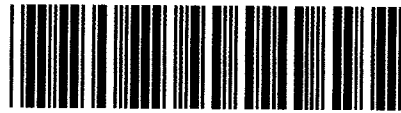


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Addendum StartPage: 0

SOAH DOCKET NO. 473-15-1589
PUC DOCKET NO. 43599

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APPLICATION OF LCRA TRANSMISSION SERVICES CORPORATION TO
AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE
PROPOSED BLUMENTHAL SUBSTATION AND 138-KV TRANSMISSION
LINE PROJECT IN BLANCO, GILLESPIE, AND KENDALL COUNTIES

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BEFORE THE STATE OFFICE
OF
ADMINISTRATIVE HEARINGS

**LCRA TRANSMISSION SERVICES CORPORATION'S SECOND
SUPPLEMENTAL RESPONSE TO KATHERINE F. PEAKE'S FIRST
REQUEST FOR INFORMATION, QUESTION 1-3**

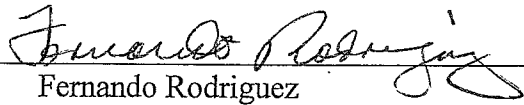
COMES NOW LCRA Transmission Services Corporation (LCRA TSC) and files this, its Second Supplemental Response to Katherine F. Peake's First Request for Information, Question 1-3. These responses are part of LCRA TSC's duty to supplement responses. LCRA TSC agrees and stipulates that all parties may treat this response as if the answer was filed under oath.

Respectfully submitted,

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ACOSTA LLP
R. Michael Anderson
Texas State Bar No. 01210050
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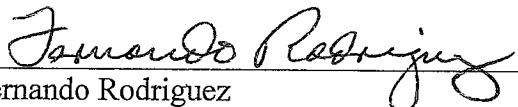
Fernando Rodriguez
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By: 
Fernando Rodriguez

ATTORNEYS FOR LCRA TRANSMISSION
SERVICES CORPORATION

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing document was served on all parties of record in this proceeding on this the 14th day of May, 2015, by email, facsimile, First-class U.S. Mail, or by hand delivery.


Fernando Rodriguez

**SOAH DOCKET NO. 473-15-1589
PUC DOCKET NO. 43599**

APPLICATION OF LCRA TRANSMIS- SION SERVICES CORPORATION TO AMEND ITS CERTIFICATE OF CON- VENIENCE AND NECESSITY FOR THE PROPOSED BLUMENTHAL SUBSTA- TION AND 138-KV TRANSMISSION LINE PROJECT IN BLANCO, GILLESPIE, AND KENDALL COUN- TIES	§ § § § § § § §	BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS
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**LCRA TRANSMISSION SERVICES CORPORATION'S SECOND
SUPPLEMENTAL RESPONSE TO KATHERINE F. PEAKE'S FIRST
REQUEST FOR INFORMATION, QUESTION 1-3**

Question No. 1-3:

Identify each expert you expect to call to testify at the hearing on the merits and for any such testifying expert provide:

- a. the expert's name, address, and telephone number;
- b. the subject matter on which the expert will testify;
- c. the facts known by the expert that relate to or form the basis of the expert's mental impressions and opinions formed or made in connection with this case;
- d. the expert's mental impressions and opinions formed or made in connection with the case, and any methods used to derive them;
- e. any bias of the witness;
- f. all documents, tangible things, reports, models, or data compilations provided to, reviewed by , or prepared by or for the expert in anticipation of the expert's testimony; and
- g. the expert's current resume and bibliography.

Second Supplemental Response 1-3:

In addition to the witnesses previously identified by LCRA TSC as witnesses filing direct testimonies, the following witnesses will provide rebuttal testimony for LCRA TSC:

- (a). H. Dwight Mercer, Ph. D., 513 Crispin Place, Clarksville, Georgia;

James Michael Silva, President, Entertech. Consultants, 494 Salmar Ave., Suite 200, Campbell, California; and

Clyde J. Pittman, Director of Engineering, Federal Airways & Airspace, Inc., 1423 South Patrick Dr., Satellite Beach, Florida.

- (b). Dr. Mercer and Mr. Silva will discuss EMF (veterinary and general, respectively) issues and Mr. Pittman will address issues regarding the Stonewall VORTAC and the FAA's treatment of same.
- (c). The facts known by these experts that form the basis of their respective positions will be discussed and explained in their respective rebuttal testimonies.
- (d). The experts' mental impressions and opinions will be discussed and explained in their respective rebuttal testimonies.
- (e). No known biases.
- (f). All documents, tangible things, reports, etc. that are not attached to the witnesses' respective rebuttal testimonies will be placed in the voluminous room.
- (g). Please see Attachments 1 through 3 to Second Supplemental Response to Peake's 1st, Q. 3 (i.e., this response) for Messrs. Silva, Mercer, and Pittman's resumes.

Supplemental Response 1-3:

- (g). Please find attached to this response, the resume of Jessica Melendez (Attachment 1) and the resume of Gary Maddox (Attachment 2). These two resumes were not included in the original response.

Original Response No. 1-3:

a&b. See response to question 1-1. Aside from the witnesses identified in response to question 1-1, at this point LCRA TSC has not identified any other expert witnesses it plans to call to testify at the hearing on the merits, either on its direct or rebuttal case. However, as other witnesses become known LCRA TSC will supplement this RFI.

c. The facts known by the experts identified in Question 1-1, are expressed in the application, its attachments, and the EA, and will be expanded upon in the direct testimony of every witness who prepares and files testimony on behalf of LCRA TSC.

d. The experts' mental impressions and opinions may be explored at the hearing or in discovery. Other mental impressions may be reviewed in the application, its attachments, and the EA.

e. No known biases.

f. The response is voluminous and can be viewed in LCRA TSC's voluminous room by contacting Gina Eddy or Janet McNutt at 512-473-3200 to make an appointment. Some documents such as text books (see literature cited in the "References Cited" section of the EA, 7.0) or other references used in the daily or regular course of employment by LCRA TSC's witnesses may be located at the offic-

es, in the libraries or in the personal possession of individual witnesses and arrangements to review those documents will need to be made.

g. Please see Attachments 1 through 4 to Peake's 1st, Q. 3 for Messrs. Peterson, Garza, Reid, and Wenmoh's resume and bibliography. Ms. Melendez's resume will be provided as a supplement to this response.

Co-Prepared By: Lance Wenmohs

Co-Prepared By: Rob Reid

Co-Prepared By: Jessica Melendez

Co-Prepared By: David Peterson

Co-Prepared By: Sergio Garza

Co-Prepared By: Gary Maddox

Co-Prepared By: Clyde Pittman

Co-Prepared By: Michael Silva

Co-Prepared By: Dwight Mercer

Co-Sponsored By: Lance Wenmohs

Co-Sponsored By: Rob Reid

Co-Sponsored By: Jessica Melendez

Co-Sponsored By: David Peterson

Co-Sponsored By: Sergio Garza

Co-Sponsored By: Gary Maddox

Co-Sponsored By: Clyde Pittman

Co-Sponsored By: Michael Silva

Co-Sponsored By: Dwight Mercer

Title: Manager, Siting and Certification

Title: Sr. Project Manager II/Vice President, Power Engineers

Title: Sr. Engineer

Title: Director of Engineering and Operations, CTEC

Title: Manager, Transmission Resource Planning

Title: Supervisor, Engineering

Title: Director of Engineering, FA&A

Title: President, Entertech. Consultants

Title: Doctor of Veterinary Medicine

Title: Manager, Siting and Certification

Title: Sr. Project Manager II/Vice President, Power Engineers

Title: Sr. Engineer

Title: Director of Engineering and Operations, CTEC

Title: Manager, Transmission Resource Planning

Title: Supervisor, Engineering

Title: Director of Engineering, FA&A

Title: President, Entertech. Consultants

Title: Doctor of Veterinary Medicine

RESUME

NAME: **James Michael Silva**

POSITION: **President - Enertech Consultants**
494 Salmar Ave., Suite 200, Campbell, CA 95008

EDUCATION: **B.S. Engineering**, University of Alabama
M.S. Engineering, Auburn University

PROFESSIONAL ENGINEERING REGISTRATION: California - **Electrical Engineering**

Other P.E. Licenses: New York, Texas, Connecticut, Massachusetts, Pennsylvania, Alabama, Nebraska.

