

William A. Tobin

-- Educational --

Bachelor of Science, Metallurgy, Case Institute of Technology Master of Arts, Special Studies, George Washington University Graduate studies, Materials Science & Engineering, University of Virginia

Additional Courses & Symposia Physical Metallurgy, Ohio State University Shaping, Forming of Metals, Ohio State University Engineering Metallurgy, Ohio State University Principles of Failure Analysis, American Society for Metals (ASM) Fractography: Practical Applications in Failure Analysis (ASM) Metallographic Interpretation (ASM) Energy Dispersive X-ray Fluorescence, Kevex Corporation Statistics I, Northern Virginia Community College Statistics II, Northern Virginia Community College Detection and Recovery of Human Remains, FSRTC Calculus I (refresher), Northern Virginia Community College Calculus II (refresher), Northern Virginia Community College Applied Statistics for Engineers and Physical Scientists, Va. Commonwealth Univ. Structure and Properties of Materials, University of Virginia Fastener Characterization by Mechanical & Metallographic Methods Manufacturing Processes & Materials, University of Virginia Applied Electrochemistry, University of Virginia Explosion Effects & Structural Design for Blast Metallurgy of Ductile Iron, American Foundry Society

-- Professional Experience --

Battelle Memorial Institute, Research Metallurgist Chase Brass and Copper Company, Plant Metallurgist National Aeronautics and Space Administration, Research Metallurgist Monarch Aluminum Company, Manufacturing/Production Process Control U.S. Marine Corps, Platoon Commander, Republic of South Vietnam Federal Bureau of Investigation, Supervisory Special Agent FBI Laboratory, *de facto* Chief Forensic Metallurgist Forensic Engineering International, Principal

-- Court Appearances and Depositions --

Testified as an expert witness in <u>301</u> local, state, federal criminal & civil matters, in <u>46</u> states, D.C., P.R., (excl. Congressional testimonies & grand juries)



- Bronze Star with Combat 'V', U.S. Marine Corps
- 2 Crosses of Gallantry, Republic of South Vietnam
- 20 additional military combat decorations

Numerous letters of commendation, including:

- Personal commendation from U. S. Attorney General William French Smith
- Three commendations with cash awards, from FBI Director William H. Webster
- Two commendations and cash award from FBI Director William S. Sessions

-- Professional Affiliations --

National Association of Corrosion Engineers (NACE, now AMPP) Statistical & Applied Mathematical Sciences Institute (SAMSI) American Society for Testing and Materials (ASTM) American Society for Metals, International (ASM) The Minerals, Metals & Materials Society (TMS) National Fire Protection Association (NFPA) Society for Experimental Mechanics (SEM) International Metallographic Society (IMS) American Foundry Society (AFS) Failure Analysis Society (FAS) 1st Marine Division Association

-- Literary Hcknowledgments/References/Media -

And The Sea Will Tell, Vincent Bugliosi, Ballantine Books, 1992; former prosecutor of Charles Manson and author of *Helter Skelter*.

Bones, Dr. Douglas Ubelaker (Smithsonian Institution) and Henry Scammell; Harper Collins Publishers, 1992, New York, NY.

Hard Evidence, David Fisher, Simon & Schuster, 1995; author of bestsellers *Gracie With George Burns*, *What's What*, *Killer*, and *The Umpire Strikes Back*.

"60 Minutes", CBS televised interview November 18, 2007; re-aired Sept. 14, 2008

-- Other --

Referee for *Fire Technology*, NFPA Editorial Advisor, *The Forensic Examiner*, ACFEI Requested by UNSCOM to serve as U.N. Weapons Inspector, Iraq (1998) Editorial Reviewer, National Research Council, National Academy of Sciences

-- Publications --

(1) Evidentiary Comparison of Plastic Materials and Products Based Upon Fabrication Characteristics (Toolmarks), F.S. DeRonja and W.A. Tobin, *Proceedings of the International Symposium on the Analysis and Identification of Polymers*, July 31 to Aug. 2, 1984, FBI Academy, Quantico, Virginia.

