CURRICULUM *VITAE*

VERLIN CROSS

Summary of Professional Experience:

Verlin Cross is a certified Computer and Video Forensic Analyst. Since his retirement from the National Fish and Wildlife Forensic Laboratory, Office of Law Enforcement, U.S. Fish and Wildlife Service, Mr. Cross formed the business AquaCross LLC and joined the forensic consortium, International Forensic Experts. Mr. Cross performs digital forensic examinations that include analysis of computer, mobile phone, video and digital image evidence items. Since 1998, Mr. Cross has preformed hundreds of examinations on a wide range of computer, mobile phones, video, and image evidence items. Mr. Cross is an Associate Member of the Digital and Multimedia Science Section of the American Academy of Forensic Science.

While working at the National Fish and Wildlife Forensic Laboratory, Mr. Cross held the position of Supervisory Forensic Specialist - Digital Evidence Branch Chief. During that time, he conducted forensic examinations on a wide range of digital evidence that included, computers, GPS devices, images, and video items. He supervised the operation of the Digital Evidence Branch made up of a staff of five forensic scientists and two computer specialists. Mr. Cross developed training curriculum and trained forensic specialists, special agents, Office of Law Enforcement staff and State Wildlife Enforcement Officers in seizing, imaging, and the analysis of digital evidence. He served on the Executive Committee of the Scientific Work Group on Digital Evidence and was the Chairman of the Forensic Committee when "Best Practices for Computer Forensics" was approved.

Employment History:

2007 - Present: Mr. Cross formed the business AquaCross LLC. The company provides desktop, laptop, printer, and server diagnosis and repair; install networks, both wireless and wired; and perform warranty repairs on LCD and Plasma televisions. In 2010, the business was expanded to provide forensic experts providing analysis and expert witness testimony in the field of Digital Evidence.

2010 – 2016: Mr. Cross joined the International Forensic Experts, a consortium to provide forensic experts providing analysis and expert witness testimony in the field of Digital Evidence.

2000 - 2007: Mr. Cross retired from the U.S. Fish and Wildlife Service, Division of Law Enforcement, National Fish and Wildlife Forensic Laboratory. Mr. Cross was the Supervisory Forensic Specialist - Digital Evidence Branch Chief. He supervised and managed the Digital Evidence Branch. He managed the budget of the Branch and oversaw the electronic and computer related aspects of the Laboratory. He developed and

conducted training. He wrote protocols and procedures for conducting forensic analysis on digital evidence. He preformed forensic analysis on computer, digital imagery, GPS, and video items submitted to the Laboratory as evidence. He assist USFWS Special Agents in serving of search warrants. He testified in court as an expert witness in federal, state and local court.

1993 - 2000: Senior Forensic Specialist - Computers – Mr. Cross managed day to day operation of the Computer Team and the Electronics Team. He was the Laboratory's network administrator. Mr. Cross maintained and repaired computer and electronic equipment. He maintained all the applications on the Laboratory network including the firewall, electronic mail system, and the JusticeTrax case management system. He developed and maintained computer programs used by the Laboratory staff to complete forensic analysis. Mr. Cross preformed forensic analysis on computer, digital imagery, and video items submitted to the Laboratory. He testified in court as an expert witness. He developed and conducted training for the staff in the use of commercial software, custom software, and the Internet.

1988 - 1993: Computer Specialist – Mr. Cross was the Computer Specialist for Division of Fisheries. He developed the Fisheries Information System. In developing the System, he built support for the system development, defined requirements, prepared system request document and life cycle analysis. He wrote the program's documentation and manual. He oversaw the publication and distribution, technical support, and training of the System. The System was in use at more than 200 Federal, State, and foreign government fishery offices. Mr. Cross developed the National Trout Strain Registry, an automated system to collect, query, and share performance information fish stocks being used in the management of fishery programs throughout the United States. This System was distributed to Federal, State, and private fishery biologists. Mr. Cross also developed the following systems used by Division of Fisheries: Control Correspondence Tracking System and National Brood Stock Program. Mr. Cross provided end user support on both DOS and Windows programs used throughout the Division. He provided technical support, trouble shooting, and training on computer hardware and networks. Mr. Cross was responsible for purchasing for the Division.

1982 - 1988: Assistant Manager – Mr. Cross planned, supervised and carried out the daily activities of a trout production station. He maintained records of fish production and distribution. He assisted in program planning and budget preparation. He wrote reports required by the Regional and Washington Offices. He supervised lower grade employees. He identified fish stress and disease vectors. He made presentations, explaining the Hatchery program and the Services policy as related to Fisheries. He maintained the facility and equipment. Mr. Cross developed 2 computer programs for maintaining hatchery records.

