

# BEK TEK LLC

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## Forensic Audio/Video/Image Consultants

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### CURRICULUM VITAE OF DOUGLAS S. LACEY

#### Professional Positions

**August 2014 – Present**      **BEK TEK LLC (Stafford, Virginia).** Owner, private consultant, examiner, and researcher. Conducts forensic examinations of audio and video media (analog and digital) and digital images, including authentication of recordings/images, intelligibility/visual enhancement, identification/classification of non-voice signals, digital data retrieval/analysis, metadata analysis, and other related examinations. Presents expert testimony and assists attorneys with preparing for cross-examination of opposing experts. Evaluates appropriate recording and analysis equipment. Conducts research in forensic audio/video/image analysis related fields and authors/co-authors peer-reviewed papers and other publications.

**October 1999 – July 2014**      **DL Technology LLC (Fredericksburg, Virginia).** Private consultant, examiner, and researcher for BEK TEK LLC (Clifton, Virginia). Conducted forensic examinations of audio and video media (analog and digital) and digital images, including authentication of recordings/images, intelligibility/visual enhancement, identification/classification of non-voice signals, voice comparison, digital data retrieval/analysis, metadata analysis, and other related examinations. Presented expert testimony and assisted attorneys with preparing for cross-examination of opposing experts. Evaluated appropriate recording and analysis equipment. Conducted research in forensic audio/video/image analysis related fields and authored/co-authored peer-reviewed papers and other publications. LLC registered in July 2003 and amended in August 2014.

**September 1996 – June 2003**      **Federal Bureau of Investigation (FBI) (Quantico, Virginia).** Electronics Engineer / Forensic Examiner. Conducted examinations of audio recordings produced or collected by federal, state, local, and foreign law enforcement and judicial agencies. These examinations included authentication of recordings, intelligibility enhancement, identification and classification of non-voice signals, digital data retrieval/analysis, and other related examinations. Additional duties included the presentation of expert testimony in criminal matters, support to FBI field offices and other law enforcement agencies regarding technical assistance pertaining to audio recordings, and training of FBI personnel in the analysis of proprietary digital recording devices. Held a full-field, TOP SECRET clearance for the entirety of the employment.

#### Certifications

Certified Forensic Video Examiner (IAI, August 2014 to July 2029)

Medex Certified Media Examiner (Medex Forensics, July 2022 to August 2025)

Certified Cyber Forensics Professional (CCFP<sup>SM</sup>) [(ISC)<sup>2</sup>, July 2013 to July 2019; certification discontinued by (ISC)<sup>2</sup>]

## **Formal Education**

Master of Science Degree, Recording Arts emphasis in Media Forensics, University of Colorado Denver [2019]

Bachelor of Science Degree, Electrical Engineering (Audio Engineering Program), University of Miami [1996]

Additional undergraduate courses at the University of Florida [1990 – 1993]

## **Work and Testimony Experience**

Have conducted examinations on over 4,560 separate audio and video recordings and digital still images in over 1,660 criminal, civil, and administrative matters, which include submissions from 49 states, the District of Columbia, Australia, Brazil, Canada, Chile, Colombia, Croatia, Grenada, Hong Kong, India, Indonesia, Republic of Ireland, Israel, Italy, Japan, the Netherlands, Puerto Rico, Romania, Singapore, South Korea, Turkey, United Kingdom, and U.S. Virgin Islands.

Have testified as an expert in the fields of audio intelligibility enhancement, video enhancement, audio and video authentication, signal analysis, and voice comparison/speaker recognition on 75 occasions in federal and state courts and depositions in Alabama, Alaska, Arizona, California, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Maryland, Minnesota, Mississippi, Montana, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Virginia, Washington, Washington, D.C., West Virginia; Belfast (Northern Ireland, United Kingdom) Crown Court; and in front of the Ukrainian Parliament.