(2) **Collapsed Springs in Arson Investigation: A Critical Metallurgical Evaluation**, W.A. Tobin & K.L. Monson, *Fire Technology*, Volume 25, Number 4 (November 1989), National Fire Protection Association.

(3) **Arson Investigations**, W.A. Tobin, *Law Enforcement Bulletin* ('Focus' feature), February 1990, Federal Bureau of Investigation.

(4) What Collapsed Springs Really Tell Arson Investigators, W.A. Tobin, *Fire Journal*, Volume 84, No. 2 (March/April 1990), National Fire Protection Association.

(5) What Collapsed Springs Really Tell Arson Investigators, W.A. Tobin; course instructional material, *Fire/Arson Investigation Resident Course*, October 1994, U.S. Fire Administration, National Fire Academy; requested and reprinted with permission.

(6) Noninvasive Evaluation of Vehicular Lampbulbs, W.A. Tobin, *Crime Laboratory Digest*, Volume 21, Number 1 (January 1994), Federal Bureau of Investigation.

(7) **Noninvasive Evaluation of Vehicular Lampbulbs**, W.A. Tobin, *Forensic News*, April-June 1994, Arizona Identification Council, Division of the International Association for Identification; reprinted with permission.

(8) **FBI Investigates Aircraft Corrosion** (submitted as "Aircraft Corrosion in Law Enforcement"), W.A. Tobin, *Materials Performance*, Volume 33, Number 6 (June 1994), National Association of Corrosion Engineers (NACE).

(9) Inferring Duration of Exposure to a Hostile Environment Based on Measurement of Corrosion Product Thickness, W. A. Tobin, *The Customs Laboratory Bulletin*, Volume 7, Number 1 (1995), U.S. Customs Service, S. M. Dyszel, Ed., Washington, D.C.

(10) **A Metallurgical Review of the Interpretation of Bullet Lead Compositional Analysis**, E. Randich, W. Duerfeldt, W. McClendon, W. Tobin, *Forensic Science International*, Volume 127, Issue 3 (September 2002), pp.174-191, Elsevier Science Publishing.

(11) How Probative is Comparative Bullet Lead Analysis?, W. A. Tobin, W. Duerfeldt, *Criminal Justice*, Volume 17, Number 3 (Fall 2002), pp.26-34, American Bar Association.

(12) Comparative Bullet Lead Evidence (CBLA): Valid Evidence or *Ipse Dixit*?, E. J. Imwinkelried and W. A. Tobin, *Oklahoma City University Law Review*, Vol. 28 No. 1 (2003), pp.43-72.

(13) **Comparative Bullet Lead Analysis: A Case Study in Flawed Forensics**, Tobin, W.A., *The Champion*, July 2004, pp.12-22, National Association of Criminal Defense Lawyers.

(14) A Retail Sampling Approach to Assess Impact of Geographic Concentrations on Probative Value of Comparative Bullet Lead Analysis, S.A. Cole, W.A. Tobin, L. Burgess, H. Stern, *Law*, *Probability & Risk*, Vol. 4, No. 4 (2005), Oxford University Press.

(15) **Evaluating and Challenging Forensic Identification Evidence,** W.A. Tobin, W.C. Thompson, *The Champion*, July 2006, pp. 12-21, National Association of Criminal Defense Lawyers.

(16) **Expert Opinion: Evidentiary Value**, Chapter 8: "Evaluating and Challenging Forensic Identification Evidence", W.A. Tobin, W.C. Thompson, reprinted with permission, pp. 137-160; The Icfai University Press, Hyderabad, India (2007).

(17) Chemical and Forensic Analysis of JFK Assassination Bullet Lots: Is A Second Shooter **Possible?**, C. Spiegelman, W.A. Tobin, William D. James, Simon J. Sheather, Stuart Wexler, D. Max Roundhill, *The Annals of Applied Statistics*, Vol. 1 No. 2, 287-301 (2007); Institute of Mathematical Statistics. <u>http://dx.doi.org/10.1214/07-AOAS119</u> or <u>http://arxiv.org/abs/0712.2150</u>. Biennial winner of "2008 Statistics in Chemistry Award" from American Statistical Association with cash award.

