BEK TEK LLC

Forensic Audio/Video/Image Consultants

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CURRICULUM VITAE OF BRUCE E. KOENIG

Professional Positions

1996-Present Private consultant, examiner, researcher, and founder of the forensic, audio/video/image consulting company BEK TEK LLC. Conducts forensic examinations of audio, video and still image media, both analog and digital, to: authenticate, improve intelligibility, visually enhance, identify/classify voice and non-voice signals, change playback speeds, and evaluate certain voice comparison techniques; identify acoustical/visual gunshot events, their timing, location, grouping by weapon, and amplitude; analyze digital images to authenticate, enhance quality and review metadata information; extract video frames as separate image files, which can be cropped, enlarged, and analyzed; measure certain objects in images; provide on-site evaluations of gunshot and other acoustical sounds plus speech; prepare transcriptions; present expert testimony and assist attorneys in preparing for cross-examination of opposing experts and lay witnesses; evaluate certain recording and analysis equipment; conduct research regarding forensic applications.

1996-2003 Hired as a forensic scientist for the Federal Bureau of Investigation (FBI), to conduct examinations of audio and video recordings in addition to continuing the forensic training of FBI employees.

1974-1995 Supervisory Special Agent, Engineering Section, FBI, Washington, D.C., Newington, VA, and Quantico, VA. Conducted examinations of audio and video recordings, both analog and digital, produced or collected by Federal, state, local, and foreign law enforcement and judicial agencies; and the supervision of forensic technicians, engineers and projects. These forensic analyses included authentication of recordings, intelligibility enhancement, voice comparisons, identification/classification of voice and non-voice signals, and other related examinations. Additional duties included analyses of room acoustics; on-site evaluations of sound pressure levels, gunshot events, and other sounds of interest; testing of audio tapes, digital and analog recorders, and laboratory analysis equipment and software; the presentation of expert testimony in criminal, civil, and administrative matters; training of FBI and other law enforcement personnel in forensic audio analysis; and conducting appropriate research. At retirement, was the manager and senior audio examiner of the FBI's Audio/Video Signal Processing program, which was composed of approximately 30 individuals, including Ph.D scientists, electrical & electronic engineers, other supervisory special agents, non-agent examiners, and support staff. At that time, this was the largest laboratory group dedicated to the analyses of forensic audio and video examinations in the world.

1970-1974 Special Agent, FBI. Investigative responsibilities in the Atlanta and Detroit Divisions involving bank robberies, prison escapes, terrorism, and other violations of Federal law. Also was the technical coordinator of the photographic laboratory in the Detroit FBI Division.

Formal Education

Bachelor of Science degree, University of Maryland, majors of Physics and Mathematics.

Certificate, DeVry Institute of Technology (now called DeVry University), electronics curriculum on the theory and circuitry design of audio and video components, including recorders, radios, and stereo equipment, with an emphasis on televisions and the associated video signal.

Master's degree, George Washington University, major of Forensic Science.

Additional graduate level courses at George Mason University, Massachusetts Institute of Technology, the University of Colorado Denver and the University of Utah.

Work Experience

Has conducted examinations on over 21,000 separate audio and video recordings, and still images, in over 6200 criminal, civil, and administrative matters, including over 3700 authenticity analyses, the enhancement of over 10,000 recordings and still images, over 6600 signal analysis determinations, over 12,000 additional analyses, and over 2200 voice comparison examinations. Submissions have been received from clients in private and governmental organizations from all 50 states within the United States of America, the Commonwealth of the Northern Mariana Islands, the District of Columbia, Guam, Puerto Rico, the U.S. Virgin Islands (both St. Croix and St. Thomas), Argentina, Australia, Canada, Cayman Islands, Colombia, Costa Rica, Croatia, Denmark, El Salvador, Ecuador, England, Eritrea, Germany, Grenada, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kenya, Mexico, the Netherlands, New Zealand, Nicaragua, Northern Ireland, Panama, Philippines, Romania, Singapore, South Korea, Switzerland, Turkey, Turks and Caicos Islands, Ukraine, and Venezuela.

Has instructed numerous personnel in the FBI, other Federal agencies, state, local, and foreign law enforcement departments, and private consultants in forensic analysis procedures.