Have conducted forensic examinations in numerous significant investigations/cases, including: data recovery and intelligibility enhancement of the cockpit voice recording from United Airlines Flight 93, which crashed in Shanksville, PA on September 11, 2001; authentication analysis of the Linda Tripp/Monica Lewinsky telephone recordings involving the investigation of President William J. Clinton; analysis of digital recordings related to the Washington D.C.-area sniper shootings; audio enhancement and video/audio authentication examinations in the Robert Durst criminal matter; video enhancement examinations in several January 6 criminal defense cases; authentication examinations of digital audio recordings from the office of former Ukrainian President Leonid Kuchma; audio and image enhancement analyses plus transcription preparation in the Duke University Lacrosse Team case; authentication analysis of audio microcassette recordings in the Canadian Prime Minister Stephen Harper vs. The Liberal Party of Canada civil case; authentication examinations of recordings surrounding the Texaco obstruction of justice investigation; and authentication examination of an audio recording related to the Abner Louima police brutality investigation.

## **Specialized Short Courses and Professional Training**

*Medex Examiner Training Course*, presented by Medex Forensics, virtual training [July 2022]

*FFmpeg for Forensic Video Examinations Webinar*, presented by Resolution Video, virtual training [May 2020]

*Autopsy Basics and Hands On*, presented by Basis Technology, virtual training [May 2020]

*Forensic Multimedia Authentication: Real Life Challenges and Solutions*, presented at the American Academy of Forensic Sciences, in Baltimore, MD [February 2019]

## **Specialized Short Courses and Professional Training (continued)**

*Forensic Image Processing*, presented at the American Academy of Forensic Sciences, in Seattle, WA [February 2018]

*Forensic Image and Video Enhancement with Amped FIVE*, presented by Amped Software, Inc., in Stafford, VA [January 2016]

*Forensic Authentication of Digital Images*, presented by the National Center for Media Forensics, University of Colorado, Denver, CO [September 2013]

*Innovation in Forensic Image and Video Analysis*, presented at the American Academy of Forensic Sciences, in Atlanta, GA [February 2012]

*Forensic Authentication of Digital Audio*, presented by the National Center for Media Forensics, University of Colorado, Denver, CO [July 2011]

*Image and Video Processing Using MATLAB*, presented by MathWorks, in Vienna, VA [February 2011]

*Signal and Image Processing and Analysis for Scientists and Engineers*, presented by Applied Technology Institute, in Laurel, MD [December 2009]

*Video Capture, Enhancement and Analysis*, presented by The Institute for Forensic Imaging (in association with Indiana University and Purdue University), Indianapolis, IN [March 2008]

*Forensic Image and Video Processing*, presented at the American Academy of Forensic Sciences, in San Antonio, TX [February 2007]

*Video Analyst System Training*, presented by Intergraph, in Huntsville, AL [July 2005]

*File Systems Revealed*, presented by X-Ways Software Technology AG, in Seattle, WA [January 2005]

*X-Ways Forensics*, presented by X-Ways Software Technology AG, in Seattle, WA [January 2005]

*Advanced Forensic Audio Processing Techniques*, presented by Digital Audio Corporation, Inc., in Raleigh, NC [September 2004]

*ABCs of Video & Digital Technology*, presented by the Sony Training Institute, in Lanham, MD [June 2004]

*Spectrum Analysis of Sound & Vibration*, presented by Brüel & Kjær, in Livonia, MI [April 2004]

*Principles of Acoustics and the Measurement of Sound*, presented by Brüel & Kjær, in Livonia, MI [March 2004]

*Principles of Vibration Measurement and Analysis*, presented by Brüel & Kjær, in Livonia, MI [March 2004]

*FBIRD Training (Personalized Instruction)*, presented by Adaptive Digital Systems Inc., in Irvine, CA [Circa 2002]

## **Specialized Short Courses and Professional Training (continued)**

*Technical Recovery of Electronic Evidence*, presented by Computer Security Institute, in Rancho Cucamonga, CA [July 2001]

*New Professional Core Curriculum Training Program, Phases I and II*, presented by the Federal Bureau of Investigation, in Quantico, VA [Circa 1999 & 2000]

*R-DAT Format Training*, presented by Sony Corporation, in Quantico, VA [Circa 1999]