(18) Analysis of Experiments in Forensic Firearms/Toolmarks Practice Offered As Support for Low Rates of Practice Error & Claims of Inferential Certainty, C. Spiegelman, W. A. Tobin, *Law, Probability and Risk*, (2013) 12 (2), 115-133, doi:10.1093/lpr/mgs028, first published online October 1, 2012, at http://lpr.oxfordjournals.org/cgi/content/full/mgs028?ijkey=ebC7b3Y008FdKhU&keytype=ref.

(19) Hypothesis Testing of the Critical Underlying Premise of Discernible Uniqueness in Firearms-Toolmarks Forensic Practice, W. A. Tobin, P. J. Blau, 53 *Jurimetrics* 121-146 (Winter 2013), available at: <u>http://www.ssrn.com/author=1521077.</u>

(20) Absence of Statistical and Scientific Ethos: The Common Denominator in Deficient Forensic Practices, W. A. Tobin, H. D. Sheets, C. Spiegelman, *Statistics and Public Policy*, 4:1, 1-11 (2017), DOI: 10.1080/2330443X.2016.1270175, available at http://dx.doi.org/10.1080/2330443X.2016.1270175. 'Editors' Choice selection of the American Statistical Association (ASA) at <a href="http://explore.tandfonline.com/content/pgas/asa-editors-choice?utm_medium=email&utm_source=EmailStudio&utm_campaign=JMH01962_2544310.

-- Noteworthy / Sample Cases --

TWA 800 Aircraft Disaster: Mid-air explosion of flight TWA 800 enroute from New York's Kennedy Airport to Paris, France, on July 17, 1996.

Mid-air Breakup of Missouri Air National Guard F-15C: Crash of F-15C attributable to longeron fatigue failure resulting in nationwide grounding of all F-15A/B/C/D aircraft.

Sago Coal Mine Disaster: Complex materials interaction issues relating to methane gas explosion, Sago, W.V., January 2, 2006. Thirteen trapped miners; one survivor.

U.S. v. [Blackwater Worldwide personnel]; incident involving Blackwater Personal Security Detail (PSD) in September 2007 escorting convoy of US State Department vehicles en route to meeting in western Baghdad with USAID officials, resulting in17 Iraqi civilian fatalities in Nisour Square, Baghdad.

U.S. v. Aafia Siddiqui; Trial of Dr. Aafia Siddiqui for attempted murder with M4 rifle; trial in NYC, NY, from Guantanamo. Terminal ballistics and GSR (gunshot residue) issues from shooting reconstruction: evaluation of wall damage claimed to be bullet holes from high velocity impact of M855 (SS109) projectiles (bullets).

BOMBING, Olympic Park: Pipe bomb explosion at Centennial Park, Atlanta, GA, during 1996 Olympics.

Charles Stuart: National notoriety and local racial strife in Massachusetts resulting from incident where Stuart and his pregnant wife were shot in their vehicle; Stuart called "911" from his vehicle while wounded. Notoriety resulted in TV movie "Good Night, Sweet Wife" (CBS) and several books.

U.S. v. Walter Leroy Moody: Defendant sentenced to 7 life terms plus 400 years for mailing package bombs that killed U.S. Appellate Court Judge Robert S. Vance and civil rights attorney Edward Robinson.

EXPLOSION, USS Iowa: explosion resulting in numerous sailor fatalities during training operation.

Susan B. Anthony silver dollar recovery. Developed technique for U.S. Mint to recover thousands of mis-minted silver dollars embedded in lucite for collectors.

PRODUCT TAMPERING; U.S. v. Joseph Earl Meling, product tampering of SUDAFED capsules; defendant convicted of contaminating capsules with sodium cyanide to murder his wife, and of causing the deaths of several consumers purchasing SUDAFED.

FOOD PRODUCT TAMPERING; nationwide alert for contaminated Girl Scout cookies.

