

**ANDREW D. LE COCQ, DABFE\***  
**HUMAN FACTORS/ERGONOMICS CONSULTANT**  
1704 LOUELLA COURT  
HURST, TEXAS 76054  
(800) 588-0008  
FAX (817) 282-2833      e-mail: andy@lecocq.org

**BACKGROUND SUMMARY:**

Over forty-five years Human Factors experience in industry as an individual contributor, supervisor and consultant. Provided Human Factors support and recommendations during the analysis, design and development of complex military, commercial and computer systems as well as consumer products to optimize the man/system interface. Efforts often included maintainability and safety considerations.

Litigation experience has involved both personal injury and product liability cases that have included issues of failure to warn, adequacy of instructions, operational procedures, machine guarding, design and labeling of controls, slip and fall, industrial accidents, perceptual site distance/human reaction time problems in railroad crossing and automobile accidents and accident reconstruction and video productions relative to Human Factors considerations. Involvement has included both plaintiff and defense cases.

**EXAMPLES OF HUMAN FACTORS ACCOMPLISHMENTS:**

Identified and analyzed critical interfaces for new interactive computer graphics terminal and received \$25,000 "Idea Fund" award to develop my idea for new next generation computer terminal.

Designed air traffic controller's console for the new FAA Air Traffic Control System (AAS) Proposal effort that included five displays and touch screen technologies.

Received "Buck Hunter" Award for saving \$60,000 in the development of new circuit breaker color coding to aid flight engineer in identifying subsystems on U.S. Air Force C-5A cargo aircraft.

Investigated Human Factors problems relative to various display systems in four nuclear power plant control rooms and made specific recommendations for changes.

Successfully organized and managed the manpower and equipment requirements for more than 20 Human Factors studies in laboratory and flight test environments.

**PROFESSIONAL EXPERIENCE (FULL TIME POSITIONS):**

Human Factors/Ergonomics Consultant; Hurst, Texas January 1991 to Present

**President** - Have been responsible for Human Factors litigation and design consulting assignments. Litigation experience has included giving over 200 depositions and testifying in court on more than 60 cases. Consulting assignments have included designing two control panels for hospital medical equipment, Human Factors/Safety analysis of a new ride at the Wet 'n Wild Water Park in Arlington, Texas and Human Factors evaluation/analysis of a new credit card activated pay telephone design.

General Dynamics; Fort Worth Division 1984 to January 1991

**Human Factors Group** - Responsible for Human Factors/Maintainability Surveys of U.S. Air Force F-16 fighter pilots and maintenance crews throughout the world to determine strengths, weaknesses, and suggestions for improvement of cockpit and overall aircraft systems. These efforts included performing in-depth interviews, supervising the survey team, and analyses of the resulting data. Previously was Lead person for Human Factors support of design changes to F-16 cockpit and aircraft systems and was responsible for ensuring that changes complied with Human Factors criteria, including applicable military specifications. Extensive communications/presentations to General Dynamics and Air Force Management were required.

\*Diplomate of the American Board of Forensic Examiners

ARD Corporation; Columbia, Maryland 1982 to 1984

**Senior Technical Advisor to the President** - Project Manager for Human Factors research and development activities of wireless robotic devices and 3-D video viewing systems. Efforts included analysis/selection of telemetry and sensor sub-systems, system integration, fabrication and testing of prototypes. Also responsible for Human Factors consulting on nuclear control room design. Provided Human Factors support to the design of air traffic controller's console for a new FAA Air Traffic Control System proposal effort that included significant Human Factors features of five displays, screen format development, and several touch screen technologies.

Texas Instruments; Dallas, Texas 1969 to 1982

**Human Factors Specialist/Manager** - Provided Human Factors design support to the development of consumer, computer and military products which included determining control and display requirements relative to perceptual and psychomotor considerations. Projects included interactive computer graphics, word processing systems, display development and evaluation, computer terminals, calculators and watches. Received two patents on a device for a new consumer product. Other responsibilities included providing Human Factors support for advanced night vision landing systems and a photo-interpreter light station. Also designed several types of warning labels. Was Project Coordinator during three year study for proposed Texas Instruments exhibit or ride for Disney EPCOT Center, working with WED Enterprises (Disney Engineering).