*Fast Fourier Analysis*, presented by Signal Processing Systems, in San Diego, CA [May 1998]

*Forensic Audio Filtering and Tape Enhancement*, presented by Digital Audio Corporation, Inc., in Quantico, VA [March 1997]

*FBIRD Training*, presented by Adaptive Digital Systems, Inc., in Quantico, VA [February 1997]

## **Short Webinars**

*Amped User Days 2024*, presented by Amped [February 2024]

*The Complete Workflow for Video Analysis in Amped FIVE*, presented by Amped [October 2023]

*Macroblocks Analysis in Amped FIVE*, presented by Amped [September 2023]

*Video Evidence in 2023: Trends, Challenges, Potentials*, presented by Amped [March 2023]

*Practical Approaches to Authenticity Analysis Using Medex*, presented by Medex [March 2023]

*Get started with content authenticity and digital provenance tools*, presented by the Content Authenticity Initiative [January 2023]

*More than meets the eye...Overcoming challenges when receiving citizen submitted video files*, presented by HTCIA/Medex [January 2023]

*Audio Forensic Analysis Procedures for User Generated Audio Recordings*, presented by NIJ/Forensic Technology Center of Excellence/Dr. Robert Maher [November 2022]

*Advanced Video Forensics: Gain a Deeper Understanding of Digital Video Files*, presented by NW3C/Medex [June 2021]

*Getting Started with Video Evidence*, presented by Amped [June 2021]

*Eyes Wide Open: New Insights Into Digital Video Forensics*, presented by NW3C/Medex [August 2020]

*COVID-19 Considerations for Collecting and Handling Digital Evidence*, presented by NW3C [April 2020]

## **Peer-Reviewed Publications**

1. Wales, Gregory S.; Grigoras, Catalin; Lacey, Douglas S.; Quantitative Analysis of Zero-Amplitude Sample Padding in AAC Audio: Exploring Transcoding Effects and Implications for Audio Stream Hashing. *2024 Audio Engineering Society 8<sup>th</sup> International Conference on Audio Forensics* **2024**.
2. Wales, Gregory S.; Smith, Jeff M.; Lacey, Douglas S.; Grigoras, Catalin; Multimedia stream hashing: A forensic method for content verification. *Journal of Forensic Sciences* **2023**, 68(1), pp 289-300.
3. 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(5), pp 1742-1750.
4. 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* **2019**.
5. 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 Audio Forensics* **2017**.
6. 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 Audio Forensics* **2017**.
7. Koenig, Bruce E.; Lacey, Douglas S. “Forensic Authentication of Digital Audio and Video Files.” *Handbook of Digital Forensics of Multimedia Data and Devices*. Ed. Anthony T. S. Ho. Ed. Shujun Li. Chicester: John Wiley & Sons, Ltd. **2015**. 133-181. Print.
8. 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.
9. Lacey, Douglas S; Koenig, Bruce E. The Effect of Sample Length on Cross-Correlation Comparisons of Recorded Gunshot Sounds. *The Proceedings of the AES 54th International Conference on Audio Forensics* **2014**, pp 122-129.
10. 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 on Audio Forensics* **2014**, pp 77-84.
11. 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.
12. 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.
13. 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.
14. 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 89.
15. 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.
16. 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.
17. 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.
18. Koenig, Bruce E.; Lacey, Douglas S. Evaluation of Clipped-Sample Restoration Software. *Forensic Science Communications* **2010**, 12(2). [LINK](#)