Summary of Experience

Mr. Silva worked at The Southern Company (1971-1979) in transmission line design. He was responsible for supervising the preparation of design specification, special environmental studies on corona, audible noise, vibration studies, and electric & magnetic fields, and technical planning relating to electric transmission lines. He has also worked in the substation-estimating group. He worked for approximately 1-1/2 years at the Electric Power Research Institute (1977-1978) as the project manager for AC and DC overhead lines. In this position, he directed many research projects relating to electric power transmission lines including: An evaluation of electric field effects of transmission lines (work done at Project UHV), Conductor Motion Reference Book, mechanical vibration studies, study of flashover mechanisms for contaminated insulation, corona performance and audible noise, instrumentation development for High Voltage Direct Current (HVDC) lines and stations, design data for ± 600 kV to ± 1200 kV HVDC lines, power frequency electric and magnetic fields, and many other research projects. He worked at GAI Consultants (1979-1982) in transmission line engineering projects. He also was a lecturer at seminars on transmission line engineering and vibration topics.

In 1982, Mr. Silva founded Enertech Consultants, where he is currently employed as President and as a Research Engineer. Enertech is involved in a wide range of engineering and research projects including electric and magnetic field (EMF) exposure assessment and development of EMF instrumentation and software. Mr. Silva was a past advisor on extremely low frequency (ELF) field research to the US Department of Energy research program on ELF fields at Battelle PNL. He was a member of the US expert team in the ELF research technical exchange program with the Soviet Union (Cooperative Health Agreement on Bioeffects of ELF Fields). He is a past member of a National Electric Safety Code committee. Mr. Silva has also served as an advisor to a variety of technical committees related to EMF from electric power facilities and other sources.

Mr. Silva is currently an active member of the Bioelectromagnetics Society (BEMS) and a Life Senior Member of the Institute of Electrical and Electronics Engineers (IEEE) Power Engineering Society. In IEEE he has served for ten years as the secretary of the Corona and Field Effects Subcommittee and is a member of the following working groups: AC Fields, DC Fields and Ions, Design and Environmental Considerations, and Environmental Treatment of Transmission Lines. He worked on the IEEE Team to prepare a guide booklet on corona and field effects of transmission lines and has worked on many IEEE standards, including standard procedures for EMF measurement. He has received awards and recognition for his work with IEEE and technical papers. He has delivered numerous lectures on EMF research activity and is very active in exposure assessment research. He has served as a scientific reviewer and publication referee for IEEE technical papers,

IEEE Standards, the Bioelectromagnetics Society, the Journal of Exposure Analysis and Environmental Epidemiology, the Journal of Occupational and Environmental Hygiene, and the American Journal of Epidemiology.

Mr. Silva has been active on research projects to evaluate and characterize exposure to ELF electric and magnetic fields. The primary focus of his EMF research is the development of exposure assessment techniques, instrumentation, and software. Important elements of his exposure assessment experience have been the planning, organization and execution of ELF exposure measurements at a variety of locations throughout the U.S. This has included Enertech work on most of the large EMF exposure assessments done in the US, including: the EPRI 1000 Home Nationwide Study, the NIEHS/DOE 1000 Person Study, and the California State-Wide School Measurement Study, California study of pregnancy outcomes, and the NCI residential magnetic field study. In addition, Mr. Silva has been involved in a variety of magnetic field mitigation and shielding projects. He has also directed work on development and manufacturing of state-of-the-art exposure instrumentation that is sold in 59 countries. This popular instrumentation includes: the EMDEX II, EMDEX-Lite, EMDEX-Snap, Amp-Logger, WaveCorder, and the GPS-Pal.

Mr. Silva has directed the development of EXPOCALC, a computer program that can be used to model transmission line electric and magnetic field exposure. He also wrote the technical manual that describes EXPOCALC. The software uses data collected by him during an extensive exposure measurement program in several states across the U.S. EXPOCALC includes many new technical methods that were developed as a result of new instrumentation, computer modeling, and exposure measurements. He has also directed development of the EMF Workstation (EMFW) software and co-authored the 500 page EPRI Handbook/CD-ROM of Electric and Magnetic Field Management Principles for Power System Fields. This book describes EMF mitigation and shielding techniques. He led a team that developed a small personal GPS logger. He performed research to evaluate the potential for electric power lines to affect GPS use. Mr. Silva has assisted the Electric Power Research Institute by managing the EPRI research program on Electromagnetic Compatibility (EMC) and is presently assisting with technical consulting on radio frequency (RF) research projects. In the RF program he has initiated and managed work on several research projects, including: dosimetric computer modeling for RF exposure compliance at the Health Protection Agency in the UK, an evaluation of RF instrumentation used in ELF fields at Washington State University, and a primer on RF exposure fundamentals.

Professional Affiliations

IEEE - Power Engineering Society – Life Senior Member
Bioelectromagnetics Society – Full Member
Licensed Professional Engineer: 8 states

Special Activities and Recognition

1978 University of Texas Power System Seminar - Lecture Series

1979 University of Southern California Lloyd Hunt Distinguished Lecturer-Power Engineering

1980 Ohio State University Electrical Engineering Colloquium - Distinguished Lecture Series

1981 Electric Research Institute of Mexico - Guest Lecturer at the International Symposium on Transmission Lines in Cuernavaca, Mexico

1983 Chairman: Health Effects Session at Third International IEEE Conference on Live-Line Maintenance in Atlanta, Georgia

1988 IARC (International Agency for Research on Cancer) Workshop on Exposure Assessment Research Coordination in Lyon, France

1991 Chairman: Wire Codes and Field Levels Working Group. Presentation on Wire Code Interpretations at EPRI Community Exposure Workshop, Memphis, TN, November 1991.

1994 Invited speaker: American Conference on Occupational Medicine in Chicago, Illinois

1998 Co-Chairman: Sources and Exposure Metrics for ELF Epidemiology at NRPB/World Health Organization International Workshop on Exposure Metrics and Dosimetry for EMF Epidemiology. Oxford, England, September 7-9, 1998.

2012 UCLA Expert Panel: Occupational Exposures to Electric Shock for Use in a Job Exposure Matrix (supported by NIOSH). Los Angeles, CA.

2014 Distinguished Engineering Fellow- University of Alabama College of Engineering.

List of Publications, Reports, Committee Documents, Presentations

Lectures at University of Texas Power System Seminar - "Current Research Projects Relating to HV/EHV/UHV Transmission Lines", Austin, Texas, February 28, 1978.

Silva, J.M., "Environmental Considerations for the Modern Transmission System", Educational Television presentation- Lloyd Hunt Distinguished Lecture Series in Power Engineering, Los Angeles, California, February 27, 1979.

