

Athena Research & Consulting LLC

PO Box 66, Bippus, Indiana 46713, USA.



Curriculum Vitae (v7.05, June 2024)

Eur Ing John Nixon

CEng D-IBFES BEng(Hons) MBA FIMechE FCMI

Board Certified Forensic Engineering Scientist

Summary

Specializing in weapons systems research, consulting, and litigation support. Technical areas include firearms, ballistics, ammunition, munitions, explosives, plus related crime & accident scene reconstruction, and intellectual property. Provided sworn testimony over 100 times in numerous US state & federal courts. Published & presented numerous research papers, and delivered many training seminars to attorneys, forensic scientists, engineers, law enforcement, and investigators. Certified Range Safety Officer and Pistol & Personal Protection Instructor.

Professional Qualifications & Memberships

- 2016 Diplomate; International Board of Forensic Engineering Sciences (D-IBFES).
- 2013 Fellow; American Academy of Forensic Sciences (F-AAFS).
- 2011 Fellow; Chartered Management Institute (FCMI).
- 2005 International Society of Explosives Engineers (ISEE).
- 2001 Professional Licensed Member of National Society of Professional Engineers (NSPE).
- 2001 Registered Professional Engineer with FEANI (Eur Ing) (approx 30 countries).
- 2000 American Society of Mechanical Engineers (ASME).
- 1999 Fellow; Institution of Mechanical Engineers (FIMechE).
- 1997 Founder Member; Expert Witness Institute (MEWI) (past member).
- 1995 Vetted by the UK Law Society (expert consultant / expert witness).
- 1992 Institute of Materials (MIM).
- 1992 Qualified as a Chartered Professional Engineer with the British Engineering Council (CEng).

Offices Held & Awards

- 2021 - 2022 AAFS, Andrew H Payne Jr Special Achievement Award.
- 2020 - 2022 Vice President, International Board of Forensic Engineering Sciences.
- 2016 - 2017 AAFS, Engineering Sciences Section, Founder's Award.
- 2016 - 2017 AAFS, Engineering Sciences Section, Chair.
- 2015 - 2016 AAFS, Engineering Sciences Section, Chair.
- 2014 - 2015 AAFS, Engineering Sciences Section, Secretary.
- 2009 - 2010 Indiana Society of Professional Engineers, State President.
- 2007 - 2020 Indiana Society of Professional Engineers, Anthony Wayne Chapter President.

Employment History

- 2000 – Now Consultant with ARC
(technical & forensic research & consulting - firearms / munitions / reconstruction)
- 2000 – 2004 Adjunct Professor at Indiana Institute of Technology, lecturing advanced courses on BA & BSc degree programs.
- 1996 - 2000 Self-employed consultant in UK (technical, forensic, and business consulting)
- 1986 -1999 United Kingdom Ministry of Defence, Whitehall, Westminster, London.
Scientist / professional engineer / project manager - working on guns, ammunition, missiles, rocketry, and energetic materials (explosives & pyrotechnics). Projects involved research, design, development, performance assessment, mid-life improvement, reverse engineering, and forensics.

Academic Qualifications

- 1997 Henley Business School, Reading University /Henley Management College, Brunel University
Master's Degree in Business Administration (MBA)
- 1990 University of Greenwich, London, UK / Thames Polytechnic / Woolwich Polytechnic
Bachelor's Degree in Mechanical Engineering (BEng: - with First Class Honors).
Recognized in the US under the terms of the Washington Accord

Supplementary Education and Training

- 95-97 Courtroom skills and report writing training courses from Bond Solon and The Academy of Experts.
- 86-99 Various internal and external training courses in areas such as safety, procurement management, space technology, desert survival, counter terrorism tactics, risk management, etc.
- 86-92 Various military technology and tactics training courses undertaken at **Royal Military College of Science** - RMCS (Cranfield University Defence Academy of the UK). These included explosives technology, ordnance and munitions design, IED design & construction, plus extensive training in ammunition & ballistics (internal, intermediate, external, and terminal – including wound ballistics).
- 1982 Gateshead Technical College, Gateshead, Tyne & Wear, United Kingdom.
Non-destructive testing (NDT) technology (3 months). Radiographic, ultrasonic, MPI and dye penetrant techniques.
- 77-81 4 year engineering apprenticeship with British Steel Corporation. (CGLI & TEC qualifications)

Patents / Patent Applications

GB 9214637.2 Plastic Tail Fin Unit

Describes new fin geometry & materials (and related manufacturing process) which improve long rod tank penetrator terminal performance, and reduce production costs. 9 July 1992. GB 9216295.7 Long Range Artillery Shell

Describes several 155mm artillery shell design concepts capable of extending maximum range to 60km by using base-bleed and rocket technology. 31 July 1992.