## **Peer-Reviewed Publications (continued)**

19. Koenig, Bruce E.; Lacey, Douglas S. Forensic Authentication of Digital Audio Recordings. *Journal of the Audio Engineering Society* **2009**, 57(9), pp 662-695.
20. Koenig, Bruce E.; Lacey, Douglas S. Distinctiveness of Non-Standard VHS Head Parameters. *Journal of Forensic Identification* **2009**, 59(1), pp 97-126.
21. 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.
22. 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.
23. 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.
24. 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.
25. Koenig, Bruce E.; Lacey, Douglas S.; Herold, N. Video and Audio Characteristics in VHS Over-Recordings. *Forensic Science Communications* **2006**, 8(3). [LINK](#)
26. Lacey, D. S. Burning Digital Audio Files to Standard Audio Compact Discs: More Than Drag and Drop. *NATIA News*. Summer 2005.
27. Koenig, Bruce E.; Lacey, Douglas S.; Killion, S. A. Analysis of the Radio Shack Micro-30 and the Olympus Pearlcarder 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.
28. Koenig, Bruce E.; Lacey, Douglas S.; Herold, Noel. Equipping the Modern Audio-Video Forensic Laboratory. *Forensic Science Communications* **2003**, 5(2). [LINK](#)

## **Other Publications**

29. Lacey, Douglas Scott; "The Effects of Bandwidth Reduction on Cross-Correlation Computations in the Analyses of Recorded Gunshot Sounds" (©2019; Master's thesis). [LINK](#)
30. Baker, David W.; Brothers, Samuel I.; Geradts, Zeno J.; Lacey, Douglas S.; Nance, Kara L.; Ryan, Daniel J.; et al. Digital evolution: history, challenges and future directions for the digital and multimedia sciences section. In: Ubelaker, Douglas H.; editor. *Forensic Science: Current Issues, Future Directions*. Chicester, UK: Wiley-Blackwell, **2013**, pp 252-91. [Contributing author]

## **Testimony**

1. 10/10/2024; Belfast, Northern Ireland (UK); Criminal Trial (video authentication) [Case # 17/0973375; Belfast Crown Court];
2. 09/11/2024; Daytona Beach, FL; Criminal Trial (video enhancement) [Case # 21-301460-CFDB; 7<sup>th</sup> Judicial Circuit Court of Florida];
3. 03/07/2024; Milford, CT; Criminal Trial (video enhancement) [Case # AAN-CR22-0121580; Ansonia-Milford Judicial District Court];
4. 12/18/2023; Seattle, WA; Criminal Interview (miscellaneous video) [Case # 20-1-06432-3 KNT; Superior Court for the State of Washington In and For the County of King] (was not placed under oath during my testimony);
5. 06/26/2023; Honolulu, HI; Criminal Trial (video enhancement) [Case # CR 23-00023-SOM; US District Court, District of Hawaii];
6. 05/25-26/2023; Atlanta, GA; Criminal Hearing (signal analysis & audio/video authentication) [Case # 1:22-cr-00388-VMC; US District Court for the Northern District of Georgia];