On hundreds of occasions has lectured and presented papers before scientific, forensic, investigative and legal organizations regarding forensic examinations.

Regularly peer-reviews scientific/technical articles, presentations, books, and doctoral theses in the audio/video signal processing fields.

Affiliate/Associate of the Audio Forensics Group, Organization of Scientific Area Committees, National Institute of Standards and Technology (NIST), U.S. Department of Commerce (2015).

Member of the Ad Hoc Subcommittee on "The 18½-Minute Erased Portion of Nixon White House Tape 342," Advisory Committee on Preservation, National Archives and Records Administration (2000).

While chairperson of the Voice Identification and Acoustical Analysis Subcommittee, of the International Association for Identification, was responsible for writing and having approved the first comprehensive standards on spectrographic voice identification, outside the FBI (effective January 1, 1992).

FBI's project manager to the National Research Council, National Academy of Sciences, for their evaluation of spectrographic voice identification, titled "On the Theory and Practice of Voice Identification" (1979).

Assisted the members of the National Research Council, National Academy of Sciences' Committee on Ballistics Acoustics, in the examination of the acoustic information in the assassination of President John F. Kennedy (late 1970s).

Clients, since establishing BEK TEK LLC, have included the U.S. Department of Justice; Federal Bureau of Investigation; U.S. Congress; Office of Independent Counsel, Bureau of Alcohol, Tobacco, Firearms and Explosives; Drug Enforcement Administration; Security and Exchange Commission; U.S. Department of Defense; U.S. Department of Energy; U.S. Customs Service; Federal Trade Commission; United Nations Criminal Tribunal; National Academy of Sciences; U.S. Agency for International Development; district attorney's offices; public defender's offices; police departments; prosecuting attorney's offices; law school legal clinics; ombudsmen; sheriff's departments; state attorney general's offices; bar associations; city & county attorney's offices; governmental judicial conduct committees; private investigators; universities/colleges; the news media; private law firms; insurance companies; major corporations; utilities; labor unions; magazine editors; and small businesses.

Work Experience (continued)

Has conducted forensic examinations in numerous significant investigations, including: the authenticity analysis of the Linda Tripp telephone recordings involving the investigation of President William J. Clinton; the authenticity and enhancement of audio and video recordings in the HBO documentary series "The Jinx: The Life and Crimes of Robert Durst", including his bathroom comment of "Killed them all, of course"; the enhancement, enlargement, magnification, speed changes, and looping of the Cobb Theater videos of Curtis Reeves, a retired Tampa, FL, police captain, fatally shooting Chad Oulson; the digital recordings of test gunshot sounds outside the Marjory Stoneman Douglas High School in Parkland, FL, and their laboratory analysis to determine their amplitude levels compared to the ambient noise at the site (this was the location of the 2018 shootings in which 17 people, including 14 students, were killed); the former the authenticity analysis of the telephone recordings concerning Housing and Urban Development Secretary Henry G. Cisneros; the enhancement examination of President Richard M. Nixon's White House recordings, including the "Watergate tapes"; the gunshot analyses in the assassination of President John F. Kennedy and the attempted assassination of Ronald W. Reagan; the authenticity and enhancement analyses of the undercover informant's recordings in the Archer Daniels Midland antitrust cases; the video surveillance analyses in the murder of Odin Lloyd, in which former New England Patriots player Aaron Hernandez was convicted; the enhancement of the Len Bias 911 recording when he is dying of a cocaine overdose (he was a first-team, All-American college basketball forward at the University of Maryland); the enhancement of the audio recording of the torture and killing of DEA Agent Enrique "Kiki" Camarena by drug lord Rafael Caro Quintero; the authenticity and enhancement examinations in the John Gotti and other high-profile organized crime cases; the authenticity determination and identification of gunshot sounds on audio and video tapes involved in the burning of the Branch Davidian complex in Waco, Texas; the analysis of the six gunshot sounds and the voices recorded by the cockpit area microphone (CAM) of the Pacific Southwest Airlines flight 1771 before it crashed; the analysis of voices and background sounds in the Atlanta Child Murders case; the authenticity and voice comparison analyses of audio recordings involved in three criminal trials before the United Nations Criminal Tribunal for the former Republic of Yugoslavia; the intelligibility determination and transcript preparation of U.S. government recordings in the Sabrina Aisenberg kidnapping investigation; the video authenticity analyses involved in the investigation by the U.S. Congress of presidential campaign financing in the Clinton administration; the authenticity examination of digital audio recordings from the office of Ukrainian President Leonid Kuchma; the analog tape authenticity analysis in the comedian William H. Cosby, Jr. criminal rape case; the authenticity examination of the FBI's undercover analog and digital recordings in the $2.7 billion fraud prosecution of Richard M. Scrushy, former CEO of HealthSouth Corporation; the analysis of the gunshots fired by members of the Ku Klux Klan, the American Nazi Party, the Communist Workers Party, and the Socialist Workers Party during a "Death to the Klan" demonstration in Greensboro, NC; the authenticity analysis of audio microcassette recordings in the Canadian Prime Minister Stephen Harper vs. The Liberal Party of Canada civil case; the authenticity analysis of 35 digital audio recordings in the conspiracy and interception of wire communications prosecution in the U.S. vs. Anthony Pellicano and Terry Christensen case; the digital authenticity analyses in the Libananco Holding Co. v. Republic of Turkey civil matter resolved by a World Bank Tribunal; the gunshot examinations in the deaths of Timothy Russell and Malissa Williams by the Cleveland Police Department, in which over 130 shots were fired; the authenticity and enhancement of air traffic control recordings involved in the destruction of Korean Airlines Flight 007 by a Russian missile; many espionage cases and other major airplane crashes since the late 1970s; many capital punishment/death penalty cases; the audio and image enhancement analyses plus transcription preparation in the Duke University Lacrosse Team case; the signal analysis examination of the engine, rotor and electrical system sounds of the Sikorsky helicopter crash near Weaverville, CA resulting in the death of seven firefighters, the pilot and the safety officer.