TRAIN DERAILMENT, Panama City, FL; 129 car derailment releasing chlorine gas which killed 8 people. Incident featured in *Newsweek* and numerous other news periodicals.

EXPLOSION in Wilberg Coal Mine, Orangeville, UT; coal mine explosion of such severity that it took approximately two years to recover bodies of 27 miners who died in the mine.

Scaffold Collapse, Willow Island, WV; wire rope failure that caused collapse of scaffold used in construction of nuclear facility, resulting in 51 deaths.

U.S. v Buck Walker & U.S. v. Stephanie Stearns; "hippie" couple alleged to have murdered Malcolm ("Mac") and Eleanor ("Muff") Graham on Palmyra Island in the South Seas. Skull found by beachcomber on deserted beach in the South Seas 12 years later, depicted on the cover of *And The Sea Will Tell* by Vincent Bugliosi (author of *Helter Skelter* and prosecutor of Charles Manson); also subject of popular TV movie "And The Sea Will Tell" (CBS).

Lt. Colonel William Higgins, Commander of U. N. Forces, kidnapped and killed, Beirut, Lebanon.

Achille Lauro Cruise Ship; terrorism aboard cruise ship.

Judge Alcee Hastings; impeached Federal judge accused of misconduct and obstruction of justice. Tensile testing and failure analysis of purse strap of Judge Hastings' purse.

TRAIN DERAILMENT, Mobile, AL; "Sunset Limited" derailment, worst rail disaster in U.S. history, resulting in the deaths of 47 passengers on September 23, 1993.

ENVIRONMENTAL DISASTER; Oil spill, San Juan, Puerto Rico, January 7, 1994, involving motorized vessel (M/V) Emily S. (tug) and barge Morris J. Berman, with 662,000 gallons of #6 fuel oil. Second-worst maritime disaster in U.S. history (second to Exxon-Valdez).

UNABOM; Sixteen package bombs sent to/opened by various technical personnel.

BOMBING, Oklahoma City, OK; bombing of Murrah Federal Building on April 19, 1995.

PATENT INFRINGEMENT Litigation: Brunswick v. U.S. Army; materials design of radarscattering camouflage netting used by U.S. Army in Kuwait-Iraq conflict. Devised unique testing technique to determine spatial relationship of critical component fibers for U.S. Justice Department.

WELDMENT FAILURE resulting in tragic auto accident due to roadway debris from 50-lb. steel plate falling from commercial truck under tow, nearly decapitating victim driver in vehicle behind tow, September 2000, causing massive I-95 traffic stoppage. <u>Cause</u>: poor maintenance and defective weldment on battery compartment of truck under tow.

FIRE at Dogwood Elementary School, Reston VA; Elementary school fire resulting in total destruction of school (\$17 million loss), November 2000. Unsolved by fire investigators for months. Forensic metallurgical assistance provided to Fairfax County Fire & Rescue attributed cause of fire to defective ceiling-hung clock.

COLLAPSE OF BUCKET TRUCK BOOM ARM; bucket truck boom arm, used to trim and clear tree limbs from vicinity of electrical power lines in Warrenton, Virginia, collapsed during use, November 2000. Failure attributable to defective manufacturing technique (weldment).

BICYCLE FATALITY; Moped conversion bike, with caliper hand brakes, became uncontrollable when brakes were applied, causing rider to be ejected over handlebars, resulting in rider fatality. Loss of control attributable to improper bicycle modification.

VEHICULAR FATALITY; Driver stopped on Interstate 95 with mechanical problems was killed by commercial truck while awaiting roadside assistance. Metallurgical examinations confirmed that disabled vehicle's lights, including emergency flashers, were incandescent and visible at time of truck impact.

CORROSION: Premature condenser tubing failures. Well-known construction contractor experienced through-wall corrosion of stainless steel condenser tubing within one year of construction for utility client in Colombia, South America. Three metallurgical entities disagreed as to cause, majority concluding microbiologically induced corrosion (MIC). Indisputable determination of cause: improper heat treatment of tubing, MIC not involved.