1980 - 1982: Assistant Manager – Mr. Cross planned, supervised and carried out the daily activities of a trout brood stock station. He maintained records of fish and egg production and distribution. He assisted in program planning and budget preparation. He wrote reports required by the Regional and Washington Offices. He supervised lower grade

employees. He identified fish stress and disease vectors. He made presentations, explaining the Hatchery program and the Services policy as related to Fisheries. He maintained the facility and equipment

1978 - 1980: Fishery Biologist – Mr. Cross reared and propagated Atlantic salmon fry, parr, and smolts. He reared and propagated of Lake trout and Landlock salmon. He spawned and cared for eggs and alevins. He prepared the hatchery charts, inventory, reports, and summaries. He identified fish diseases and proscribed treatments. He conducted a scientific study to monitored water quality and the UV water treatment facility.

1973 - 1978: Biological Technician – Mr. Cross conducted research on predators and their prey species under laboratory, pen, and field conditions. He conducted studies dealing with food habits, reproduction, mortality, movement through territory, and behavior of predators and their prey species. He have collected predators by such methods as denning, trapping, snaring, and poisoning, He have worked on all aspects of the Annual Western Predator survey. He was in charge of purchasing and maintenance of vehicles.

Education:

B.S. Wildlife Management: 1973
Utah State University, Logan, Utah

B.S. Fishery Biology: 1973
Utah State University, Logan, Utah

Publications:

Procedure Guide for the Fisheries Information System 1990 and revised 1991
National Trout Strain Registry Manual, 1991
Print Sharing Devices, Microscope, Department of Interior 3/1990.
Lot History Production - Hatchery Production Summary, an Electronic Record Keeping System, Bozoman Fish Technology Leaflet, 1988
Efficacy of the Water Treatment Plant at Green Lake NFH, Ellsworth, Maine, Progressive Fish Culturist, 1988
Understanding Historical Cell Site Records, The Oregon Defense Attorney, November/December 2013

Presentations:

"Digital Imaging and Video Forensics", Northwest Association of Forensic Examiners, 1999.

"Computer Technology", USFWS. Fisheries Academy, 1989, 1990, 1991, 1992, and 1993.
"Fisheries Information System", USFWS Fisheries Academy, 1991, 1992, and 1993.
"National Trout Strain Registry", USFWS Fisheries Academy, 1992, and 1993.
"Train the Trainer", USFWS - Fisheries Training Class 1993.
"Fisheries Information System", National Conference of Integrated Water Management
"Fisheries Information System", Atlantic Salmon Workshop 1992.
"Fisheries Information System", National Brood stock Workshop 1991 and 1992.
"Efficacy of the Water Treatment Plant at Green Lake NFH, Ellsworth, Maine", Northeast Fish and Wildlife Conference, 1982.

Training Conducted:

"Computer Technology" U.S. Fish and Wildlife Service Fishery Academy 1989, 1990, 1991, 1993, and 1993.
Adjunct Professor to the Southern Oregon State College, Department of Computer Science 1996 to 1998.
"Introduction to Digital Imaging" Northwest Association of Forensic Scientist, 5/1998.
"Wildlife Crime Scene Investigation" National Fish and Wildlife Training Center. 6/2002.
"Wildlife Crime Scene Investigation" Federal Law Enforcement Training Center. 2003, 2004, and 2005.
"Introduction to Computer Seizure and Imaging" National Fish and Wildlife Forensic Laboratory, 2005.
"Wildlife Crime Scene Investigation" Mississippi State University. 3/2004.
"Wildlife Crime Scene Investigation" National Fish and Wildlife Forensics Laboratory, 6/2005.
"Advanced Training in Computer Seizure and Imaging for Special Agents" National Fish and Wildlife Forensics Laboratory, 2005.
"Advanced Training in Computer Seizure and Imaging for Law Enforcement" National Fish and Wildlife Forensics Laboratory, 2005.
"Advanced Training on Computer Analysis for Special Agents" National Fish and Wildlife Forensics Laboratory 2006.
"Conducting a Computer Forensic Analysis" Southern Oregon State University, 2005.
"Conducting a Computer Forensic Analysis" Southern Oregon State University - video production, 2005.
 "Mobile Phone Forensic Analysis" International Forensic Experts Seminar 12/2010.
"Computer Forensic Analysis" International Forensic Experts Seminar 12/2010.
Numerous computer training classes on Windows Operating System, WordPerfect for Windows, cc: Mail, Notes, Internet Usage and Care and Maintenance Computers.

Training:

"Basic Programming" Colorado Mountain College, 3/1985.

"Introduction to C Language" Graduate School, U.S. Department of Agriculture 1/1991.

"Introduction to Geographic Information Systems" College of Forestry and Natural Resources, Colorado State University, 6/1991.

"Case Management Training" AG Communication Systems, 8/1996.

"Crystal Reports" Northwest Association of Forensic Scientist, 5/1998.