Specialized Short Courses Attended (partial listing)

Acoustics and Electroacoustic Measurement, presented by Brüel & Kjær, in Marietta, GA

Applications of Modern Image Processing Systems, presented by The International Society for Optical Engineering, Bellingham, WA

Autopsy [computer software] Basics and Hands On, presented by Basis Technology Corp., Cambridge, MA

Cellular Telephone System, presented by Douglas A. Kerr, in Dallas, TX

Computer Science Technology, University of Utah, Salt Lake City, UT

Digital Signal Analysis for Applications in Sound and Vibration, presented by Pope Engineering Company and Brüel & Kjær, in Norcross, GA

Electroacoustic Measurements on Telephones, presented by Brüel & Kjær, in Marietta, GA

Essentials of Industrial Security Management, presented by the Army Institute for Professional Development, Fort Eustis, VA

Eyes Wide Open: New Insights into Digital Video Forensics (regarding file structures in image and video authenticity analyses), presented by National White Collar Crime Center (NW3C), Richmond, VA

FFmpeg (Fast Forward Moving Picture Experts Group) for Forensic Video Examinations Webinar, presented by Resolution Video Inc., Fredericksburg, VA.

Fast Fourier Analysis, presented by Spectral Dynamics, in San Diego, CA

FBI Laboratory Quality Assurance Training on Evidence Submission, Examination, and Return, presented by the FBI Laboratory Division, Quantico, VA

File Systems Revealed, presented by X-Ways Software Technology AG, in Seattle, WA

Forensic Authentication of Digital Audio, presented by the National Center for Media Forensics, University of Colorado, Denver, CO

Forensic Authentication of Digital Images, presented by the National Center for Media Forensics, University of Colorado, Denver, CO

Image and Video Processing Using MATLAB, presented by MathWorks, in Vienna, VA

Image Processing and Analysis, presented by The International Society for Optical Engineering, Bellingham, WA

Mastering Analog Video Technology, presented by The Sony Video Institute, in San Jose, CA

Mastering Digital Video Technology, presented by the Sony Training Institute, in San Jose, CA

Mastering Telecommunications Fundamentals, presented by Two Rivers Technologies, in Washington, D.C.