Also creator of numerous inventions that were not submitted for patent protection due to security restrictions.

Partial (allowable) Listing of Research Papers (UK Government 1987 - 1999)

Sept 99 A Review of Non-Destructive Evaluation Techniques Suitable for Solid Propellant Rocket Motors. UK Government Publication.

Apr 99 A Review of Non-Destructive Evaluation Techniques Suitable for Solid Propellant Rocket Motors. UK Government Publication.

Plus **at least 18 other bound UK government research / project papers** with classified titles and classified content that cannot be divulged. Individuals with appropriate security clearances may obtain a full listing of titles, and copies, from: Defence Research Information Center, Kentigern House, 65 Brown Street, Glasgow G2 8EX, United Kingdom.

Publications (non-government)

Evaluation of mono-molecular surface modifiers applied to bullets and rifle barrels, and their influence on drag, velocity, consistency, accuracy, and copper fouling. Varmint Hunter Magazine, April 1999.

Contributor to article on 32 ACP caliber suitability for self defence. American Handgunner 2002 Tactical Annual.

Major contributor to Beltway Sniper article authored by Janet Rae-Dupree, US News & World Report, October 2002.

Major contributor (including microscope photography) to Newsweek Special Report – 'The Sick World of the Snipers, The Inside Story of an Epic Manhunt. Newsweek, November 4, 2002.

Major contributor to article on 'ballistic fingerprinting' by Kyle Orland, Suburban Newslane (a publication of the University of Maryland) 2002.

An Overview of **Forensic Firearms Engineering**, Indiana Professional Engineer, Volume 69 No 6, November / December 2006, pp14-16.

Forensic Firearms Engineering - **Blame Apportionment - Products v Operators**, Indiana Professional Engineer, Volume 70 No 1, January / February 2007, pp13-17.

Forensic Firearms Engineering - **Toolmark Analysis**; Linking Cartridge Cases and Bullets to Individual Firearms. Indiana Professional Engineer, Volume 70 No 2, March / April 2007, pp13-16.

Forensic Firearms Engineering - **Terminal Effects**; The Consequences of Being on the Wrong End of a Firearm. Indiana Professional Engineer, Volume 70 No 3, May / June 2007, pp11-15.

Forensic Firearms Engineering - **Shooting Incident Scene Reconstruction: Part 1** - Bullet Impact Area Identification and Interpretation. Indiana Professional Engineer, Volume 70 No 4, July / August 2007, pp13-16.

Forensic Firearms Engineering - **Shooting Incident Scene Reconstruction: Part 2** - Bullet Hole ID and Distance Determinations. Indiana Professional Engineer, Volume 70 No 5, Sept / Oct 2007, pp13-14.

Forensic Firearms Engineering - **Shooting Incident Scene Reconstruction: Part 3** - Ejection Pattern Testing & Analysis. Indiana Professional Engineer, Volume 71 No 2, Mar / Apr 2008, pp12-15.

Forensic Engineering Analysis of Firearm Trigger Incidents. NAFE Journal, Volume XXV, No. 2, December 2008 (Published May 2010) pp. 119 to 134.

Forensic Engineering Analysis of Firearm Silencers, NAFE Journal, Volume XXVI, No. 2, December 2009 (Published October 2012), pp. 39 -50.

Forensic Firearms Engineering - **Employing Hands-on Engineering Skills, Plus Engineering Theory & Calculations, to Analyze & Resolve Complex Design & Safety Liability Issues**, Indiana Professional Engineer, Volume 75 No 4, July / August 2012, pp. 13-27.

Scientific Paper Presentations and Training Seminars Delivered

Presented over 50 continuing education courses and scientific papers between 2001 and 2018. Subjects have included firearms, ballistics, wound ballistics, tool mark comparison, ammunition, crime /accident scene reconstruction, explosives, destructive devices. Attendees have included law enforcement, investigators, attorneys, judges, engineers, scientists, medical professionals, law and forensic science students. Courses have been approved for continuing education credit in most states.

Nov 01	Training seminar on forensic firearms, ballistics, & wound ballistics at University of Louisville Law School. Accredited for CLE by Kentucky Bar Association.
May 02	Lectured in forensic firearms and ballistics at Ohio University Forensic Science School.
Apr 03	Presented a one day training seminar on forensic firearms, ballistics, & wound ballistics to 60+ Chicago lawyers and investigators.
Sep 03	Training seminar in forensic firearms, ballistics, & wound ballistics in Indianapolis. Accredited for CLE by Indiana Commission on Legal Education.