Lecturer at Ohio State University - Electrical Engineering Colloquium Distinguished Lecture Series, "Research on the Biological Effects of Electric and Magnetic Fields of Transmission Lines", Columbus, Ohio, April 10, 1980.

Ramey, G.E. and Silva, J.M., "An Experimental Evaluation of Conductor Aeolian Fatigue Damage Mitigation by Amplitude Reduction", IEEE Transactions on Power Apparatus and Systems, Vol. PAS-100, No.12, pp. 4935-4940, December 1981.

Chairman and Speaker: Institute of Electrical and Electronics Engineers Panel Session on the "National Electrical Safety Code (NESC)- 5 mA Rule and Electric Field Induction" at IEEE Winter Power Meeting, New York City, February 1983.

"Electrical Effects of AC Power Transmission Lines: An Introduction for the Public", IEEE Power Engineering Society, Corona & Field Effects Working Group Brochure, February 1983.

"Modeling Public Exposure to AC Fields", platform presentation by J.M. Silva at U.S. Department of Energy Annual EMF Contractors Research Review Meeting, Kansas City, MO, 1983.

Deno, D.W., Silva, J.M., "Method for Evaluating Human Exposure to 60 Hz Electric Fields", IEEE Transactions on Power Apparatus and Systems, Vol. PAS-103, No.7, pp. 1699-1706, July 1984.

Silva, J.M., Kavet, R.I., "Estimating Public Exposure to Power-Frequency Electric Fields", DOE60 Symposium Series, 23rd Hanford Life Sciences Symposium on Interaction of Biological Systems with Static and ELF Electric and Magnetic Fields, pp. 419-435, Richland, WA, October 2-4, 1984.

Silva, J.M. et.al, "AC Field Exposure Study: Human Exposure to 60 Hz Electric Fields", EPRI Report EA-3993, April 1985.

Silva, J.M., Zaffanella, L.E., Hummon, N.P., "An Activity Systems Model for Estimating Human Exposure to 60 Hz Electric Fields", IEEE Transactions on Power Apparatus and Systems, Vol. PAS-104, No.7, pp. 1923-1929, July, 1985.

"Corona and Field Effects of AC Overhead Transmission Lines: Information for Decision Makers", IEEE Power Engineering Society, Corona and Field Effects Subcommittee- AC Fields Working Group document on EMF, corona, and audible noise, New York, July 1985.

Silva, J.M., Huber, D.L., "Exposure to Transmission Line Electric Fields During Farming Operations", IEEE Transactions on Power Apparatus and Systems, Vol. PAS-104, No. 9, pp. 2632-2640, September, 1985.

Deno, D.W., Silva, J.M., "Probability and Consequence of Gasoline Ignition Under HVAC Transmission Lines", IEEE Transactions on Power Apparatus and Systems, Vol. PAS-104, No.11, pp. 3181-3188, November, 1985

The EXPOCALC Code, Version 1.10: A Tool for Estimating Human Exposure from Transmission Line Electric Fields - User's Manual and Documentation; EA-4489-CCMP; EPRI Research Project RP799-16; Enertech Consultants, J.M. Silva, Principal Investigator; Computer Code Manual, April 1986.

"Magnetic Field Exposure Assessment: Instrumentation, Residential Measurements, and Exposure Modeling Software", Silva, J.M., platform presentation at U.S. Department of Energy Annual Review of Research on Biological Effects of Electric and Magnetic Fields, Denver, CO, 1986.

Deno, D.W., Silva, J.M., "Transmission Line Electric Field Shielding by Objects", IEEE Transactions on Power Delivery, Vol. PWRD-2, No. 1, pp. 269-280, January, 1987.

"Magnetic Fields: A Status Report", J.M. Silva, presented at Fortieth Annual Power Distribution Conference, University of Texas-Austin, published in Conference Proceedings, October, 1987.

EXPOCALC Version 2.1: An Exposure Assessment Tool for Transmission Line Electric and Magnetic Fields - User's Manual and Documentation; EA-5765-CCML; EPRI Research Project RP799-16; Enertech Consultants, J.M. Silva, Principal Investigator, Computer Code Manual, April 1988.

Domestic Magnetic Field Database: User's Manual and Documentation; EA-5972-CCML; EPRI Research Project RP799-16; Enertech Consultants, J.M. Silva, Principal Investigator; Computer Code Manual, August 1988.

"Estimating Electric and Magnetic Field Exposure", Silva, J.M., paper presented at the 1988 Seminar on Power-Frequency Electric and Magnetic Field Exposure Assessment, Colorado Springs, CO., October, 1988.

Silva, J.M., Hummon, N.P., Rutter, D.A., Hooper, H.C., "Power Frequency Magnetic Fields in the Home", IEEE Transactions on Power Delivery, Vol. PWRD-4, No. 1, pp. 465-478, January, 1989.

EMDEX System Manuals - Volume 1: User's Manual, EPRI EN-6518, Vol. 1, Research Project RP799-16; Enertech Consultants, J.M. Silva, Principal Investigator, October, 1989.

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Silva, J.M., Kavet, R., "An Alternative Hypothesis for Association Between Distribution Wiring Configurations and Cancer: Planning Phase", RP 2966-2, EPRI EN-6863, June 1990.

"Extremely Low-Frequency Electric and Magnetic Fields and Risk of Human Cancer", World Health Organization-International Agency for Research on Cancer; IARC Ad Hoc Working Group (24 members including J.M. Silva), Bioelectromagnetics, 11:91-99, 1990.

"Measurements of Power Frequency Magnetic Fields Away From Power Lines", A Report of the IEEE PES AC Magnetic Fields Working Group, M. Misakian, M. Silva, R. Baishiki, principal authors, Paper No. 90 SM 423-4 PWRD presented at 1990 Summer Power Meeting, IEEE Transactions on Power Delivery, 1990.

"Studies of Power System Magnetic Fields: Characterization of Sources in Residential Environments, Measurements of Exposure, Influence on Computer Screens", U.S. Committee, CIGRE-Electra, Paris, France, 1990.

IEEE Std 539-1990, "IEEE Standard Definitions of Terms Relating to Corona and Field Effects of Overhead Power Lines", Transmission and Distribution Committee of the IEEE Power Engineering Society, 1990.

EMDEX II System Documentation - Volume 1: User's Manual, EPRI Report EN-7497, Enertech Consultants, September 1991.

EMDEX II System Documentation - Volume 2: Technical Reference Manual, EPRI Report EN-7497, Enertech Consultants, September 1991.

RESICALC: Magnetic Field Modeling Program, EPRI Report TR-101776, Enertech Consultants, and December 1992.

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Kavet, R., Silva, J.M., "Magnetic Field Exposure Assessment for Adult Residents of Maine Who Live Near and Far Away From Overhead Transmission Lines", Bioelectromagnetics, Vol. 13, No. 1, pp. 35-55, 1992.

"Small integrating meter for assessing long-term exposure to magnetic fields", Kaune, W.T., Niple, J.C., Liu, M.J., Silva, J.M., Bioelectromagnetics, Vol. 13, No. 5, pp. 413-428, 1992.

"Measurement of Electromagnetic Transients in Residential Environments", Guttman, J., Niple, J., Silva, M., platform presentation at U.S. Department of Energy Annual Review of Research on Biological Effects of Electric and Magnetic Fields from the Generation, Delivery, and Use of Electricity, San Diego, 1992.