Lockheed Georgia Company; Marietta, Georgia 1966 to 1969

**Lead/Human Factors Design Support** - Responsible for Human Factors design support of U.S. Air Force C-5A Cargo Aircraft cockpit, including all control panels and instruments. Worked closely with design engineers, maintainability engineers, vendors and test pilots. Exercised sign-off authority on design drawings and evaluated vendor proposals on various sub-systems.

The Boeing Company; Huntsville, Alabama 1963 to 1966

**Design Engineer B** - Primarily responsible for Human Factors analysis of control panel and CRT display designs for Saturn S-IC Booster checkout equipment. Evaluated man/system interface problems during test and checkout operations. Designed warning labels for high voltage equipment racks and supervised their installation.

The Boeing Company; Seattle, Washington 1961 to 1963

**Design Engineer B** - Monitored control panel designs to ensure proper representation of sub-system functions and proper application of Human Factors criteria for the U.S. Air Force Advanced Dyna-Soar Aircraft cockpit (similar to the NASA Space Shuttle).

Chrysler Corporation; Detroit, Michigan 1958 to 1961

**Design Engineer** - Monitored the styling and design of new automotive instruments for possible Human Factors or manufacturing problems. (From 1958 to 1960 attended Graduate School part-time.)

### **PROFESSIONAL EXPERIENCE (CONSULTANT - PART TIME POSITIONS):**

Expert Witness 1971 to January 1991

Assisted as a Human Factors consultant and expert witness on cases involving product liability and personal injury litigation. Analyzed all points of man/machine interface relative to the equipment involved in the accident as well as the operational environment to determine design deficiencies and/or operational procedures problems.

Public Broadcasting System; Washington, D.C. 1978

Performed Human Factors analysis on the various interfaces of a new captioning system for the deaf to be used at all Public Broadcasting Television Stations. The captioning system would place a set of one-line messages at the bottom of the screen representing the audio track. Preliminary Human Factors concerns were keyboard design and operational procedures.

Quest Medical; Carrollton, Texas 1978 to 1998

Designed control panel for new blood/cardioplegia delivery system to be used in open heart surgery. Included Human Factors analysis of three open heart surgeries, meetings and interviews with cardiovascular surgeons and perfusionists. Final design resulted in graphically oriented control panel that integrates all the controls and displays for the blood/cardioplegia pump, heat exchanger, additive/arrest agent parameters, and retrograde/antigraade delivery functions. I was granted a U.S. Patent for the graphic control panel design. Performed Human Factors Operational analysis of new microprocessor controlled intravenous fluid delivery equipment used in hospitals. Designed two control panels for single and dual delivery bottle models which included incorporation of dynamic graphics into the control panel. I was granted a U.S. Patent for this graphic control panel design. Efforts also included Human Factors evaluations and analyses of production unit and operational manual, as well as preliminary development of interactive computer graphic training aids.

CORE Laboratories, Inc.; Dallas, Texas 1979

Designed the interior of a new trailer to be placed next to oil drilling rigs to analyze all drilling operations including core examination, gas analysis, and various drilling parameters such as rate of penetration. Layout included placement of all test equipment, mini-computer, micro-processor and two CRT terminals within the trailer relative to frequency of use and criticality of operation. Living quarters for two operators also had to be included.

EG and G of Idaho; Idaho Falls, Idaho 1980

Performed an analysis of annunciator systems (labeled indicator lights) of two nuclear control rooms that were under full operation. Analysis techniques included performing interviews with licensed control room operators (using an interview form I designed) and making observations of control room hardware and operational procedures. My two final reports identified specific annunciator problems and made recommendations relative to short and long term solutions.

#### **PATENTS AND PATENT APPLICATIONS:**

U.S. Patent #5,573,502 - Display Panel and Controls for Blood Mixture Delivery System.

U.S. Patent #4,553,958 - Intravenous Delivery Controller Graphic Display Control Panel.