Specialized Short Courses Attended (partial listing - continued)

Medex Examiner Video Authentication & Source Identification Training, presented by Medex Forensics, Madison, WI. Then passed the Medex Certified Media Examiner (MCME) examination and certified as Medex Certified Media Examiner.

Presenting Data and Information, presented by Edward R. Tufte, in Arlington, VA

Professional Photography, presented by New York Institute of Photography, New York, NY

Selected Topics in Acoustics, presented by George Mason University, Fairfax, VA

Signal and Image Processing and Analysis for Scientists and Engineers, presented by Applied Technology Institute, Laurel, MD

Sonic Boom: Prediction and Effects, presented by American Institute of Aeronautics and Astronautics, in Tallahassee, FL

Speech Enhancement, presented by The University of Utah, Salt Lake City, UT

Speech Spectrogram Reading: An Acoustic Study of English Words and Sentences, presented by the Massachusetts Institute of Technology. Cambridge, MA

Video Analyst System Training, presented by Intergraph, Huntsville, AL

Video Capture, Enhancement and Analysis, presented by The Institute for Forensic Imaging (in association with Indiana University and Purdue University), Indianapolis, IN

Voice Identification, presented by Voice Identification, Inc., in Manville, NJ

X-Ways Forensics, presented by X-Ways Software Technology AG, in Seattle, WA

Testimony

Has testified as an expert in the fields of audio/video/image analyses in judicial proceedings, including trials, hearings, and depositions on over 430 occasions on cases from: The Netherlands, Northern Ireland, Singapore, South Korea, Turks and Caicos Islands, District of Columbia, Guam, Puerto Rico, U.S. Virgin Islands, Alabama, Alaska, Arizona, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, and West Virginia.

Seminars

Have attended numerous seminars, conventions, conferences, and workshops of organizations including the Acoustical Society of America, Audio Engineering Society, DSP Expo, International Association for Identification, International Society for Optical Engineering, Institute of Electrical and Electronic Engineers, International Speech Communication Association, National Association of Broadcasting, and National Technical Investigators Association.

Miscellaneous

Full-field, TOP SECRET and Sensitive Compartmented Information (SCI) clearances (1970-2004).

Reviewer/limited contributor for a number of legal papers and books, including the second and third editions of Scientific Evidence by Paul C. Giannelli and Edward J. Imwinkelried.

Photos of Mr. Koenig and his associate Artese Kelly are displayed in The Sixth Floor Museum at Dealey Plaza in the former Texas School Book Depository building, Dallas, Texas, regarding the Kennedy Assassination audio examinations conducted by the FBI.

First-hand account regarding some FBI experiences appears in the chapter entitled "Best Work in Law Enforcement" in the book *Guide to Careers in the FBI*, 2nd edition by John Douglas, published in 2005 by Simon & Schuster.

Professional Society Memberships

Acoustical Society of America – member. Member of the Subcommittee on Forensic Acoustics.

Audio Engineering Society – member. Member of the Audio Forensics Technical Committee and the Standards Working Group. Awarded the 33rd "2015 Distinguished Richard C. Heyser Memorial Lecturer" at the 139th Audio Engineering Society Convention in New York City, with a presentation entitled "Acoustic Forensic Gunshot Analysis — The Kennedy Assassination and Beyond."

International Association for Identification – Distinguished and Life Active member. Member of the Editorial Board for the *Journal of Forensic Identification*. Former chairperson of both the Voice Identification and the Acoustical Analysis Subcommittees plus the Voice Identification Certification Board; former board member of the Forensic Video Analysis Certification Study Committee.

Institute of Electrical and Electronic Engineers (IEEE) – Life Senior member. Member of the IEEE Signal Processing Society.

National Technical Investigators Association – former member.

Society of Former Special Agents of the Federal Bureau of Investigation – member.

Society of Motion Picture and Television Engineers (SMPTE) – Life Member.

SPIE [formerly known as The International Society for Optical Engineering] – former member (2000-2010).

Scientific Publications

Koenig, Bruce E.; Lacey, Douglas S. Effects of Content Trimming iPhone 12 Pro Max Video Files in iOS 14. *Journal of Forensic Sciences* **2021**, 66, pp 1742-1750.