Oct 03 **Training seminar on forensic firearms & ballistics** at DePaul University, Chicago.

Dec 03 **Training seminar on forensic firearms, ballistics, & wound ballistics** in Indianapolis. Accredited for CLE by Indiana Commission on Legal Education.

Feb 04 **Training seminar on forensic firearms, ballistics, & wound ballistics** in Indianapolis. Accredited for CLE by Indiana Commission on Legal Education.

Mar 04 **Two training seminars on firearms, ballistics, & wound ballistics** (14 & 15 March 04). NLADA Life in the Balance conference, Memphis Tennessee. Accredited for CLE in most States.

Apr 04 **Keynote Speaker at Emergency Nurses Association Regional Forensic Science Conference**, Memphis TN. Accredited for CLE by the Emergency Nurses Association.

Jan 05 **Firearms & Ballistics for Law Enforcement**, Columbia City Sheriff's Department, Indiana.

Mar 05 **Training seminar on explosives** at the NDIA Annual Conference, Chicago, IL.

Mar / Apr 05 **Two training seminars on Firearms & ballistics**, at the NDIA Annual Conference, Chicago, IL.

Oct 05 **Training seminar on firearms, ballistics, and wound ballistics** at Rochester Institute of Technology NY.

Sept 06 **Two training seminars on firearms, ballistics, & wound ballistics** at the NDIA Conference in Washington DC.

Feb 07 **Accreditation v TQM, Do We Need Either, Do We Need Both ?** Paper Presented at 59th AAFS Annual Scientific Meeting, San Antonio, TX.

Apr 07 **Training Seminar on forensic firearms & ballistics**. at the 70th Annual Convention of the Indiana Society of Professional Engineers, 26 to 28 April 2007.

Jun 07 **Training seminar on firearms, ballistics & wound ballistics**. Maryland Public Defender Annual Training Seminar, 14 to 16 June 2007, Potomac, MD.

Feb 08 **Guru; Demon; Illusionist ? Is it Time for an Overhaul of Expert Qualification Procedures ?** Paper Presented jointly with Maryland Innocence Project at 60th AAFS Annual Scientific Meeting, Washington, DC.

Feb 08 **Impulsive Legislation. Adverse Consequences of Excluding Appropriately Qualified Experts from the Law making Process**. Paper Presented at 60th AAFS Annual Scientific Meeting, Washington, DC.

Feb 08 **Rush to Judgment! Do Some Forensic Scientists Jump to Conclusions, Thereby Facilitating Injustice ?** Paper Presented at 60th AAFS Annual Scientific Meeting, Washington, DC.

Jun 08 **Training seminar on forensic firearms & ballistics**. Washington DC Public Defenders 6th Annual Forensic Science Conference, Gallaudet University, June 12-13 2008.

Jul 08 **Forensic Engineering Analysis of Firearm Trigger Incidents**. Paper presented at NSPE / NAFE Annual Convention, Portland, Oregon.

Jul 08 **Training seminar on forensic firearms, ballistics & wound ballistics**. Indiana Public Defender Counsel, Indianapolis, Indiana.

Feb 09 **Time for Change? The Science & Technology Behind Firearm Trigger Mechanism Evaluation**. Paper presented at 61st AAFS Annual Scientific Meeting, Denver, Colorado.

Jan 10 **Forensic Engineering Analysis of Firearm Silencers**. Paper presented at NAFE Training Seminar, New Orleans, Louisiana.

Feb 10 **Tool Mark Creation and Transfer Issues in Firearms**. Paper presented at 62nd AAFS Annual Scientific Meeting, Seattle, Washington.