## **Testimony (continued)**

7. 05/23/2023; Wytheville, VA; Criminal Trial (video enhancement) [Case #s 197CR20000452-00 & 197CR20000452-01; Wythe County Circuit Court];
8. 04/24/2023; Upper Marlboro, MD; Criminal Trial (video enhancement) [Case # CT210535X; Prince George's County Circuit Court];
9. 02/10/2023; Mobile, AL (via video teleconference from Stafford, VA); Civil Trial (miscellaneous video & video authentication) [Case # 1:20-cv-00137-WS-N; US District Court for the Southern District of Alabama – Southern Division];
10. 11/30/2022; Rockville, MD; Criminal Trial (video enhancement) [Case # 138512C; Montgomery County Circuit Court];
11. 11/21/2022; Palmer, AK; Criminal Trial (miscellaneous video) [Case # 3PA-18-2055 CR; District Court of Palmer];
12. 11/09/2022; Bend, OR (via video teleconference from Stafford, VA); Criminal Trial (video enhancement & analysis) [Case # 21CR47755; Deschutes County Circuit Court];
13. 09/20/2022; Alexandria, VA; Criminal Trial (miscellaneous video) [Case # CF22000024; Alexandria Circuit Court];
14. 09/01/2022; Bend, OR (via video teleconference from Stafford, VA); Criminal Hearing (video enhancement & analysis) [Case # 21CR47755; Deschutes County Circuit Court];
15. 06/15/2022; Charleston, WV (via video teleconference from Stafford, VA); Deposition (audio authentication) [Case # 19-C-779];
16. 05/16/2022; Riverside County, CA (via video teleconference from Stafford, VA); Deposition (video enhancement, audio/video authentication, miscellaneous video) [Case # 5:20-cv-01188-KK; US District Court for the Central District of California – Eastern Division];
17. 04/21/2022; Bristol, VA; Criminal Trial (audio enhancement & signal analysis) [Case # CR21005994 through CR21005996; Bristol Circuit Court];
18. 02/15/2022; Alexandria, VA; Criminal Trial (miscellaneous video) [Case # CM20000061; Alexandria Circuit Court];
19. 12/09/2021; Edgefield, SC; Criminal Hearing and Criminal Trial (audio & video enhancement) [Case # 2018A1910100216; Circuit Court for Edgefield County];
20. 09/07/2021; Edgefield, SC; Criminal Hearing (video enhancement) [Case # 2018A1910100216; Circuit Court for Edgefield County];
21. 11/16/2020; Lynchburg, VA (via video teleconference from Stafford, VA); Deposition (video authentication) [Case # 6:19-cv-00071-NKM; US District Court for the Western District of Virginia];
22. 03/10/2020; Charlottesville, VA; Criminal Trial (signal analysis, audio & video enhancement) [Case # 540CR19000083-01; Charlottesville Circuit Court];
23. 01/31/2020; Havre, MT (via video teleconference from Stafford, VA); Criminal Hearing (appellate) (audio/video authentication) [Case # DV-12-093; District Court of Hill County];
24. 09/25/2019; Smithfield, NC; Criminal Trial (audio enhancement) [Case # 2016 CRS 53004; Superior Court of Johnston County];
25. 07/29/2019; New York, NY (via telephone from Stafford, VA); Civil Hearing (video authentication) [Case # 17 CV-182; US District Court for the Eastern District of New York] (was not placed under oath during my testimony);
26. 07/22/2019; Fairfax, VA; Civil Hearing (miscellaneous video) [Case # 2018-09795; Circuit Court of Fairfax County] (also testified during the Civil Trial as a fact witness);
27. 05/09/2019; Stafford, VA; Deposition (miscellaneous video) [Case # 2018-09795; Circuit Court of Fairfax County];
28. 12/20/2018; Washington, D.C.; Deposition (voice comparison) [Case # 2:17-cv-0169-AB; US District Court for the Eastern District of Pennsylvania];
29. 12/07/2018; Hartford, CT; Deposition (video/audio authentication) [Case # 16-CV-1564(WWE); US District Court for the District of Connecticut];

