminum Alloy", Accepted by Corrosion Science for publication, July, 2008, to be published.

Hoepfner, D. W., Shinde, S., Keynote Paper, "Fretting Fatigue Design Considerations in Holistic Structural Integrity Based Design", Presented at the 5th International Symposium on Fretting Fatigue held in Montreal, Quebec, Canada, April, 2007, to be published.

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