- Feb 10 **Use of Supplementary Analytical Techniques in Firearm Tool Mark Analyses.** Paper presented at 62nd AAFS Annual Scientific Meeting, Seattle, Washington.
- Jun 10 **Forensic Firearms & Ballistics for the legal Profession; a Continuing Education Course for Attorneys, Judges, and Professional Engineers.** Accredited by the Indiana Supreme Court Commission for Continuing Legal Education, and the Indiana Society of Professional Engineers.
- Jan 11 **Forensic Firearms & Ballistics for the legal Profession; a Continuing Education Course for Attorneys, Judges, and Professional Engineers.** Accredited by the Indiana Supreme Court Commission for Continuing Legal Education, and the Indiana Society of Professional Engineers.
- Feb 11 **Differing Perspectives on the Use of Experts in an Adversarial Litigation System, Are Experts Misunderstood & Misused ? Are Court Appointed Experts the Ultimate Answer ?** Paper Presented jointly with State of Minnesota PD at AAFS 63rd Annual Scientific Meeting, Chicago, IL.
- May 12 **Training seminar on forensic firearms, ballistics, and wound ballistics.** Missouri Public Defender Annual Training Conference, Branson, MO.
- Aug 12 **Forensic Firearms & Ballistics for the legal Profession; a Continuing Education Course for Attorneys & Judges.** Cincinnati, OH. Accredited for Continuing Legal Education in the State of Ohio.
- Oct 12 **Training seminar on firearms and ammunition technology,** NLADA Life in the Balance conference, St Louis, MO. Accredited for CLE in most States.
- Oct 12 **Training seminar on firearm & ammunition toolmark analysis,** NLADA Life in the Balance conference, St Louis, MO. Accredited for CLE in most States.
- Oct 12 **Training seminar on improvised explosive devices & destructive devices,** NLADA Life in the Balance conference, St Louis, MO. Accredited for CLE in most States.
- Feb 13 **Performance Evaluation of Firearm Silencers.** Paper presented at 65th AAFS Annual Scientific Meeting, Washington DC.
- Feb 13 **Safety Evaluation of Post Manufacture Firearm Modifications.** Paper presented at 65th AAFS Annual Scientific Meeting, Washington DC.
- Nov 13 **You Don't Have to Accept It in Silence: Challenging Firearms Identification Evidence, and Those Who Deliver It.** Wisconsin Public Defender Annual Training Seminar, Milwaukee WI.
- Feb 14 **Was That Car Used as a Weapon ? Combining Reconstruction Skills to Answer a Critical Question.** Paper presented jointly at 66th AAFS Annual Scientific Meeting, Seattle WA.
- Feb 14 **Investigation of Ear Witness Testimony with Regard to Sounds Heard During a Shooting Incident.** Paper presented at 66th AAFS Annual Scientific Meeting, Seattle WA.
- Jun 14 **Forensic Firearms, Ammunition, & Ballistics.** Washington DC Public Defender Service 11th Annual Forensic Science Conference, Washington DC.
- Feb 15 **A Study of Lot-to-Lot Handgun Ammunition Propellant Variables and Their Influence upon Muzzle to Target Distance Determinations.** Paper presented at 67th AAFS Annual Scientific Meeting, Orlando, FL.
- Feb 15 **Investigation of 'Inert' Artillery Shell Explosion.** Paper presented at 67th AAFS Annual Scientific Meeting, Orlando, FL.

- Feb 15 **Forensic Investigation of a Premature Mortar Explosion that Resulted in the Death and Maiming of Several US Marines.** Paper presented at 67th AAFS Annual Scientific Meeting, Orlando, FL.
- Feb 15 **Implementing Change in a Multidisciplinary Forensic Science World.** Paper presented at 67th AAFS Annual Scientific Meeting, Young Forensic Scientists Forum (YFSF), Orlando, FL.
- Sep 15 **Is the Gatekeeper Concept Failing the Justice System ? Is There a Viable Alternative ?** Paper presented at the 2015 AAFS ESS International Scientific Meeting, Toronto, Canada.
- Feb 16 **Is the Gatekeeper Concept Failing the Justice System ? Is There a Viable Alternative ?** Paper presented at 68th AAFS Annual Scientific Meeting, Special Joint Session, Las Vegas, NV.
- Feb 16 **Accident or Lovers Quarrel ?** Paper presented at 68th AAFS Annual Scientific Meeting, Young Forensic Scientists Forum (YFSF), Las Vegas, NV.
- Aug 17 **Human Rights & the Enduring Negative Impact of Military Weapons,** International Association of Forensic Sciences, 21st Triennial Meeting, Toronto, Canada.
- Feb 18 **Does Size Really Matter — Or Is How You Manipulate It More Important? A Review of Data Analysis and Presentation Tips and Tricks.** Paper presented at 70th AAFS Annual Scientific Meeting, Seattle, WA.
- Feb 18 **It's a Fair System, Isn't It? Facts, Alternative Facts, and Other Litigation Influencers.** Paper presented at 70th AAFS Annual Scientific Meeting, Seattle, WA.
- Feb 19 **Assessing the Construction & Performance Potential of Improvised Hand Grenades.** Paper presented at AAFS 71st Annual Scientific Meeting, Baltimore, MD.
- Feb 19 **Handgun & Ammunition Performance Influencers.** Paper presented at AAFS 71st Annual Scientific Meeting, Baltimore, MD.
- Mar 19 **An Introduction to Forensic Engineering.** Purdue University, Fort Wayne, IN.
- Oct 19 **Forensic Engineering - The Importance of Multi-disciplinary Cooperation.** Purdue University, Fort Wayne, IN.
- Feb 20 **A Comparison of Scientifically Valid & Traditional Firearm Trigger Mechanism Evaluation Techniques.** Paper presented at AAFS 72nd Annual Scientific Meeting, Anaheim, CA.
- June 23 **Forensic Firearms Engineering.** Paper presented at the 2023 ISPE Annual Meeting, Indianapolis, IN.