## **Testimony (continued)**

30. 11/01/2018; Fairfax, VA; Criminal Trial (video enhancement) [Case # FE-2018-0000970; Circuit Court of Fairfax County];
31. 10/09/2018; Upper Marlboro, MD; Criminal Trial (video enhancement) [Case # CT180097X & CT180021X; Prince George's County Circuit Court];
32. 06/19/2018; Richmond, VA; Criminal Trial (video enhancement & signal analysis) [Case # CR17F03896-00+; Richmond Circuit Court];
33. 10/23/2017; Washington, D.C.; Criminal Trial (video enhancement, miscellaneous video, & image analysis) [Case # 17 CF3 6228; Superior Court of the District of Columbia];
34. 09/22/2017; West Palm Beach, FL (via telephone from Fredericksburg, VA); Deposition (video enhancement) [Case # 2:16cv14413; US District Court for the Southern District of Florida];
35. 04/07/2016; Harrisonburg, VA; Criminal Trial (video authentication & miscellaneous video) [Case # CR15000247-00; Rockingham County Circuit Court];
36. 02/08/2016; Boca Raton, FL (via video teleconference from Alexandria, VA); Deposition (audio enhancement) [Case # 50 2013 CA 013276 MB AJ; Circuit Court for Palm Beach County];
37. 10/30/2015; White Plains, NY; Deposition (miscellaneous video) [Case # 08 Civ. 4903 (KTD) (JM); US District Court for the Southern District of New York];
38. 09/29/2015; Lancaster, OH (via telephone from Stafford, VA); Deposition (video authentication) [Case # 14CV 736; Court of Common Pleas, Fairfield County, Ohio];
39. 08/04/2015; Stafford, VA; Civil Trial (audio & video authentication) [Case # JA035448-01-00, et al.; Stafford County Juvenile and Domestic Relations District Court];
40. 08/19/2014; Hohenwald, TN; Criminal Trial (audio authentication) [Case # 2012-CR-6; Circuit Court of Lewis County];
41. 07/22/2014; Franklin, TN; Criminal Hearing (audio authentication) [Case # 2012-CR-6; Circuit Court of Lewis County];
42. 11/19/2013; Stafford, VA; Criminal Trial (miscellaneous video) [Case # GC13014487-0; General District Court];
43. 01/17/2013; Baltimore, MD; Civil Trial (video enhancement and miscellaneous video) [Case # 1:11-cv-01399-WMN; Federal District Court];
44. 01/11/2013; Richmond, VA; Civil Trial (videotaped testimony) (miscellaneous video and video enhancement) [Case # CL08-000389; Circuit Court of the County of Gloucester];
45. 12/19/2012; Richmond, VA; Deposition (miscellaneous video and video enhancement) [Case # CL08-000389; Circuit Court of the County of Gloucester];
46. 12/17/2012; St. Paul, MN (via telephone from Clifton, VA); Deposition (signal analysis) [Case # 3494960; State of Minnesota Office of Administrative Hearings, Workers' Compensation Division];
47. 11/28/2012; Wilmington, DE; Criminal Hearing (audio authentication) [Case # 0104015882; Superior Court of the State of Delaware In and For New Castle County];
48. 03/26/2012; Baltimore, MD; Criminal Hearing (miscellaneous video) [Case # 109317007 & 109317008; Circuit Court for Baltimore City];
49. 12/21/2011; Chicago, IL; Civil Trial (miscellaneous video) [Case # 08 L 4878; Circuit Court of Cook County];
50. 10/26/2011; Los Angeles, CA; Deposition (miscellaneous audio) [Case # BC363201; Superior Court of California (deposition in Washington, D.C.)];
51. 04/20/2011; Washington, D.C.; Criminal Trial (miscellaneous audio) [Case # 2010 DVM 002499; Superior Court of the District of Columbia];
52. 03/30/2011; Leesburg, VA; Civil Trial (video duplication and authentication) [Case # CL00059123-00; Circuit Court of Loudon County];
53. 03/17/2011; Los Angeles, CA; Deposition (miscellaneous audio) [Case # BC363201; Superior Court of California (deposition in Naples, FL)];
54. 12/20/2010; Chicago, IL (via video teleconference from Herndon, VA); Deposition (video enhancement) [Case # 07L2399; Circuit Court of Cook County];