"A Protocol for Spot Measurements of Residential Power Frequency Magnetic Fields", IEEE Magnetic Fields Task Force of the AC Fields Working Group, IEEE Transactions on Power Delivery, Vol. 8, No. 3, pp. 1386 - 1394, July, 1993.

"Reversed-Phase Lines May Reduce EMF Levels", Silva, J.M., Transmission & Distribution, pp. 44-45, November 1993.

"High-Bandwidth Measurements of Transient Magnetic Fields in Residential Environments", Guttman, J., Niple, J., Silva, M., Electricity and Magnetism in Biology and Medicine, San Francisco Press, 1993.

"Transient Data Acquisition System Used in the California Pilot Study: A Series of 24-Hour Measurements of Transient Magnetic Fields Performed in 21 Residences", Guttman, J.L., Niple, J.C., Silva, J.M., The Annual Review of Research on Biological Effects of Electric and Magnetic Fields from the Generation, Delivery, and Use of Electricity, U.S. DOE, Savannah, GA, 1993.

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Silva, M., Marshall, T., "Magnetic Fields in Schools: Sources and Management", IEEE/PES Transmission and Distribution Conference and Exposition, Chicago, April 10-15, 1994.

"Handbook of Shielding Principles for Power System Magnetic Fields", Vols: 1 and 2, Clairmont, et. al., EPRI Report TR-103630, April 1994.

"RESICALC 2.0 - Magnetic Field Modeling Program, ENERTECH, J. M. Silva, et. al., EPRI Report TR-104274, October 1994.

"IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines", Institute of Electrical and Electronics Engineers, Corona and Field Effects Subcommittee - AC Fields Working Group, IEEE/ANSI Std. 644-1994, 1994.

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Silva, J.M., "The Nationwide Differential Global Positioning System and Electric Power Line Interference", presented at Institute of Navigation (ION) GPS 2000 Conference, Salt Lake City, Utah, September 20, 2000.

Silva, J.M., "Study of the Potential for Electric Power Facilities to Affect Use of The Global Positioning System (GPS)", EPRI Final Report No. 1000085, September, 2000.

"Power System Electromagnetic Compatibility", Silva, J.M., Olsen, R.G., Young, F.S., EPRI Resource Paper, Product No. 1001049, Palo Alto, CA, December, 2000.

"Alternative Magnetic Field Exposure Metrics: Relationship to TWA, Appliance Use, and Demographic Characteristics of Children in a Leukemia Survival Study", Foliart, D.E., Iriye, R.N., Tarr, K.J., Silva, J.M., Kavet, R.I., Ebi, K.L., Bioelectromagnetics, Vol. 22, No. 8, pp. 574-580, December 2001.

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"Evaluation of the Potential for Power Line Carrier (PLC) to Interfere with the Nationwide Differential GPS Network", Silva, J.M., Whitney, B., IEEE Transactions on Power Delivery, vol. 17, No. 12, pp 348-352, April, 2002.

"An Introduction to Electromagnetic Compatibility (EMC) Standards", Ramie, J., Silva, J.M., Olsen, R.G, EPRI Resource Paper, Product No. 1005494, Palo Alto, CA, July, 2002.

"Use of Global Positioning System (GPS) Receivers under Power Line Conductors", J.M. Silva, R.G. Olsen, IEEE Transactions on Power Delivery, vol. 17, No. 4, pp 938-944, October 2002.

"Correlation of year-to-year magnetic field exposure metrics among children in a leukemia survival study", Foliart, D.E., Iriye, R.N., Silva, J.M., Mezei, G., Tarr, K.J., Ebi, K.L., Journal of Exposure Analysis and Environmental Epidemiology, 12(6), pgs 441-447, 2002.

"Transmission Line Corona and X-Rays", Silva, J.M., Fleischmann, H.H., Shih, C.H., IEEE Transactions on Power Delivery, vol. 19, No. 3, pp 1472-1482, July, 2004.

"Electromagnetic Noise Emission Measurements Near FACTS Devices at the Inez UPFC Station", D. Klinect, D. Nichols, B. Mehraban, S. Sebo, L. Xu, X. Liu, B. Cramer, M. Silva, R. Olsen, and J. Ramie, Paper Presented at the 16th International Zurich Symposium on Electromagnetic Compatibility, Zurich, Switzerland, February 14-18, 2005.

"Electromagnetic Noise Emission Measurements Near the Flexible AC Transmission System (FACTS) Device at the Sullivan (TVA) Station", D. Klinect, D. Nichols, S. Sebo, L. Xu, X. Liu, B. Cramer, M. Silva, R. Olsen, and J. Ramie, Paper Presented at the 2005 PowerTech Conference, St. Petersburg, Russia, June, 2005.

"Limits Applied to Electromagnetic Noise Emission Measurements Near FACTS Devices", R. Olsen, J. Ramie, B. Cramer, M. Silva, S. Sebo, L. Xu, X. Liu, D. Klinect, D. Nichols, Paper Presented at the 2005 PowerTech Conference, St. Petersburg, Russia, June, 2005.

"Magnetic Field Exposure and Long-term Survival among Children with Leukemia", Foliart DE, Pollock BH, Mezei G, Iriye R, Silva JM, Ebi KL, Kheifets L, Link MP, Kavet R., British Journal of Cancer 2006; 94 (1): 161-164. (Corrigendum. British Journal of Cancer 2006; 94 (6): 940.).

"Magnetic field exposure and survival among children with leukemia" (Abstract), Foliart DE, Pollock BH, Mezei G, Iriye R, Silva JM, Ebi KL, Kheifets L, Link MP, Kavet R. Bioelectromagnetics Society, 28th Annual Meeting Proceedings, Cancun, Mexico, June 2006.

Mezei G, Li CY, Sung FC, Silva M, Chen PC, Chen LM. "Survey of residential power frequency magnetic field exposure among children in Taiwan". (Abstract) Bioelectromagnetics Society, 28th Annual Meeting Proceedings, Cancun, Mexico, June 2006.

"Power Frequency Magnetic Field Exposure of Children at Schools Near High Voltage Transmission Lines" (Abstract), Cy Li, FC Sung, PC Lee, FL Chen, G Mezei, M Silva, Annual Meeting of the International Society of Environmental Epidemiology, Paris, September 2006.

"Survey of Residential Extremely-Low-Frequency Magnetic Field Exposure among Children in Taiwan", Chung-Yi Li, Gabor Mezei, Fung-Chang Sung, Michael Silva; Pei-Chun Chen, Pei-Chen Lee, Li-Mei Chen, Environment International Journal, October 2006.

"Magnetic field exposure and prognostic factors in childhood leukaemia", Folliart DE, Pollock BH, Mezei G, Iriye R, Silva JM, Ebi KL, Kheifets L, Link MP, Kavet R. Bioelectromagnetics, vol. 28, No. 1, January, 2007.

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"Extremely-low-frequency magnetic field exposure of children at schools near high voltage transmission lines." Li CY, Sung FC, Chen FL, Lee PC, Silva M, Mezei G. Sci Total Environ. 2007 Apr 15;376(1-3):151-9.

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"Theoretical Evaluation of Magnetic Field Determinants for Residences Above Electric Transformer Rooms", M. Silva, G. Mezei, L. Kheifets, C. Hooper, Poster P-56, BEMS Annual Meeting, San Diego, CA, June, 2008.

"New Electric-Shock Job Exposure Matrix", Vergara XP, Kheifets L, Silva M, Bracken TD, Yost M., American Journal Industrial Medicine, Am J Ind Med. 2012 Mar;55(3):232-240.