"Video Forensic Analysis" Law Enforcement Video Association at the FBI National Academy, 7/2000.

"Electronic and Technical Surveillance Training" National Technical Investigator's Association, 8/2000.

"Seized Computer and Evidence Recovery Specialist" Federal Law Enforcement Training Center, Department of the Treasury, 9/2000.

"Forensic Video Analysis and Court Presentation", Law Enforcement/Emergency Service Services Video Association, 7/2000

"dTective Training on the Avid Express for Windows NT" Ocean Systems, 7/2001.

"Electronic and Technical Surveillance Training" National Technical Investigator's Association, 7/2002.

"FBI Computer Analysis Response Team Forensic Training", National Center for Forensic Science, 7/2002.

"13th Annual LEVA Training Conference" Law Enforcement/Emergency Services Video Association 10/2002.

"Change Management for Management and Supervisors" Prosci Learning Center, 3/2005.

"Internet Trace Evidence", National Fish and Wildlife Forensics Laboratory, 11/2005.

"Overview of Cell Phone Forensics" Southern Oregon State University, 2/2006.

"Cellebrite UFED Training" Cellebrite USA Corp. 1/2011.

"Oxygen Forensic Mobile Phone Training" Oxygen Forensic Software, 2/2011.

"Mobile Telephony: The Next Wave in Cyber Crime" Federal Times Webcast, 2/2011.

"iPhone Forensics - Live Recovery of iPhone 3G(s)" O'Reilly Webcast 2/2011.

"Reducing Digital Case Load: Reinventing the Computer Forensics Lab Environment" Accessdata. 10/2011.

"AccessData MPE+ Training", 1/2012.

"Crossing Borders: An International View of E-Discovery", ACEDS, 3/2012.

"Identifying and Extracting ESI - Mobile Phone Forensics", EDEN, 3/2012.

"Wi-Fi Industry Trends that Impact Law Enforcement, PATC WebEx, 3/2012.

"Mobile Phone Examiner Plus", AccessData, 4/2012.

"Introduction to Mobile Phone Forensics", EDEN, 4/2012.

"Cell Phone Call Detail Records and Cell Tower Analysis Course", Cellular Data Resources.com, 5/2012.

"Finding Evidence in an Online World - Trends & Challenges in Digital Forensics". JAD Software, 7/2012.

"Mobile Devices Forensics", TestunoData and EDEN, 11/2012.

"Using MPE+ For Smart Device Application Analysis", AccessData, 2/2013.

"CIRT - What You Don't Know CAN Hurt You, AccessData", 2/2013.

"Using Cerberus with FTK for Malware Triage and Analysis", 2/2013.

"Practical Consideration for e-Discovery in the Cloud", ACEDS 3/2013

"Are You Ready For Mobile Device Discovery", AccessData 3/2013

"There's an App for that...: How to Recover and Analyze Smart Device Application Data", Digital Forensic Investigator, 3/2013.

"Its not always what it SIMS: Chinese Chipsets and Clone Devices",AccessData 4/2013

"UFED Link Analysis", Cellebrite 5/2013.

"No Tool Fits All: Mobile Device Investigations and the Multi-Tool Approach", Digital Forensic Investigator, 5/2013.

"The Role of a Computer Forensic Expert from Retention Through Trial", Forensic Magazine, 5/2013

"P2 Commander", Digital Forensic Investigator and Paraben Corporation, 7/2013.

" AAFS Career Webinar (Digital and Multimedia Science)", Academy of Forensic Science 11/10/2013.

"Using Geolocation Artifacts and Timeline Analysis to Solve the Case: A Digital Forensics Case Study", Forensic Focus/Magnet Forensics, 12/2013.

"Enhanced iLogical Exams with MPE+", Public Agency Training Center, 1/2014.

"How to Harvest SQLite Data With MPE+", Public Agency Training Center, 1/2014.

"The Mobile Device in the Big Data World", Digital Forensic Investigator, 3/2014.

"GPS Forensics and TomTom Trip-Log Decryption", Cellebrite, 5/2014.

"Investigating Child Exploitation Cases", Forensic Focus & Magnet Forensics 5/2014

"The Time, Man-Power and Logistical Solution to a Mobile Forensic World", Digital Forensic Investigator, 5/2014.

"Bypassing Locked Devices", Cellebrite, 7/2014.

"Link Analysis: Identify Connections Between Suspects in Less Time", Cellebrite, 7/2014.

"JTAG Extractions Decoding Session", Cellebrite, 7/2014.

"Anti-anti-forensics in action - Recovering from (USB) oblivion", SANS, 2/2015.

"From the Trenches: Being Your Own "Expert Witness"", BrightTalk, 3/2015.

"JTAG for Forensics", NowSecure, 4/2015.

"Burner Phone Forensics: 3 tips for more data", NowSecure, 4/2015.