## **Testimony (continued)**

55. 12/13/2010; Charlotte, NC; Criminal Trial (audio enhancement and miscellaneous audio) [Case # 09CR260997, 09CR260999; Mecklenburg County District Court]
56. 12/03/2010; Minneapolis, MN; Criminal Hearing (miscellaneous video) [Case # 82-CR-09-7129; Hennepin County District Court];
57. 10/25-26/2010; Vicksburg, MS; Civil Hearing (audio authentication) [Case # 05-0004; Chancery Court of Issaquena County];
58. 07/29/2010; Williamson, WV; Criminal Hearing (video authentication) [Case # A10-F88, A10-F102; Circuit Court of Mingo County];
59. 11/02/2009; New York, NY; Criminal Trial (miscellaneous audio and voice comparison) [Case # 03-CR-987-DAB; Federal District Court];
60. 08/26/2009; Tucson, AZ; Criminal Trial (video enhancement) [Case # CR-20063636; Pima County Superior Court];
61. 05/20/2009; Staunton, VA; Civil Hearing (video authentication and miscellaneous video) [Case # CL06-000002; Augusta County Circuit Court];
62. 01/27/2009; Providence, RI; Deposition (miscellaneous video) [Case # 06-5785; Providence County Superior Court];
63. 12/13/2007; Yorktown, VA; Criminal Hearing (audio authentication) [Case # CR06R38229-01; York County-Poquoson Circuit Court];
64. 09/27/2007; Tucson, AZ (via telephone from Clifton, VA); Criminal Trial (video enhancement) [Case # CR-20063636; Pima County Superior Court];
65. 09/13/2007; New York, NY; Deposition (audio authentication) [Case # 06-CV-1944; US District Court for the Eastern District of Pennsylvania];
66. 09/05/2007; Kingwood, WV; Criminal Trial (signal analysis and audio enhancement) [Case # 07-F-5; Preston County Circuit Court];
67. 01/08/2007; Washington, D.C.; Criminal Hearing (audio enhancement and signal analysis) [Case # 05-CR-00151; US District Court for the District of Columbia];
68. 09/15/2006; Kiev, Ukraine; Hearing in front of the Ukrainian Parliament (audio authentication);
69. 11/04/2005; High Point, NC; Criminal Trial (audio enhancement) [Case # 05-CRS-23105; Guilford County Superior Court];
70. 10/11/2005; Portland, OR; Criminal Trial (audio authentication) [Case # 9906-34654; Multnomah County Circuit Court];
71. 02/23/2005; Roanoke, VA; Criminal Hearing (audio authentication) [Case # 7:03CR00049-4; US District Court for the Western District of Virginia];
72. 02/04/2005; New York, NY; Deposition (audio enhancement) [Case # 99-CV-862-K(J); US District Court for the Northern District of Oklahoma];
73. 10/09/2001; Houston, TX; Criminal Trial (audio enhancement) [Case # 0845174; 176<sup>th</sup> District Court of Harris County];
74. 10/07/2001; Houston, TX; Criminal Hearing (audio enhancement) [Case # 0845174; 176<sup>th</sup> District Court of Harris County]; and
75. 05/13-14/2001; Philadelphia, PA; Criminal Hearing (audio enhancement) [Case # CR 01-88; US District Court for the Eastern District of Pennsylvania].

## **Presentations**

### **American Academy of Forensic Sciences (AAFS):**

- “Navigating the SILK Road: An Examination of WeChat SILK Audio Files” [co-presenter] (2024)
- “Multimedia Stream Hashing: A Forensic Method for Content Verification” [co-presenter] (2023)
- “An Analysis of Apple® iOS® Version Effects on Format and Metadata Structure of Audio Files Recorded Using the Native ‘Voice Memos’ App” [co-presenter] (2017)
- “Conversion of AVI ‘txts’ Stream Data to Adobe® Premiere Pro® Title Files” (2011) [awarded the Outstanding Case Study Award for the Digital & Multimedia Sciences section]
- “Analysis of MiniDV Recording Date/Time Information” (2007)

### **Audio Engineering Society (AES):**

- “Forensic Authenticity Analyses of the Metadata in Re-Encoded M4A iPhone iOS 12.1.2 Voice Memos Files” (AES International Conference on Audio Forensics, 2019)
- “Triage Approach for the Forensic Analysis of Apple iOS Audio Files Recorded Using the ‘Voice Memos’ App” [co-presenter] (AES International Conference on Audio Forensics, 2017)
- “The Effect of Sample Length on Cross-Correlation Comparisons of Recorded Gunshot Sounds” (AES 54<sup>th</sup> International Conference on Audio Forensics, 2014)
- “Forensic Digital Data Analysis” (AES 133<sup>rd</sup> Convention, 2012)
- “WinHex for Forensic Audio Analysis – Introduction, Applications, and Scripting” (AES 46<sup>th</sup> International Conference, 2012)
- “Considerations for the Forensic Authentication of Digital Audio Recordings” (Washington DC Section, 2007)
- Overview of the forensic audio field (University of Miami chapter)

**International Association for Identification (IAI)** – “Audio Extraction from Silicor Technologies, Inc.’s Digital Video Recorder Format” (2009)