Continuing Education, Training, & Development (post 2001)

- Nov 01 Forensic Science conference at University of Louisville Law School.
- Sept 03 Death Penalty conference, Indianapolis.
- Oct 03 Conference; Ballistics; from the Shop Floor to the Courtroom, DePaul University, Chicago.
- Dec 03 Forensic Science training seminar, Indianapolis.
- Feb 04 Forensic Science training seminar, Indianapolis.
- Sept 04 Forensic Science for Investigators, Indianapolis.
- Apr 06 Forensic Science Symposium, Indianapolis.
- Apr 06 Indiana Society of Professional Engineers (ISPE) Annual Convention, Indianapolis, IN.
- May 06 Advanced Defensive Pistol Course.

Sept 06 SIG Factory Certified Armorer Course.
Oct 06 Forensic Investigation, Dr Henry C Lee, Carmel, Indiana.
Feb 07 American Academy of Forensic Sciences (AAFS) 59th Annual Scientific Meeting, San Antonio, TX.
Apr 07 ISPE Annual Convention, Indianapolis IN.
Jul 07 National Institute of Justice Annual Conference, Arlington VA.
Jul 07 National Academy of Forensic Engineers (NAFE) Annual Conference, Denver CO.
Feb 08 AAFS 60th Annual Scientific Meeting, Washington, DC.
Apr 08 ISPE Annual Convention, Indianapolis, IN.
Jul 08 NAFE Annual Convention, Portland, OR.
Feb 09 AAFS 61st Annual Scientific Meeting, Denver, CO.
May 09 ISPE Annual Convention, Indianapolis, IN.
Jul 09 National Society of Professional Engineers (NSPE) Annual Convention, St Louis, MO.
Jan 10 NAFE Training Seminar, New Orleans, LA.
Feb 10 AAFS 62nd Annual Scientific Meeting, Seattle, WA.
May 10 ISPE Annual Convention, Indianapolis IN.
Feb 11 AAFS 63rd Annual Scientific Meeting, Chicago, IL.
Jan 12 NAFE Training Seminar, Miami Beach, FL.
Feb 12 AAFS 64th Annual Scientific Meeting, Atlanta, GA.
Oct 12 NLADA Life in the Balance Conference, St Louis, MO.
Feb 13 AAFS 65th Annual Scientific Meeting, Washington DC.
Jun 13 ISPE Annual Convention, Indianapolis, IN.
Feb 14 AAFS 66th Annual Scientific Meeting, Seattle, WA.
Feb 15 AAFS 67th Annual Scientific Meeting, Orlando, FL.
Sept 15 AAFS ESS International Scientific Meeting, Toronto, Canada.
Feb 16 AAFS 68th Annual Scientific Meeting, Las Vegas, NV.
Jun 17 ISPE Annual Convention, Indianapolis, IN.
Feb 18 AAFS 70th Annual Scientific Meeting, Seattle, WA.
Feb 19 AAFS 71st Annual Scientific Meeting, Baltimore, MD.
Feb 20 AAFS 72nd Annual Scientific Meeting, Anaheim, CA.
Feb 21 AAFS 73rd Annual Scientific Meeting (virtual).
Jun 23 ISPE Annual Convention, Indianapolis, IN.
Dec 23 ANSI National Accreditation Board ISO / IEC 17024 Training Course.

Achievements & Activities

- * One of the youngest people to be elected to Fellowship of the Institution of Mechanical Engineers.
- * My expert report format was adopted by the Academy of Experts.
- * Secretary to UK explosives safety, performance, and compatibility committees (95-98).
- * NRA Certified Range Safety Officer.
- * NRA Certified pistol and personal protection instructor.
- * SIG Sauer Factory Certified Law Enforcement Armorer (2006 to 2009).