Koenig, Bruce E.; Lacey, Douglas S. Forensic Authenticity Analyses of the Metadata in Re-Encoded M4A iPhone iOS 12.1.2 Voice Memos Files. *2019 Audio Engineering Society International Conference on Audio Forensics: Trust Powered by Science,* Porto, Portugal, **2019**.

Koenig, Bruce E.; Lacey, Douglas S. Forensic Authenticity Analyses of the Metadata in Re-Encoded iPhone M4A Files. *2017 Audio Engineering Society International Conference on Forensic Audio: Finding Signal in the Noise,* Arlington, VA, **2017**.

Smith, Jeff M.; Lacey, Douglas S.; Koenig, Bruce E.; Grigoras, Catalin. Triage Approach for the Forensic Analysis of Apple iOS Audio Files Recorded Using the "Voice Memos" App. *2017 Audio Engineering Society International Conference on Forensic Audio: Finding Signal in the Noise,* Arlington, VA, **2017**.

Koenig, Bruce E.; Lacey, Douglas S. Forensic Authentication of Digital Audio and Video Files (chapter 4) in the book entitled *Handbook of Digital Forensics of Multimedia Data and Devices* (Anthony T. S. Ho and Shujun Li, editors), IEEE Press-Wiley, Chichester, West Sussex, U.K. **2015**, pp 133-181.

Koenig, Bruce E.; Lacey, Douglas S. The Average Direct Current Offset Values for Small Digital Audio Recorders in an Acoustically Consistent Environment. *Journal of Forensic Sciences* **2014**, 59(4), pp 960 966.

Lacey, Douglas S; Koenig, Bruce E; Reimond, Christina E. The Effect of Sample Length on Cross-Correlation Comparisons of Recorded Gunshot Sounds. *The Proceedings of the AES 54th International Conference - Audio Forensics: Techniques, Technologies and Practice*, London, UK, **2014**, pp 122-129.

Koenig, Bruce E.; Lacey, Douglas S. Forensic Authenticity Analyses of the Metadata in Re-Encoded WAV Files. *The Proceedings of the AES 54th International Conference - Audio Forensics: Techniques, Technologies and Practice*, London, UK, **2014**, pp 77-84.

Koenig, Bruce E.; Lacey, Douglas S.; Reimond, Christina E. Selected Characteristics of MP3 Files Re-Encoded With Audio Editing Software. *Journal of Forensic Identification* **2014**, 64(3), pp 304-321.

Koenig, Bruce E.; Lacey, Douglas S.; Grigoras, Catalin; Price, Suzana Galić; Smith, Jeff M. Evaluation of the Average DC Offset Values for Nine Small Digital Audio Recorders. *Journal of the Audio Engineering Society* **2013**, 61(6), pp 439-448.

Koenig, Bruce E.; Lacey, Douglas S. Forensic Authenticity Analyses of the Header Data in Re-Encoded WMA Files from Small Olympus Audio Recorders. *Journal of the Audio Engineering Society* **2012**, 60(4), pp 255-265.

Koenig, Bruce E.; Lacey, Douglas S.; Richards, Gerald B. Video Frame Comparisons in Digital Video Authenticity Analyses. *Journal of Forensic Identification* **2012**, 62(2), pp 165-182; 62(3), p 189.

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Lacey, Douglas S.; Koenig, Bruce E. Identification of Identical and Nearly-Identical Frames from a Lawmate PV-500 Digital Video-Audio Recorder. *Journal of Forensic Identification* **2012**, 62(1), pp 36-46.

Koenig, Bruce E.; Lacey, Douglas S. An Inconclusive Digital Audio Authenticity Examination: A Unique Case. *Journal of Forensic Sciences* **2012**, 57(1), pp 239-245.

Lacey, Douglas S.; Koenig, Bruce E. Audio Extraction from Silicor Technologies' Digital Video Recorder File Format. *Journal of Forensic Identification* **2010**, 60(5), pp 573-588.

Koenig, Bruce E.; Lacey, Douglas S. Evaluation of Clipped Sample Restoration Software. FBI's *Forensic Science Communications* **2010**, 12(2).

