

James S. Sobek, P.E.

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**Professional Competencies:**

Forensic Engineer providing instruction on:

- Lighting and visibility in vehicular collisions, especially nighttime incidents
- Photometry for the forensic investigator
- Digital photography and videography
- Motor vehicle headlamp performance/limits
- Pedestrian and bicyclist visibility



Experience Summary

- Forensic photography educator
- CIA physicist consultant on digital image correlation systems
- Designer, systems engineer and program manager for electro-optical missile guidance systems
- Research physicist in aircraft navigation and early GPS systems

**Employment History:**

**Clearly Visible Presentations, LLC**

Managing Partner (August 2007 to Present)

Mr. Sobek provides technical presentations in the fields of optics, lighting and visibility to the law enforcement, legal and professional communities. His focus is on optics, lighting, visibility and digital imaging for the forensic investigator.

**Wolf Technical Services, Inc., Indianapolis, IN**

Senior Accident Analyst (April 1988 to Present)

Mr. Sobek specializes in automotive and tractor-trailer accident reconstruction with emphasis on analysis of lighting, optics, visibility/conspicuity, aerial photography, photogrammetry, and image processing. He also analyzes railroad grade crossing collisions and other railroad incidents. He prepares computer models of vehicle and railroad headlamp illumination, contrast, veiling glare, etc. He also provides electronic signals analysis, particularly of analog sound recordings. Finally, he analyzes the physics issues of exterior ballistics, ladder dynamics, friction, etc. In a previous role with Wolf, he served as Technical Director, responsible for the day-to-day operations of the company and review/approval of all forensics work.



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**Central Intelligence Agency (June 2003 to 2011)**

Physicist consultant on digital image correlation systems for the Jasmine program, a guided para-foil payload delivery system under development.

**Naval Avionics Center, Indianapolis, IN (June 1968 to April 1988)**

DSMAC Program Manager, D/906.2 (Electrical Engineer) (June 1987 to April 1988)

- Responsible for the production of Digital Scene Matching Area Correlator (DSMAC), the autonomous precision electro-optical missile guidance system currently used on the Navy's TOMAHAWK cruise missile. Also responsible for the design and development of the DSMAC IIA follow-on system.

Assistant to the Executive Director, D/004 (Electrical Engineer) (December 1986 to June 1987)

- Senior Management grooming position.

Global Positioning System Program Manager, D/909 (Electrical Engineer) (June 1986 to December 1986)

- Responsible for all GPS systems integration activities at the Center. Developed GPS equipment second sources for the GPS Joint Program Office.

Dep. Prog. Mgr. NAV/INSTRUM/DISPLAYS, D/072.71 (Electrical Engineer) (October 1984 to June 1986)

- Responsible for development, production, and maintenance of aircraft navigation and display components.

Branch Manager, D/925 (Electrical Engineer) (March 1983 to October 1984)

- Responsible for systems engineering design, development, production and maintenance of system components of the Navy's television-guided Walleye missile system. Missile system trajectory and response to guidance inputs from pilots were important components of this work.

Research Physicist, B/824 (Physicist) (June 1968 to March 1983)

- Co-inventor (see Patents section below) of the Digital Scene Matching Area Correlator (DSMAC) system, the precision electro-optical guidance system used on the Navy's TOMAHAWK cruise missile. Jointly responsible for the system engineering aspects of the DSMAC. Solely responsible for the system's electro-optical design and the image processing techniques used in preparing the reference imagery. This work required the integration of the illumination requirements with the missile flight dynamics and the airframe's ability to respond to guidance inputs. Ballistic trajectory computations were a strong component of the work. Additional work was performed to create a digital link simulator for early TOMAHAWK guidance development. Developed a technique for using an early video tape recorder to record Ships Inertial Navigation System data directly from ship's data ports.



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**Robert Lewis, General Contractor, Alfred, NY**

Assistant in all phases of general contracting work. Was offered a permanent position as partner.  
(Summers and Vacations, 1964 to 1967 while in college)

**U. S. NAVY, Honorable Discharge, FTM-2 (Missiles) July 1960 to July 1964**

AN/SPG-55A & B Missile Guidance Radar  
AN/WDS-9 Weapons Designation System

**EDUCATION:**

Thiel College, Greenville, PA

Bachelor of Arts, Physics

June 1968

Minors: Chemistry and Mathematics

**LICENSES:**

Registered Professional Engineer, Indiana License Number: PE60890004

**COMPUTER SYSTEMS:**

Proficient in PC-based systems, particularly: FORTRAN, BASIC, TK Solver, and web site design.

**PATENTS:**

Digital Scene Matching Area Correlator, electro-optical missile guidance system  
(Secrecy order number 146,981; assigned to U.S. Navy)

Trucker Log Chek®, U.S. Patent No. 5,142,486

**CONTINUING EDUCATION:**

Classical Lens Design – UCLA (Kingslake) – Aug 1968

Engineering Uses of Aerial Photography – IUPUI (Dr. Robert Miles) – 1970-71

Tribology (Wear and Lubrication) – IUPUI

FORTRAN - Naval Avionics Center – 10/22/68

VAX 11/70 Operating System – Digital Equipment Corp.