CORROSION: Determination of cause and fault for metal building roof corrosion, installed one year earlier; Wilmington, NC.

CORROSION: Determination of cause & fault for metal building roof corrosion, Annandale, VA.

CORROSION: Determination of cause & fault for multi-million dollar power generating trailers for large-scale emergency power, Wheeling, IL.

CORROSION: Determination of cause & fault for multi-million-dollar firing range automatic target system failures installed one year earlier for FBI Quantico training facility.

CORROSION: Authentication of disputed origin of historical artifact: "six-shooter" owned by leader of last famous outlaw gang in the U.S.: the 'Bob Dalton Gang'.

CORROSION: Numerous cases in marine and industrial environments, including the environmental disaster at Escambron Beach, Puerto Rico, mentioned above, where corrosion played integral role in sequence of disastrous events.

CORROSION: Determination of cause & fault for pervasive corrosion of expensive paper testing laboratory instruments for well-known paper manufacturer.

EXPLOSION FAILURE of chamber structure used for demilitarization processes at Army Research Laboratory (ARL), Aberdeen Proving Grounds (APG), Aberdeen, MD.

TRAJECTORY ANALYSIS: Terminal ballistics reconstruction analysis of military engagement (shooting) in jungle/rain forest by Philippine Army near Kananga, Leyte, P.R., November 15, 2010, where over 245 military bullets (5.56 mm M193 in M-16 rifles) were expended. Victims of mistaken identity were unarmed and engaged in scientific research, including renowned botanist, Dr. Leonardo Co.

FASTENER FAILURE ON YACHT: Fatigue failure of fastener on "Destiny" yacht attributable to deficient design, manufacturing, construction, installation practice.

MISCELLANEOUS: Work ladders; hunter's tree stand; wire rope & cables; fire sprinkler system corrosion; foundry & casting matters; obliterated serial number & identification marking restorations; oil drilling equipment; fasteners (nails, screws, staples, bolts, nuts, *etc.*); missile guidance system components (radar waveguides); aircraft, boat and ship corrosion; aviation components; false claims act; fraud against the government; automobile accidents & components (fractures, failures, speedometer, headlights, taillights, *etc.*); timing mechanisms (clocks, watches, *etc.*); manufacturing processes; statistical process control; metal building corrosion; mine disasters; transport disasters (maritime, aviation, rail); quality control; standards & specifications; welding; fires & explosions; M4 launch and penetration mechanics with M855 (SS109); terminal ballistics; gunshot residue (GSR); bullets; firearms; toolmarks; body armor; apple brandy alembic in distilling process; operational failures/explosions of firearms during user use (*aka*, 'kaBooms').

Various cases featured on "America's Most Wanted", "Unsolved Mysteries", "60 Minutes", "20/20", "Dateline", "Primetime", "Eye to Eye", "48 Hours", "Forensic Files", "FBI Files", "The Discovery Channel", "The Learning Channel", CNN, Canadian Broadcasting Corporation (CBC), British Broadcasting Corporation (BBC), and National Geographic Channel.