### **National Technical Investigators Association (NATIA):**

- “Bits and Bytes: Audio and Video File Analysis” (2013)
- “Authentication of Forensic Audio Recordings: Practices and Considerations” (2004)

**NACDL and Cardozo School of Law National Forensic College (NFC)** – “Considerations with Digital Audio, Video, and Image Evidence” (2017)

**Private Investigators Association of Virginia** – “Benefits & Limitations of Forensic Audio, Video, & Image Examinations” (2016)

**Scientific Working Group on Digital Evidence (SWGDE)** – overview of forensic audio enhancement tools (circa 2002)

Various presentations to FBI personnel and Department of Justice personnel.

## **Professional Associations, Seminars, & Activities**

**Scientific Working Group on Digital Evidence (SWGDE)** [Member, 2016 – present]

- Member of the Audio Committee
- Chair of the Audio Committee (2024 – present)
- Vice Chair of the Audio Committee (2018 – 2024)
- At-Large Member of the Executive Committee (2020 – present)

## **Professional Associations, Seminars, & Activities (continued)**

### **American Academy of Forensic Sciences (AAFS)** [Fellow, 2006 – present]

- Associate Editor for the *Journal of Forensic Sciences* (2022 – present)
- Member of the Editorial Board for the *Journal of Forensic Sciences* (2015 – present)
- Director of the Digital & Multimedia Sciences (DMS) section (2016 – 2019)
- Chair of the DMS section (2012 – 2014)
- Secretary of the DMS section (2010 – 2012)
- DMS section co-presenter/presenter for the AAFS Student Academy (2020, 2021, 2023, 2024)
- DMS section Program Committee member (2013 – 2014)
- DMS section By-Laws Committee member (2009 – 2010)
- Chair of the AAFS Connect Committee (formerly Content Digitization ad hoc) (2021 – 2022)
- AAFS Connect Committee member (formerly Content Digitization ad hoc) (2018 – 2021)
- Membership Outreach (ad hoc) (2019)
- AAFS Nominating Committee (2014 – 2015)
- AAFS Membership Committee member (2010 – 2014)
- AAFS Continuing Education Committee member (2010 – 2014)
- AAFS Mentoring Committee (ad hoc) (2015 – 2016)
- Guest Reviewer for the *Journal of Forensic Sciences* (2008 – 2010)

### **Organization of Scientific Area Committees (OSAC)**

- Member (2020 – present) of the Digital Evidence Subcommittee within the Digital/Multimedia SAC
- Member (2014 – present) of the Audio Forensics Task Group within the Digital Evidence Subcommittee of the Digital/Multimedia SAC
- Member (2016 – 2020) of the Digital/Multimedia Scientific Area Committee (SAC)
- Executive Secretary (2017 – 2019) of the Digital/Multimedia SAC
- Member (2014 – 2016) & Affiliate Member (2016) of the Video/Imaging Technology and Analysis Subcommittee within the Digital/Multimedia SAC

### **Audio Engineering Society (AES)** [Member, 1997 – present]

- Member of the Technical Committee on Audio Forensics
- Paper reviewer for the *2024 AES 8th International Conference on Audio Forensics* (Denver, CO)
- Papers Co-Chair for the *2019 AES International Conference on Audio Forensics* (Porto, Portugal)
- Papers Co-Chair for the *2017 AES International Conference on Audio Forensics* (Arlington, VA)

### **International Association for Identification (IAI)** [Active Member, 2004 – present]

- Member of the Editorial Board for the *Journal of Forensic Identification* (2011 – present)
- Former member of the IAI's Forensic Video Analysis Certification Study Committee

### **National Technical Investigators Association (NATIA)** [Former member]

Have attended seminars and conferences of the AES, the IAI, the AAFS, OSAC, SWGDE, NATIA, and a regional meeting of the Acoustical Society of America. Invited exam developer for the (ISC)<sup>2</sup> Certified Cyber Forensics Professional (CCFP<sup>SM</sup>) certification program.