Koenig, Bruce E.; Lacey, Douglas S. Forensic Authentication of Digital Audio Recordings. *Journal of the Audio Engineering Society* **2009**, 57(9), pp 662-695.

Koenig, Bruce E.; Lacey, Douglas S. Distinctiveness of Non-Standard VHS Head Parameters. *Journal of Forensic Identification* **2009**, 59(1), pp 97-126.

Lacey, Douglas S.; Koenig, Bruce E. Identification of an Eccentricity in the Date/Time Metadata of a PAL MiniDV Recording. *Journal of Forensic Sciences* **2008**, 53(6), pp 1417-1423.

Koenig, Bruce E.; Lacey, Douglas S.; Killion, Steven A. A Digital System for Imaging Bitter Patterns. *Journal of Forensic Identification* **2008**, 58(2), pp 238-264; 58(3), pp 281-282.

Koenig, Bruce E.; Lacey, Douglas S. Audio Record and Playback Characteristics of Small Solid-State Recorders. *Journal of Forensic Identification* **2007**, 57(4), pp 582-598.

Koenig, Bruce E.; Lacey, Douglas S.; Killion, Steven A. Forensic Enhancement of Digital Audio Recordings. *Journal of the Audio Engineering Society* **2007**, 55(5), pp 352-371.

Marr, Kenneth W.; Koenig, Bruce E. Fundamental Frequency Analysis of a Metal Baseball Bat. FBI's *Forensic Science Communications* **2007**, 9(1).

Koenig, Bruce E.; Lacey, Douglas S.; Herold, Noel. Video and Audio Characteristics in VHS Over-Recordings. FBI's *Forensic Science Communications* **2006**, 8(3).

Koenig, Bruce. E. Procedures for the Playback of the Initial Frames of VHS Video Cassettes. *NATIA News* **2004**, Summer Issue, pp 14-15.

Koenig, Bruce E.; Lacey, Douglas S.; Killion, Steven A. Analysis of the Radio Shack Micro-30 and the Olympus Pearlcorder S950 Time Code. *Journal of Forensic Identification* **2004**, 54(4), pp 442-451. Authors' Response to Letter. *Journal of Forensic Identification* **2004**, 54(6), pp 629-632.

Koenig, Bruce E.; Lacey, Douglas S.; Herold, Noel. Equipping the Modern Audio-Video Forensic Laboratory. FBI's *Forensic Science Communications* **2003**, 5(2).

Koenig, Bruce E.; Hoffman, Shawn M.; Nakasone, Hirotaka; Beck, Steven D. Signal Convolution of Recorded Free-Field Gunshot Sounds. *Journal of the Audio Engineering Society* **1998**, 46(7/8), pp 634-653.

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Merrill, Steven B.; Koenig, Bruce E. Analysis of Hang-up Transients for the Same Model Telephone. *Journal of Forensic Identification* **1996**, 46(3), pp 294-321.

Koenig, Bruce E.; Merrill, Steven B. Determination of the Frequency Characteristics of Filters. *Journal of Forensic Identification* **1995**, 45(1), pp 51-68.

Koenig, Bruce E. Selected Topics in Forensic Voice Identification. FBI's *Crime Laboratory Digest* **1993**, 20(4), pp 78-81. Reprinted in *Methods and Metrics of Voice Communications* **1996**; B. G. Kanki; O. V. Prinzo, eds; Federal Aviation Administration, DOT/FAA/AM-96/10.

Koenig, Bruce E. Frequency Measurement of Alternating Current. *Journal of Forensic Identification* **1992**, 42(5), pp 408-411.

Koenig, Bruce E. Reel Periodicity Determinations in Authenticity Examinations. *Journal of Forensic Identification* **1992**, 42(3), pp 237-247.

Koenig, Bruce E. Voiceprints - Believe It or Not. *Detective* **1991**, Spring/Summer issue, pp 8-11.

Koenig, Bruce E. Serial Time Code Analysis in Authenticity Determinations. *Journal of Forensic Identification* **1991**, 41(3), pp 179-189.

Koenig, Bruce E.; Ryan, James John, Jr. Diagonal Erase Head Marks - An Anomaly. *Journal of Forensic Identification* **1991**, 41(2), pp 96-101.