-- Speaking Engagements -

ASM, COMS (Central Ohio Metallographic Society), Columbus, OH **Ohio State University** Welding & Testing Technology 8th Annual National Conference (31 professional societies, Knoxville, TN) ASM, Philadelphia, PA (Liberty Bell Chapter) MTI (Metal Treating Institute), Secaucus, NJ ASM, Hartford, CT ASM, Bethlehem, PA ASM, New Haven, CT ASM, Nashua, NH ASM, York, PA ASM, Charlotte, NC ASM, Cincinnati, OH AWS (American Welding Society), York, PA University of Pittsburgh ASNT (American Society for Nondestructive Testing), ASM, Hampton, VA AWS, ASM, Houston, TX ASM, Peoria, IL AWS, Los Angeles, CA AWS, Baltimore, MD AWS, Hampton, VA ASM, Baltimore, MD ASM, Washington, DC ASM, Johnson City, TN ASM, South Bend, IN (Notre Dame Chapter) AWS, Houston, TX AIME (American Institute of Mechanical Engineers), AWS, ASM, Beaumont, TX SCTE (Society of Carbide and Tool Engineers), ASM, Philadelphia, PA ASM, Portland, OR ASM, Greensboro, NC ASQC (American Society for Quality Control), ASM, AIME, Worcester, MA Metal Treating Institute International Convention, Washington, DC ASM, Baton Rouge, LA Florida International Arson Seminar, 46th Annual, Orlando, FL AWMI (Association of Women in the Metal Industries), Marlboro, MA AWS, Washington, DC SAMPE (Society for Advancement of Materials and Processing Engineers), SCTE, ASM, San Diego, CA Florida International University ASM, AWS, Miami, FL MFPG (Mechanical Failures Prevention Group), 45th Session Symposium AICE (American Institute of Carbide Engineers), ASM, AIME, Kansas City, MO ASM, Grand Rapids, MI ASM, Battle Creek, MI ASM, AWS, ASNT, Rahwah, NJ ASM, Oak Ridge, TN ASM, South Bend, IN (Notre Dame Chapter) Roger Williams College ASME, ASM, East Providence, RI ASM, Bethlehem, PA (Lehigh Valley Chapter) COMS, ASM, ASNT, Ohio State University, Columbus, OH ASM, AES (American Electroplaters Society), ASQC, Springfield, MA ASM International, Montreal, Quebec, Canada TMS (The Metallurgical Society), New Haven, CT AWS, ASM, Beaumont, TX AWS, ASM, Houston, TX AWS, Tampa, FL

Case Alumni Association, Washington, DC National Thermal Spray Convention (NTSC) '93, Anaheim, CA 26th Annual IMS Symposium, Charleston, SC ASM, Dayton, OH ASM, Central Carolinas Chapter, Raleigh, NC SWE, ASM, Peoria, IL AWMI, Cleveland, OH AFS (American Foundrymen's Society), ASM, Saginaw, MI U. S. Attorney's Office, Dept. of Justice, San Diego, CA AWS, San Diego, CA ASM, Milwaukee, WI AWMI, Baltimore, MD AWS, Tysons Corner, VA ASM, Indianapolis & Muncie, IN National Engineers Week, Akron, OH: AIIA, ASM, ASCE, ASDPE, ASME, ASHE, IEEE, SME, NAWIC, ASQC, ASHRAE, AIChE, ACESS, Univ. of Akron, Kent State Univ. ASM, MIT Faculty Club, Cambridge, MA AWMI. Dallas, TX ASM. Baltimore, MD University of Virginia (graduate seminar) AWMI, Minneapolis, MN AWMI, St. Louis, MO Oklahoma City University School of Law Florida Assoc. of Criminal Defense Lawyers (FACDL), Palm Beach, FL Wisconsin Assoc. of Criminal Defense Lawyers (WACDL), Madison, WI American University, Washington School of Law, Washington, D.C. (quest lecturer) CLE: "Life In The Balance" Seminar, NLADA, Memphis, TN CLE: North Carolina Association of Trial Lawyers (NCATL), Raleigh, NC. Joint Statistics Meeting (JSM 2004), Toronto, Canada CLE: NLADA Conference, Washington, DC, CLE: NACDL Midwinter Meeting & Seminar, New Orleans, LA CLE: NCATL Conference, Sunset Beach, NC. CLE: CPD, Copper Mountain, CO CLE: TCDLA, Dallas, TX (co-director) Georgetown University School of Law, Washington, D.C. CLE: DCACDL, Washington, D.C. CLE (judges only): "Science in the Courtroom", Judicial Institute of Maryland, Annapolis, MD CLE: TCDLA, Houston, TX (co-director) CLE: NCAJ, Raleigh, N.C. CLE: WISBA, Milwaukee, WI CLE (invitation only): Cardozo Law School, NYC, NY Metropolitan Public Defender's Office, Louisville, KY CLE, TCDLA, Houston, TX (Oct. 2016) CLE, NACDL, Las Vegas, NV (May 2017) FAPI (Feb. 2021)

Contact Information:

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