"Susceptibility of Magnetic Information Storage to Power Frequency Magnetic Fields", J. Hoburg, J. Bain, M. Silva, IEEE Electromagnetic Compatibility Magazine, No. 2, pp. 59-67, July, 2013.

"Developing a job-exposure matrix with exposure uncertainty from expert elicitation and data modeling", Heidi J. Fischer, Ximena P. Vergara, Michael Yost, Michael Silva, David A. Lombardi, Leeka Kheifets. Journal of Exposure Science and Environmental Epidemiology (In Press).

"Estimating Magnetic Fields of Homes Near Transmission Lines in the California Power Line Study", Ximena P. Vergara, Robert Kavet, Catherine M. Crespi, Chris Hooper, Mike Silva, and Leeka Kheifets, Environmental Research (In Press)

“Advanced Electric Shock Job Exposure Matrix Quantifies Uncertainty”, Ximena P. Vergara, Heidi J. Fischer, Michael Yost, Michael Silva, David A. Lombardi, Leeka Kheifets. International Journal of Environmental Research and Public Health, 12(4), pgs 3889-3902, April 8, 2015

RESUME

H. DWIGHT MERCER, Ph. D.

**513 Crispin Place
Clarksville, Georgia 30523-1313
(706) 839-9746 Home
(229) 723-1084 Cell**

Date of Birth: February 20, 1939

Education: University of Georgia
B.S., Agriculture - 1960
University of Florida
M.S., Pharmacology/Toxicology - 1966
Ohio State University
PhD., Pharmacology/Toxicology - 1976
University of Georgia
DVM, Veterinary Medicine - 1963

Registration: Licensed to practice veterinary medicine in Mississippi
(Faculty License), Georgia and Alabama
Certified John's Disease Veterinarian, Middle Georgia
College

Employment History:

1999 - Present

Mississippi State University
Starkville, Mississippi

Retired Professional and Dean Emeritus, Veterinary
Toxicologist, Herd Health Consultant, Cattle Farmer.

1977 - 1999

Mississippi State University
Starkville, Mississippi

Professor, Pharmacology/Toxicology responsible for
teaching, research and service in the areas of pharmacology
and toxicology and clinical pharmacology (1977-1999).

Administrative Officer responsible for the College Cabinet
and the Administration and Management Affairs of the
College of Veterinary Medicine (1978-1981).

Director of Academic Program responsible for the
administration of the Veterinary Medical Curriculum (1981-
1982).

Coordinator of Programs responsible for the conduct and
administration of the Academic, Clinical and Research
Programs for the College (1982-1983).

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Employment History continued:

Mississippi State University
Starkville, Mississippi

Director of Laboratory Services and the Diagnostic Laboratory (1983-1985).

Associate Dean, College of Veterinary Medicine (1984-1987).

Dean, College of Veterinary Medicine (1987-1990).

Experience:

Admissions Officer, College of Veterinary Medicine, Mississippi State University responsible for the admission of new students into the CVM curriculum; Chairman of Phase I (Freshman Curriculum); and, Director, Animal Health Center responsible for establishing procedures, administration and management of the clinical activities for the new CVM facilities.

Director, Veterinary Medical Research Program and Head, Animal Health Research, Mississippi Agricultural and Forestry Experiment Station (MAFES) (1983-1987).

Deputy Director, Division of Veterinary Medical Research, Bureau of Veterinary Medicine, Food and Drug Administration.
Beltsville, Maryland. (1972-1974 and 1976-1977).

Expert witness and consultant in fields of polybrominated biphenyl (PBB) environmental toxicology case in Michigan; drug and drug residue related cases; biological hazards of electrical and magnetic fields from extra high voltage (EHV) lines on agricultural animals; risk assessment, water quality, catfish production, and food safety; consultant on drug and microbial contamination of foodstuffs produced by food animals; and, consultant to large dairy herd operations and production medicine veterinarians across the Southeastern United States.

Research in the field of pharmacology and toxicology. Emphasis on metabolism and pharmacokinetics of drugs, including the absorption, distribution, metabolism and excretion of drugs in food animals. Various aspects of the drug residue problem in food animals have been studied. The effects of antibiotics on the ecology, resistance, transfer of R-factors, and the epidemiological aspects of using antibiotics in animal feeds have been studied. Supervised or conducted on the toxicity, metabolism and tissue residue transmission of Hexachlorobenzene (HCB), polychlorinated biphenyls (PCB), polybrominated biphenyls (PBB),

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Experience continued:

mycotoxins, deildrin and heptachlor in domestic and laboratory animals. Developed animal models for toxicity testing for cardiotoxic, opthalmic, and neuromuscular toxins. Studied toxic effects of chemicals upon renal function. Research in the biological effects of electromagnetic fields on agricultural animals and the effects of stray voltage on dairy cows.

Additional training includes Managerial Grid Phase I, II and III; FDA Supervisory Development Course; Defense Procurement Management for Technical Personnel; Emergency Concepts of Managerial Leadership; Design of Experiment, Advance Statistics; Clinical Pathology, Special Section Training, Walter Reed Medical Hospital; George Washington University, Graduate Course, Molecular Pharmacology; Veterinary Toxicology Review Workshop, Ames, Iowa; Training on In Vitro and In Vivo Pharmacologic Models in Problem Solving; The Brookings Institution, Advanced Study Program "Conference for Science Executives"; Management by Objectives; Matrix Management, Ira Bitz and Associates and Steve Gershenson Associates, Washington, D.C.; and, Center for Creative Leadership Foundation Grant for Veterinary Medical Education, Greensboro, N.C.

Professional Memberships:

American Veterinary Medical Association
District of Columbia Veterinary Medical Association (Past Member)
American College of Veterinary Toxicology (Fellow)
American Society of Veterinary Physiologists and Pharmacologists
OMEGA TAU SIGMA Professional Fraternity
Diplomate, American Board of Veterinary Toxicology (1974)
American College of Veterinary Toxicology - Board of Councils (1974-1975)
Alabama Cattleman's Association (Past Member)
Alabama Veterinary Medical Association (Past Member)
National Mastitis Council (Member of Research Committee, 1973-1975)
FDA Task Force on the Use of Antimicrobials in Animal Feeds (1971)
American Academy of Veterinary Pharmacology and Therapeutics (Fellow 1977) (Executive Council 1983-1985)
Mississippi Veterinary Medical Association
Council for Agricultural Science and Technology (CAST), Individual Member - Mississippi Membership Committee

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Professional Memberships continued:

American College of Veterinary Toxicology (Secretary-Treasurer 1981-1983)
American Academy of Veterinary and Comparative Toxicology (Fellow 1984) (Secretary-Treasurer 1984-1987)
American Veterinary Computer Society
Mississippi Cattleman's Association
Mississippi State University - Loyalty Club
Mississippi State University Club (1982)
Society of Toxicology - Southern Region
Phi Kappa Phi, Mississippi State University
Sigma Xi, Mississippi State University
Board of Animal Health for State of Mississippi
Chairman, Veterinary Diagnostic Laboratory Board for State of Mississippi

ADDENDUM A TO RESUME

OF

H. DWIGHT MERCER, Ph. D.

Professional Experience and Academic Appointments:

Post-Graduate work in Pharmacology/Toxicology at the Ohio State University (1975-1977).
Acting Director, Division of Veterinary Medical Research, Bureau of Veterinary Medicine, Food and Drug Administration, Beltsville, Maryland (1968-1972).
Branch Chief, Division of New Animal Drugs, Bureau of Veterinary Medicine, Food and Drug Administration (1966-1968).
Post Doctoral Fellow, NIH Grant, Graduate Student, University of Florida, Gainesville, Florida (1965-1966).
Large and Small Animal Practitioner, Houston Animal Clinic, Blakely, Georgia (1964-1965).
Area Veterinarian, Agriculture Research Service, U.S. Department of Agriculture, Montgomery, Alabama (1963-1964).