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Koenig, Bruce E. Authentication of Forensic Audio Recordings. *Journal of the Audio Engineering Society* **1990**, 38(1/2), pp 3-33.

Wallace, Albert Jr.; Koenig, Bruce E. An Introduction to Single Channel FFT Analysis. FBI's *Crime Laboratory Digest* **1989**, 16(2), pp 33-39.

Koenig, Bruce E. Enhancement of Forensic Audio Recordings. *Journal of the Audio Engineering Society* **1988**, 36(11), pp 884-894. Reprinted in *Methods and Metrics of Voice Communications* **1996**; B. G. Kanki; O. V. Prinzo, eds; Federal Aviation Administration, DOT/FAA/AM-96/10.

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Koenig, Bruce E.; Kohus, Barbara A. Measurement of Recorder Speed Changes in Authenticity Examinations. FBI's *Crime Laboratory Digest* **1987**, 14(4), pp 139-152.

Koenig, Bruce E.; Ritenour, Donald V. Jr.; Kohus, Barbara A.; Kelly, Artese Savoy. Reply to 'Some Fundamental Considerations Regarding Voice Identification.' *Journal of the Acoustical Society of America* **1987**, 82, pp 688-689.

Koenig, Bruce E. Making Effective Forensic Audio Tape Recordings. *FBI Law Enforcement Bulletin* **1987**, 56(5), pp 10-18.

Koenig, Bruce E. Spectrographic Voice Identification. FBI's *Crime Laboratory Digest* **1986**, 13(4), pp 105-118.

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Koenig, Bruce E. Overview of the Federal Bureau of Investigation's Technical Analyses of Forensic Tape Recordings, Particularly in Aviation Related Investigations. The Seventeenth Annual Air Law Symposium. *Journal of Air Law and Commerce* **1983**, pp 223-227.

Koenig, Bruce E., et al. Review Requested by the Department of Justice of the Acoustical Reports Published by the House Select Committee on Assassinations. U.S. Department of Justice, Washington, D.C. **1980**.

Koenig, Bruce E. Speaker Identification. *FBI Law Enforcement Bulletin*. **1980**, 49(1), pp 1-4 and 49(2), pp 20-22.

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RECENT EXPERT TESTIMONY OF BRUCE E. KOENIG