Spread Spectrum Systems

Global Positioning System and Navigation Systems

Federal Railroad Administration Track Safety Standards

HVE Seminar – 2002

Highway-Rail Grade Crossing Safety

2020 Indiana Engineers' Laws and Rules

Ethical Decision Making for Engineers 1, 2, 3 & 4

Highway Engineering 3: Driver, Pedestrian, Vehicle & Traffic Characteristics

Better Roadway Design – Lane Assignment, Signals & Lighting

Highway Engineering 5: Highway Traffic Engineering



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Geotechnology: Cartography, Mapping and Map Serving  
U.S. Biofuel Industry: Mind the Gap  
Responsible Outdoor Lighting  
Green Design: The Ethics of Green Design  
Essential Lighting: The Language, Metrics & Process of Lighting Design  
American National Standard Practice for Office Lighting  
Building Systems for Designers - Lighting Systems  
Daylighting 1: Fundamentals  
Daylighting 2: Occupant Productivity, Glazing Properties, & Electric Lighting  
Daylighting 3: Design Tools  
Daylighting in Design  
Lighting Calculations  
Parking Lots - Lighting  
Solar Electric Generation: Technologies  
Building for Senior Living: Acoustics & Lighting  
Building Systems for Designers - Introduction to Acoustic Design Principals  
Indiana Engineers Laws, Rules and Ethics – Revised for 2016  
Energy Efficiency – HID Lighting  
Energy Efficiency – LED Lighting  
Railroad Signal System Fundamentals  
Basics of Power Line Interference to Railroad Signal Systems  
Earthquakes and Tsunamis: Fundamental Concepts  
Residential Guide to Earthquake Design and Construction – Parts 1 & 2  
Fundamentals of Railway Train and Control Signaling  
Introduction to the Fundamentals of Acoustics  
Audio Engineering  
Principles of Signal Design  
Three Mile Island Accident  
Characteristics and Properties of Metals  
MUTCD – Roadway Traffic Control  
Indiana Engineering Laws, Rules and Ethics (Revised for 2018)  
Bicycle Planning and Safety  
Determining Negligence in Engineering Failures  
The U.S. Power Grid – Vulnerability to Solar Storms  
Roadway Lighting Design  
Roadway Traffic Signs  
Fiber Optics – Theory, Cable Design, Connectors, Testing and Equipment  
Geometric Design of Roundabouts  
Retaining Walls for Non-Geotechnical Engineers



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**PUBLICATIONS:**

*Digital Scene Matching Area Correlator* by Jon R. Carr and James S. Sobek (SPIE Proceedings, July 1980, San Diego).

Numerous classified papers and presentations with the U.S. Navy on aerial imaging, reference image processing, photogrammetry and missile guidance systems (both midcourse and terminal)

*Three-Dimensional Computerized Photogrammetry and Its Application to Accident Reconstruction* by Michael D. Pepe, James S. Sobek, and Gary J. Huett. (SAE 890739, March 1989).

*The Accuracy of Three-Dimensional Computerized Photogrammetry as Demonstrated by Field Tests* by James S. Sobek, Michael D. Pepe and D. Allen Zimmerman (SAE 930662, March 1993).

*Predicting and Analyzing Vehicle Dynamics in a Train-Passenger Vehicle Collision Using EDSMAC* by James S. Sobek and William E. Dickinson (HVE 2002 Seminar).

*One-Way Light (or Applications of Polarized Light in Forensic Engineering)* by James S. Sobek (MATAI Reference Points, August 2002).

*Litigating the Shadows* by James S. Sobek, P.E., & James R. Holland II, Esq. (Railroad Section, ATLA Annual Convention 2006, Seattle, WA).

*Physics 101 for Trial Lawyers - Key Principles, Concepts and Laws of Engineering You Need to Know (and understand) in the Handling of Personal Injury and Wrongful Death Cases*, Florida Justice Association, February 2007, Orlando, FL.

**MEMBERSHIPS:**

Michigan Association of Traffic Accident Investigators (MATAI)  
Ohio Traffic Accident Reconstruction Association (OTARA)  
Illinois Association of Technical Accident Investigators (IATAI)  
Washington Association of Technical Accident Investigators (WATAI)  
Optica, formerly Optical Society of America (OSA)  
Illuminating Engineering Society of North America (IESNA)  
National Association of Professional Accident Reconstruction Specialists (NAPARS)  
International Network of Collision Reconstructionists (on-line forum)  
RTA - Investigators - International Collision Investigators Discussion List (on-line forum)  
American MENSA, Life Member  
The Heinlein Society, Life Member

**VOLUNTEER ACTIVITIES:**

President Watercolors Homeowners Association, 2008 to 2011  
Member-at-Large Villas at Geist Homeowners Association Board of Directors 2011 to 2012  
Communications Committee Chair, Villas at Geist HOA 2012 to present  
Steward, Villas at Geist Little Free Library (# 27226)