Honors and Awards:

Honors Day, University of Georgia, 1961, 1962, 1963, Top Ten Percent of Class.
Dr. Jessie Roberts Aware, Senior Clinic Award, 1963.
Phi Zeta, Honorary Veterinary Medical Society, 1962.
NIH Grant for Post-Doctoral Research, University of Florida, 1965.
NIH and Tulane Medical College Grant in Public Health, 1964.
Civil Service Commission, Rating Board, Research Veterinarian, 1970-1977.
FDA 1974 Award of Merit.
Scientific Editorial Board, Journal of Food Safety, 1977-Present.
Editorial Board, Journal of Environmental Pathology and Toxicology, 1977-Present.
Editorial Board, Journal of Veterinary Pharmacology and Therapeutics, 1978-Present.
President's Pegasus Award, College of Veterinary Medicine, Mississippi State University, 1979.
Sigma Xi, Scientific Research Society, Elected Member, 1979.
Cast Food Safety "Dialogue", 1980.
Editorial Board, American Journal of Veterinarian Research, 1981-1983.
Gamma Sigma Delta, Honorary Agriculture Society, 1985.
Mississippi Veterinarian of the Year, 1993.
Distinguished Service Award, Mississippi Catfish Farmers, 1999.
Distinguished Alumnus Award, University of Georgia, 1999.
Distinguished Alumnus Award, The Ohio State University, 1999.

ADDENDUM B TO RESUME

OF

H. DWIGHT MERCER, Ph. D.

Publications, Reports and Presentations:

- Mercer, H.D., Surgical Correction of Impacted Omasum, *Southeastern Veterinarian*, Vol. 4:187-189, 1963.
- Mercer, H.D., Toxicity of Cassia Occidentalis, Thesis Publication, Graduate Council, University of Florida, Gainesville, Florida, 1966.
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- Mercer, H.D., J.N., Geleta, E.J. Schultz and W.W. Wright, Milk-Out Rates for Antibiotics in Intramammary Infusion Products Used in the Treatment of Bovine Mastitis: Relationship of Somatic Cell Counts, Milk Production Level and Drug Vehicle, *JAVR*, Vol. 31, No. 9, 1959-1960, September, 1970.
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- Rollins, L.D., H.D. Mercer, G.G. Carter and J. Kramer, The Absorption, Distribution and Excretion of Penicillin and Dihydrostreptomycin in Dairy Cows Following Intramammary Infusion, *Journal of Dairy Science*, Vol. 53, No. 10:1407-1414, 1970.
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- Righter, H.F., J.M. Worthington and H.D. Mercer, Tissue Residue Depletion of Sulfamethazine in Calves and Chickens, *AJVR*, Vol. 32, No. 7:1003-1006, July, 1971.
- Mercer, H.D., S.A. Gaines and D.W. Pocurull, Survey of Infectious Multiple Drug Resistance Among Salmonella Isolated from Animals in the United States, *Applied Microbiology*, Vol. 21, No. 2:348-362, February, 1971.
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- Mercer, H.D., L.D. Rollins, M.A. Garth and G.G. Carter, A Residue Study and Comparison of Penicillin and Dihydrostreptomycin Concentrations After Intramuscular and Subcutaneous Administration in Cattle, *Journal of the American Veterinary Medical Association*, Vol. 158, No. 6, Part I:776-779, 1971.
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- Mercer, H.D. and R.H. Teske, Special Considerations for the Development of Drugs for Acute Clinical Mastitis, Journal of the American Veterinary Medical Association, Vol. 170, No. 1:125, May 15, 1977.
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- Mercer, H.D., L.B. Willett, F.L. Shanbacher, P.D. Moorehead and T.E. Powers, The Use of the Double Isotope, Single Injection Method for Estimating Renal Function in Normal and Polybrominated (PBB) Exposed Dairy Cows, American Journal of Veterinary Research, Vol. 39, No. 8:1262-1268, August 1978.
- Durst, H.I., L.B. Willett, C.J. Brumm and H.D. Mercer, The Effects of Polybrominated Biphenyls on Health and Performance of Pregnant Holstein Heifers, Journal Dairy Science, Vol. 60, pp. 1292-1300, August, 1977.
- Mercer, H.D., R.H. Teske, W.G. Helferich and D.H. Showalter, The Use of Double Isotope, Single Injection Method for Estimating Renal Function in Normal Cross-Bred Swine, AJVR, Vol. 40, No. 4, pp. 567-570, April, 1979.
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- Mercer, H.D., Heath George, P.E. Long, D.H. Showalter and Thomsa E. Powers, Drug Residues in Food Animals I: Plasma and Tissue Kinetics of Chloroamphenicol in Young Cross-Bred Swine, Journal of Veterinary Pharmacology and Therapeutics, 1, 19-36, 1978.
- Mercer, H.D., Richard H. Teske, Patricia A. Long and David M. Showalter, Drug Residues in Food Animals II: Plasma and Tissue Kinetics of Oxytetracycline in Young Cross-Bred Swine, Journal of Veterinary Pharmacology and Therapeutics, 1978.
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- Mercer, H.D., The Phenomenon of Transferable Resistance (R-Factors), Proc., Annual Conference of Veterinarians, Columbia, Missouri, October, 1978.
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- Leard, A.T., Tucker, C.S., Mercer, H.D., Camp, K.L. and Wise, D.J., "Findings of the Diuron Safety Study in Farm Raised Catfish", Board of Directors of the Drexel Chemical Company, Memphis, Tennessee, 1995.
- Boone, J.S., Chambers, J., Carr, R., Mercer, H.D. and Leard, T., *Chronic Chlorpyrifos Exposure in Experimental Catfish Ponds: Water and Sediment Concentrations and Hepatic Cytochrome P450*, Proceedings: 17th Annual Meeting of the Society of Environmental Toxicology and Chemistry, Washington, D.C., November, 1996.
- Chambers, J.E., Boone J.S., Carr, R.L., Mercer, H.D. and Camp, K., *Chronic Chlorpyrifos Exposure in Experimental Catfish Ponds: Acetylcholinesterase Activities*, Proceedings: 17th Annual Meeting of the Society of Environmental Toxicology and Chemistry, Washington, D.C., November, 1996.
- Carr, R.L., Chambers, J.E., Boone, J.S., Straus, D.L., Boyle, C. and Mercer, H.D., *A 12-Month Study of Temporal Variation in Biochemical and Physiological Biomarkers in Channel Catfish, *Ictalurus Punctatus**, Proceedings: 17th Annual Meeting of the Society of Environmental Toxicology and Chemistry, Washington, D.C., November, 1996.
- Leard, A.T., Mercer, H.D., Handy, F., Camp, K.L., Langston, V.C., Alley, E.G., Wise, D.J., Tucker, C.S., Jack, S.W. and Purchase, H.G., "Tolerance Petition for Diuron in Edible Portions of Catfish", Primary Author of the Final Report (GLP study), 800 pg, USEPA, Washington, D.C., 1996.
- Leard, A.T., Mercer, H.D. and Tucker, C.S., "Water Management in Commercial Catfish Ponds", Addendum to the Diuron Tolerance Petition, USEPA, Washington, D.C., 1996.
- Leard, A.T. and Mercer, H.D., "Catfish Offal Disposition", Addendum to the Diuron Tolerance Petition, USEPA, Washington, D.C., 1996.
- Leard, A.T., Handy, F., Mercer, H.D., Camp, K.L., Wise, D.J. and Tucker, C.S., "Review of the Findings of the Diuron Safety Study", Presentation to Dr. Steve Johnson and Staff, US Environmental Protection Agency, Washington, D.C., 1996.
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- Leard, A.T., Mercer, H.D., Camp, K.L., Jack, S.W. and Wise, D.J., "Toxicity of Diuron and Associated Residues in Channel Catfish, *Ictalurus Punctatus*, At Three Treatment Levels", In preparation, 1997.