"Analyzing Evidence From Mobile Devices, Including Hidden and Deleted Data", Forensic Focus, 6/2015.

"Cellebrite Pro Series: Solving Common Problems with Mobile Device Data", Cellebrite, 6/2015.

"Cellebrite Cloud Analyzer", Cellebrite, 6/2015.

"Smartphone Forensics: New Challenges in Acquisition & Analysis", Magnet Forensics, 6/2015.

"Computer Forensics and the Cloud: Rising above the storm", AccessData, 6/2015.

"Inside the Samsung keyboard vulnerability", NowSecure, 7/2015.

"Mobile Chat & Social App Forensics", Magnet Forensics, 7/2015.

"Secure View", Susteen, 11/2015.

"New release of FTK 6.0 is here and it's all based on customer feedback", AccessData, 12/2015.

"Finding and Analyzing Important Evidence in Child Exploitation Cases", Magnet Forensics, 3/2016.

"Using Python in Forensic", AccessData, 3/2016

"Differential Forensic Analysis of Periodic Mobile Forensic Images", AAFS, 2/2016.

"Using Deep Learning Methods for Forensic Image and Video Investigations", AAFS

2/2016.
"Discriminating Hacker Techniques by Individual Difference and Techniques of Neutralization", AAFS, 2/2016.
"Joint Test Action Tool Testing", AAFS, 2/2016.
"Google Chromebook Evaluation of Forensic Methods for Data Extraction", AAFS, 2/2016.
"D.A.R.T. Cell Mapping", PATC, 3/2016.
"Introduction to JTAG & Chip-Off for Mobile Forensics", AccessData 4/2016.
"Taking the Mystery out of Android Marshmallow Analysis" Magnet Forensics, 11/2016.
"Topic: Mobile Device Investigations: From Android to iPhone and Back", Knoll On Track, 11/2016.
"Investigating the Most Popular Browsers You've Never Heard Of", Magnet Forensics, 11/2016.
"Mobile Device Forensics - Beyond the Cell Phone", XACT Data Discovery, 12/2016.
"Acquiring Removable Drives, Mobile Devices, RAM And Cloud Storage", Belkasoft, 12/2016.
"Digital Security Awareness Briefing – Cyber Threats Facing Oregon Business Community", Federal Bureau of Investigation, 1/2017.
"Methods for parsing new applications", Magnet Forensics, 3/2017.
"Android Emulators Forensics: When an Android Device Isn't an Android Device", Magnet Forensics, 4/2017.
"Video Interrogation: Codecs, Containers, and Raw Video", -Input-Ace, 8/2017.
"Understanding Android Data Recovery in Forensic Investigations", Magnet Forensics, 8/2017.
"The Good, The Bad and The Useless – The Truth About Geolocational Data", Magnet Forensics, 8/2017.
"Aspect Ratio: Resizing and Interpolation", -Input-Ace, 9/2017.
"How to investigate someone using remote acquisition", AccessData, 10/2017.
"Connecting the Dots Between Artifacts and User Activity", Magnet Forensics, 10/2017.
"How to use forensic tools to investigate a breach, Part II", AccessData, 10/2017.
"How to investigate Internet artifacts", AccessData, 11/2017.
"How to raise the bar on your investigations with our latest forensic release", AccessData, 11/2017.
"How to use advanced searching techniques", AccessData, 12/2017.
"Mobile Trends, Tools and Methods" Magnet Forensics, 3/2018.
"Virtual Analyzer & SQLite Wizard Webinar", Cellebrite, 4/2018.
"CellHawk Training", Hawk Analytics, Inc., 4/2018.
"Forensics in the Cloud: How to Conduct an Office 365 Investigation", Magnet Forensics, 5/2018.
"Finding the Best Starting Point for Insider Threats and Other Workplace Investigations", Magnet Forensics, 5/2018.

Certifications:

"Certified Microcomputer Technologist" Information Technology Center, U.S.

Department of Interior 3/1998.
"Seized Computer Evidence Recovery Specialist (SCERS)", Federal Law Enforcement Training Center, 9/2000.
"Video Forensic Specialist" Law Enforcement Emergency Services Video Association International, 7/2001.
"Computer Analysis Forensic Specialist" Federal Bureau of Investigation, 7/2002.

Court Testimony:

State v. Donnie Briggs, Jackson County Circuit Court**,** 8/1998.
United States of America v. Joseph Lafollette, 12/2001.
State v. Daniel Lemon, Marion County Circuit Court, 1/2011.
State v. Ryan J. Tankersley, Douglas County Circuit Court, 12/2011.
State v. Robert Kenneth, Yamhill County Circuit Court, 1/2012
State v. Angelica May Swartout, Lane County Circuit Court, 1/2012
State v. Nai Mai Chao, Multnomah County Circuit Court, 2/2012