U.S. Patent #3,955,356 - Watch Having Positioned Controlled Display Actuator.

U.S. Patent #3,921,385 - Watch Having Positioned Controlled Display Actuator With Delay.

U.S. Patent Application #TI-8247 - Decisional Task Device and Method.

#### **PROFESSIONAL INVOLVEMENT:**

-DIPLOMATE OF THE AMERICAN BOARD OF FORENSIC EXAMINERS

-MEMBER OF HUMAN FACTORS AND ERGONOMICS SOCIETY

-Secretary/Treasurer of Forensic Technical Interest Group of the Human Factors and Ergonomics Society 1995-1996.

-National Officer (Secretary-Treasurer) Human Factors Society 1979-1980.

-General Chairman for 1975 Human Factors Society National Annual Meeting, held in Dallas, Texas.

-Founder and first Chairman of the Consumer Products Technical Interest Group of the Human Factors Society.

-Past President of North Texas Chapter of the Human Factors Society

-MEMBER OF SOCIETY OF AUTOMOTIVE ENGINEERING

#### **EDUCATIONAL BACKGROUND:**

Experimental Psychology, Psychology Department, Georgia Institute of Technology; 50 credits towards Master of Science Degree.

MAE, Masters of Automotive Engineering, Chrysler Institute of Engineering, 1960. (Thesis in Human Factors).

B.S. in Industrial Engineering, The University of Washington, 1958.

B.S. in Mechanical Engineering, The University of Washington, 1957.

### **PRIVATE PILOT LICENSE:**

-Single Engine Land Aircraft (Also some dual helicopter time.)

### **PUBLICATIONS:**

"Application of Human Factors Engineering to Cardioplegia Delivery System Design" - Canadian Perfusion Canadienne, Vol. 8, No. 3 March 1996

"Application of Human Factors Engineering in Medical Product Design" - Journal of Clinical Engineering, Vol. 12, No. 4, July-August 1987.

"Selecting a Color Monitor for an Interactive Graphics System Used to Design Integrated Circuits" - Proceedings of the 26th Annual Meeting of the Human Factors Society, October 1982.

"The Design of a CRT Computer Terminal - A Human Factors Dream or Nightmare?" - Proceedings of the 21st Annual Meeting of the Human Factors Society, October 1977.

"Integration of Human Factors into Electronic Digital Watch Design" - Proceedings of the 6th Congress of the International Ergonomics Association Meeting, July 1976.

"The FLIR Display" - Proceedings for the 17th Annual Meeting of the Human Factors Society, October 1973.

"Perceptual Considerations for a Wide Field of View Helicopter Night Landing System (HENILAS)" - proceedings for the 16th Annual Meeting of the Human Factors Society, October 1971.

"Human Factors Impact on an Airborne Night Vision System" - Presentation at the 14th Annual Meeting of the Human Factors Society, October 1970.

"Loudness Calculation - Complex Engine Noise" (Human Factors techniques for evaluating engine sounds within passenger compartment) - Masters Thesis; Publication Date: July 1959 - Chrysler Corporation Major Technical Report.

"Engineering Management" - February 1959 issue of the University of Washington "Washington Engineer" Magazine.

### **PRESENTATIONS:**

Presentations of "The Impact of Human Factors on Personal Injury and Product Liability Litigation" to American Trial Lawyer and Paralegal meetings in Texas, Oklahoma, Arizona, Washington State, Alaska, Florida, San Juan Puerto Rico, as well as the Grayson County Texas Defense Council Meeting.

"Human Factors Involvement in Complex Electronic Consumer Products" - Presentation at the 23rd Annual Meeting of the Human Factors Society, October 1979.

Guest Lecturer at Graduate and Undergraduate Level Human Factors Courses at Texas A&M University, University of Texas at Arlington, and The University of Oklahoma.

### **COMMUNITY INVOLVEMENT:**

Past Member of Industrial/University Relations Committee, University of Texas at Arlington.

Past Member of Residential Architectural Committee, Village of Dorsey's Search; Columbia, Maryland.

Past Elder and Member of Session Boards in three Presbyterian Churches.