Statement of Qualifications
for
Aeronautical Impact Statements (AIS) and providing Expert Witness Testimony

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Company Profile

Federal Airways and Airspace (FA&A) is a private, woman owned, small business that was established in 1984. Its founder was motivated by the need within the telecommunications industry to automate the obstacle evaluation process of locations for proposed towers. FA&A believed it was possible to quickly and accurately perform obstacle evaluations in accordance with Federal Aviation Administration (FAA) rules and regulations. FA&A's solution was to develop a software application to sell commercially. After 5 years of development, FA&A released Airspace®, its first obstacle evaluation software, in 1989. This software application met the requirements to analyze any type of proposed or existing structure's effect on the aeronautical environment by determining the maximum allowable height.

In 1998, Clyde Pittman joined FA&A after retiring from the FAA with an accomplished career of 27 years of service. Mr. Pittman's knowledge and expertise aided in the development and launch of the Airspace® OMS Advanced software, which incorporated the redesigned TERPS® application. Mr. Pittman has also developed many quality control measures used for data validation of FA&A's proprietary data including airport reference points, runway coordinates, navigational facilities and obstacles.

Obstacle Evaluation Software

The Airspace® software was originally released in 1989. This proprietary software was developed by FA&A to perform obstacle evaluations of structures in the aeronautical environment. Since its creation, Airspace® has undergone several iterations of advancement to incorporate new rules and regulations the FAA has adopted. In 1995, TERPS® Professional was released to analyze a structure's impact on instrument procedures and airport surfaces. One of the key features in the TERPS software is the ability to graphically model the aeronautical environment at any airport in any configuration or construction phase. Airspace® Survey was the third application developed by FA&A and has provided GIS capabilities for obstacle evaluation. These three applications together make up the Airspace® OMS Suite that is sold commercially.

Consulting Services

FA&A also provides consulting services to industries that need to comply with the rules and regulations of the FAA. FA&A employs a team of highly trained Airspace Specialists with expertise in FAR Part 77 as well as TERPS criteria. Mr. Clyde Pittman also manages and oversees the consulting operations at FA&A. In addition, the company has developed its own training program to teach new personnel the rules and regulations of FAR Part 77 and TERPS criteria using the Airspace OMS software. FA&A also provides a yearly training seminar to current employees for re-certification of its software. FA&A has trained hundreds of private industry regulatory personnel in FAR Part 77 and use of its obstacle evaluation software applications.

Introduction of Clyde Pittman

Mr. Pittman graduated from the University of Florida with a degree in Electronic Engineering. He began his government career with NASA as a member of the Apollo Moon Program at Kennedy Space Center. During his tenure, he distinguished himself by inventing several innovative devices to aid individuals that are hearing impaired.

Mr. Pittman continued to pursue a career of service to the United States when he joined the Federal Aviation Administration's Southern Region, Airways Facilities Division. While holding this position, Mr. Pittman was responsible for the installation of various electronic facilities throughout the Southeast, Puerto Rico, and the US Virgin Islands.

After several years, Mr. Pittman left the Southern Region and joined the Approach Landing Aids Branch of the FAA in Washington, DC to assist the Agency in upgrading the existing electronic landing facilities throughout the United States.

Mr. Pittman then left Washington, DC to become a member of the FAA's Airway Facilities Program Management Team in the Great Lakes Region. Mr. Pittman held the position of Program Manager for Electronic Landing Facilities, Communications Facilities, and Airport Traffic Control Towers. One of Mr. Pittman's greatest achievements as program manager was the 'on time' completion of the new ATCT at Detroit Metro Wayne County Airport in 1992. Mr. Pittman further enhanced his reputation in 1996 with completion of the electronic drop tube project that allowed the Chicago O'Hare ATCT to be commissioned as scheduled.

Later in his career, Mr. Pittman was promoted to be the Supervisor of Spectrum Engineering and the Frequency Management Officer for the Great Lakes Region. Mr. Pittman completed his accomplished FAA career as the Supervisor of Electronic Engineering in the Great Lakes Region and retired after 27 years of dedicated service to the United States.

Since leaving the FAA, Mr. Pittman has continued to be involved in aviation. In 1998, Mr. Pittman joined the private software and consulting company Federal Airways & Airspace® (FA&A), as the Director of Engineering. Mr. Pittman is responsible for the development of FA&A's Airspace® OMS Advanced software applications, which include Airspace® Manager, TERPS® Advanced and Airspace® Survey.

In September 2002, Mr. Pittman held a meeting with Florida Congressman John Mica, then Chairman and Minnesota Congressman James Oberstar, ranking minority member of the US House Aviation Sub-Committee regarding safety concerns in the near airport environment. The purpose of the meeting was to discuss the need for local governments to be more concerned about the accuracy of local airport and obstacle data that is submitted to and maintained by the Federal Aviation Administration. Accuracy of this type of data is fundamental to a correct aeronautical analysis of a proposed structure by the FAA and maintaining the overall safety of the aeronautical environment.

In October 2006, Mr. Pittman gave a presentation during the FAA Annual Meeting of Airspace Specialists regarding the Obstacle Evaluations program. His presentation detailed how the number of structures filed has been steadily increasing while the number of aircraft

accidents has been decreasing over the years. He attributed this to the excellent job and service of the FAA Airspace Specialists.

In the fall of 2008, the FAA invited Mr. Pittman to be one of the principal speakers at their "Competition for the Sky" National Conference in Las Vegas, NV. His address "Highways in the Sky" explained the concept of "Airspace" as a limited resource with many competitors seeking its use and exhibited the need to establish and sustain balance between aviation requirements and development growth. Mr. Pittman concluded that successful resolution of this problem will require the commitment from all interested parties to reach a compromise that can accommodate the future growth of aviation without curtailing development projects across the United States.

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Clyde Pittman CV

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Clyde Pittman

1423 South Patrick Drive
 Satellite Beach, Florida 32937

Phone 321-777-1266 Fax 321-777-8595
 E-mail Airspace@AirspaceUSA.com

Work Experience

Director of Engineering
 Federal Airways & Airspace® Satellite Beach, FL 1998 - Present
 Designed and developed Airspace OMS Advanced Software (Airspace® Manager, TERPS® Advanced and Airspace® Survey). The Airspace OMS Commercial software is used throughout the United States to determine height restrictions specified under FAR Part 77 and assess the aeronautical impact of structures on Instrument Flight Procedures.

Supervisor of Electronic Engineering, AGL-472
 Federal Aviation Administration Chicago, IL 1995 – 1997
 • Managed Electronic Engineering Program for the Federal Aviation Administration Great Lakes Region.
 • Program Manager for Automated Flight Data Processing System used in new Chicago O'Hare Airport Traffic Control Tower and TRACON.