Number	Date	City	State	P**	Court	Judge	Court#	Defendant or Case	Exam*
434	05/22/24	West Palm Beach	FL	HRG	Circuit	Scott I. Suskauer	2020CF001353BMB	Bonelly Miguel Fernandez	SA;VM;VE
433	05/08/24	New Haven	CT	DEP	Fed Dist	Charles S. Haight, Jr.	3:22-cv-00630	Stefon v. New Haven, etal.	AAU
432	04/05/24	West Palm Beach	FL	DEP	Circuit	Luis Delgado	2023CA00124MBAG	Jolicoeur v. Alexander	IA;VM
431	02/07/24	West Palm Beach	FL	DEP	Circuit	Luis Delgado	2023CA00124MBAG	Jolicoeur v. Alexander	IA;VM
430	08/18/23	West Palm Beach	FL	DEP	Circuit	Scott I. Suskauer	2020CF001353BMB	Bonelly Miguel Fernandez	SA;VM;VE
429	07/20/23	Fort Lauderdale	FL	HRG	Circuit	Carol-Lisa Phillips	CACE19080000	Marjory S. Douglas H.S.	SA
428	05/02/23	Ocala	FL	HRG	Circuit	Lisa Herndon	19-CF-3931	Michael McDermott	VAU
427	04/19/22	Atlanta	GA	HRG	Superior	Henry M. Newkirk	2019CV320855	McGahan v. McGahan	VAU
426	03/31/22	Nashville	TN	DEP	Fed Dist	Waverly D. Crenshaw, Jr.	3:20-cv-946	Layton v. Southerland	AAU
425	2/21-22/22	Dade City	FL	CRT	Circuit	Susan G. Barthle	2014-CF-216-AX-ES	Curtis Judson Reeves	VE;VM
424	02/17/22	Tampa	FL	CRT	Circuit	Samantha L. Ward	2019-CF-014704	Melissa Rose Turner	AM
423	02/08/22	Tampa	FL	HRG	Circuit	Christine A. Marlewski	2019-CF-014704	Melissa Rose Turner	AM
422	12/17/21	Dade City	FL	HRG	Circuit	Kemba Johnson Lewis	2014-CF-216-AX-ES	Curtis Judson Reeves	VM
421	10/01/21	Bartow	FL	HRG	Circuit	Keith P. Spoto	2021CF003623	Michael Shane Denn II	VAU;VM
420	08/31/21	Bartow	FL	HRG	Circuit	Keith P. Spoto	2021CF003623	Michael Shane Denn II	VAU;VM
419	08/02/21	Tampa	FL	DEP	Circuit	Scott A. Farr	2018CA001266	Salyer v Record Transcripts	AAU
418	06/15/21	Valparaiso	IN	CRT	Superior	Michael A. Fish	64D01-2005-MR-3704	John Salvadore Silva, II	AAU;AE
417	01/15/21	Dothan	AL	DEP	Fed Dist	R. Austin Huffaker, Jr.	2:15-cv-739	Massey v. Conner, et al	VM;SA
416	12/11/20	San Francisco	CA	DEP	Fed Dist	Donna M. Ryu	12-cv-1892	Maurice Caldwell v San Fran	AAU
415	11/30/20	Belfast, Northern Ireland		CRT	Crown	Justice O'Hara	14/126080	Duffy McCrory	AAU
414	10/15/20	Valparaiso	IN	CRT	Superior	Roger V. Bradford	64D01-1903-MR-2107	Connor Ralland Kerner	AAU;AE
413	08/20/20	Valparaiso	IN	HRG	Superior	Roger V. Bradford	64D01-1903-MR-2107	Connor Ralland Kerner	AAU;AE
412	02/24/20	Freehold	NJ	CVT	Superior	Andrea I. Marshall	MON-L-2468-14	Kelly v Charlie's Place	IAU
411	02/08/20 02/11/20	Seoul, South Korea Los Angeles	CA	HRG	Int'l Court of Arbitration	3-Person Panel	23544/PTA	Mitsubishi Tanabe Corp vs Kolon Life Science, Inc.	AAU
410	09/16/19	Conway	SC	CRT	Circuit	R. Markley Dennis	2014-GS26-1125	Sidney Moorer	VM
409	07/24/19	Singapore		CVT	High Court	Chua Lee Ming	HC/5 772/2016	Prudential v Peter Tan Shou Yi	AAU
408	05/21/18	Portland	OR	HRG	Fed Dist	Robert E. Jones	3:17-cr-226-JO	W. Joseph Astarita	SA;VE;VM
407	03/29/18	New Haven	CT	DEP	Superior	Unassigned	NNH-CV15-6053275-5	Klein v. Quinnipiac Univ.	VM; IAU
406	3/6+21/18	Belfast, Northern Ireland		HRG	Crown	Justice Colton	14/126080	Harry Fitzsimmons, et al.	AAU; VC
405	07/06/17	West Hartford	CT	DEP	Superior	Cesar A. Noble	HHD-CV-16-6067801	Morant v Cramer, et al.	AAU
404	03/16/17	Mobile	AL	DEP	Circuit	J. Clark Stankoski	05-CV-2014-900812	Tuttle v Eastern Shore Lanes	VAU
403	02/21/17	Dade City	FL	HRG	Circuit	Susan G. Barthle	CRC-1400216CFAES	Curtis Judson Reeves	VE; VM
402	09/27/16	Chicago	IL	CVT	Fed Dist	Joan Humphrey Lefkow	12CV0771	Jones v Union Pacific	AVAU;VM

* Examination: AAU=Audio Authenticity; AE=Audio Enhancement; AM=Audio Misc.; AVAU=Audio/Video Authenticity; IA=Image Analysis; IAU=Image Authenticity; IE=Image Enhancement; SA=Signal Analysis; VAU=Video Authenticity; VC=Voice Comparison; VE=Video Enhancement; VM=Video Misc.

** Proceeding: CVT=Civil Trial; CTM=Court-Martial; CRT=Criminal Trial; DEP=Deposition; GRJ=Grand Jury; HRG=Hearing