Supervisor of Spectrum Engineering, AGL-483
 Federal Aviation Administration Chicago, IL 1992 – 1995
 • Managed and assigned aeronautical spectrum for all aviation electronic facilities for the Federal Aviation Administration's Great Lakes Region.
 • Created and established 1st National Spectrum Monitoring Network that was designed to target and apprehend Phantom Controllers.
 • Great Lakes representative at National Airspace Improvement Committee.

Program Manager, AGL-427
 Federal Aviation Administration Chicago, IL 1978 – 1992
 • Managed Terminal Systems (ATCT) Program for the Federal Aviation Administration's Great Lakes Region.
 • Managed Communications & Interfacility System's Program for the Federal Aviation Administration's Great Lakes Region.
 • Managed Instrument & Visual Landing Systems Program for the Federal Aviation Administration's Great Lakes Region.
 • Managed Environmental Systems Program for the Federal Aviation Administration's Great Lakes Region.
 • Designed and implemented Automated Budget System Program.
 • First FAA implementation of computer managed program schedules.
 • Managed Airways Facilities aeronautical studies program.
 • Great Lakes, Airway Facilities Division representative at National Airspace Conferences.

Electrical Engineer, AGL-436
 Federal Aviation Administration Chicago, IL 1977 – 1978
 • Designed electrical distribution systems for on airport communication and navigation system for the Federal Aviation Administration's Great Lakes Region.
 • Attended FAA Academy at Oklahoma City on Visual Guidance Systems.

Electronic Engineer, AAF-420
 Federal Aviation Administration Washington, D.C. 1977 – 1978
 • Managed the electronic system outage program for electronic landing system for the entire FAA.

Electronic Engineer, ASO-450
 Federal Aviation Administration Atlanta, GA 1972 – 1977
 • Installed and commissioned electronic systems (ILS, VOR, ATCT, ASR, and ARTCC Radar & Computer Systems) throughout the Southeast US, Puerto Rico, and US Virgin Islands.
 • Attended FAA Academy at Oklahoma City on Electronic Landing Systems. Highest Class Grade.
 • Designed the electronic weather system for the Airport Traffic Control Tower at Atlanta Harts Field.

Education	University of Florida	Gainesville, FL	1966-1971
	<ul style="list-style-type: none"> • BS Electronic Engineering 		
	NASA School	Kennedy Space Center, FL	1971-1972
	<ul style="list-style-type: none"> • Launch Complex 39 Egress Systems - Emergency Evacuation 		
	<ul style="list-style-type: none"> • Logic Design - Utilizing Digital Circuits 		
	<ul style="list-style-type: none"> • Digital Systems Engineering - Utilizing Digital Circuits 		
	FAA Academy	Oklahoma City, OK	1975-1978
	<ul style="list-style-type: none"> • ILS Equipment - ILS installation and setup 		
	<ul style="list-style-type: none"> • Instrument Landing Systems Concepts - Design and Construction of Instrument Procedures (Terminal & Enroute) 		
	<ul style="list-style-type: none"> • Advanced ILS/VOR Principles - Electronic Landing Systems. 		
	Harper College	Schaumburg, IL	1978 - 1980
	<ul style="list-style-type: none"> • Environmental Impact - Organic Chemistry II, Organic Chemistry I, Zoology, Basic Organic Chemistry, Environmental Biology 		
	FAA Academy	Oklahoma City, OK	1981 - 1981
	<ul style="list-style-type: none"> • Obstruction Evaluation and Airport/Airspace Analysis - FAR Part 77, Airport Layout Plans, Airport Airspace Analysis 		
	OPM	Chicago, IL	1983 - 1983
	<ul style="list-style-type: none"> • OPM Budget Estimating Techniques - Data Management 		
	Harper College	Schaumburg, IL	1983 - 1983
	<ul style="list-style-type: none"> • Electronic Spreadsheet for Microprocessors - Data management 		
	<ul style="list-style-type: none"> • Data management for Microprocessors - Data Management 		
	<ul style="list-style-type: none"> • Computer and Data Processing - Data management 		
	Data General	Schaumburg, IL	1984 - 1985
	<ul style="list-style-type: none"> • AOS/VS User Training - Operating System Training 		
	<ul style="list-style-type: none"> • How to Generate and Run AOS/VS - Operating System 		
	FAA Academy	Oklahoma City, OK	1984 - 1986
	<ul style="list-style-type: none"> • Flight Procedures Analysis - TERPS. Highest Class Grade 		
	<ul style="list-style-type: none"> • Program Analysis and Review - Data Management 		
	Harper College	Schaumburg, IL	1986 - 1986
	<ul style="list-style-type: none"> • Computer Aided Design (AutoCAD) - Graphics Development 		
	FAA Academy	Palm Coast, FL	1994 - 1995
	<ul style="list-style-type: none"> • Management Phase I - Introduction to management 		
	<ul style="list-style-type: none"> • Management Phase II - Team Building 		
	Microsoft Partner	Chicago, IL	1997 - 1997
	<ul style="list-style-type: none"> • Computer Software Design - Software Engineering and Design 		
	Florida Institute of Technology	Melbourne, FL	1997 - 1997
	<ul style="list-style-type: none"> • Aeronautical Studies - Automated Processing of Aeronautical Studies Using AutoCAD 		
	Harper College	Schaumburg, IL	1998 - 1998
	<ul style="list-style-type: none"> • Web Hosting - Design and host world wide web pages 		

**Security
Clearance**

Top Secret Clearance 1997-1993 & 1971 - 1972

**Civil Service
Grades**

GS-855-14 (1992 – 1997), GS-801-14 (1991-1992), GS-801-13 (1978 – 1991), GS-850-12 (1977 – 1978), GS-855-11 (1976 – 1977), GS-855-09 (1972-1976), GS-855-07 (1971 – 1972)

**Awards and
Recognition**

- Director of Engineering of Airspace® and TERPSs® Software used nation wide for the analysis of structures to ensure compliance with Federal Aviation Regulations Part 77 and Instrument Approach Procedures, FA&A
- Managed the development of Automated Flight Data Processing System (AFDPS) (see attached Chicago Tribune article 2/22/1998) , FAA
- Automation Presentation at Seattle Airspace Conference, FAA
- Development various devices to aid hearing impaired (see attached KSC Spaceport article October 1971)
- Presentation at Seattle Airspace Conference on Automation
- Outstanding Performance for Development of AFDPS, 1996, FAA
- Distinguished Performance for Supervision, 1993, FAA
- Quality within Grade Award, 1993, FAA
- Outstanding Performance 1992, FAA
- Letter of Appreciation from Congressman Les Aspen (WI) for outstanding work on Kenosha, WI ATCT, 1992
- Certificate of Recognition for work on VSCS Program, 1991, FAA
- Exceptional Performance, 1991, FAA
- Exceptional Performance, 1990, FAA
- Exceptional Performance, 1989, FAA
- Letter of Appreciation from Ohio Department of Transportation, Chief Bureau of Aviation John B. Cornett, 1989, ODOT
- Outstanding Performance 1988, FAA
- Quality within Grade Award, 1988, FAA
- Exceptional Performance, 1987, FAA
- Exceptional Performance, 1986, FAA
- Exceptional Performance, 1985, FAA
- Exceptional Performance, 1984, FAA
- Exceptional Performance, 1983, FAA
- Outstanding Performance 1982, FAA
- Quality within Grade Award, 1982, FAA
- Exceptional Performance, 1981, FAA