

Mr. Marsh is a Senior Staff Consultant with Engineering Systems Inc. (ESi) in Houston, Texas. He obtained a Bachelor's degree in Electrical Engineering from the University of Houston. For ESI, Mr. Marsh performs electrical investigations of fires, explosions, arc flashes, lightning, electrostatic events, power and electronic equipment failures, and other electrical issues. Mr. Marsh is an experienced investigator of lithium-ion battery fires and explosions and has validated claims through experimentation and failure reconstruction. Mr. Marsh does control process failure analysis. Prior to joining ESI, he acquired 33 years of experience in electrical and software product design in the oilfield services industry, primarily for MWD/LWD operations. Mr. Marsh has a strong background in design of control systems and data acquisition systems for low power, high temperature, and hazardous environments. He has an engineering history of challenging system assumptions, promoting continuous product improvement and performing root-cause failure analysis to provide mission critical solutions. Mr. Marsh holds 21 patents related to the oilfield services industry.

Education

B.S., Electrical Engineering, University of Houston

Licenses & Certifications

- State of Texas P.E. License No. 129009
- NAFI Certified Fire and Explosion Investigator (CFEI)

Positions Held

Engineering Systems Inc., Houston, Texas

- Senior Consultant, 2023 - Present
- Senior Staff Consultant, 2018 - 2023
- Staff Consultant, 2015 - 2018

Halliburton, Houston, Texas

- Telemetry Advisor (Electrical), 2013 - 2015
- Senior Project Manager, 2009 - 2013

Contact Information

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ESi Houston

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Areas of Specialization

- Root Cause Failure Analysis
- Fire and Explosion Investigation
- Electrical Fire Investigation
- Battery Operation and Failure Investigation
- Control Process Analysis
- Switchgear, Arc Flash, and Lightning Strike Investigation
- MWD and LWD Operations
- Rapid and Agile Software Development Methods
- Telemetry Systems, Data Acquisition, Digital Signal Processing
- Data Compression and Transmission/Reception Design
- Mechanical Failure Analysis
- Electrical Failure Analysis
- Electrical Engineering Design
- Computer/Microcontroller Engineering Design

Dresser Industries/Halliburton, Houston, Texas

- Software Development Manager, 1996 – 2009

Baroid Corporation/Dresser Industries, Houston, Texas

- Electrical/Software Team Leader, 1986 – 1995

NL Industries, Houston, Texas

- Signal Processing and Electrical Developer, 1981 – 1986

Ross Hill Controls, Houston, Texas

- Electrical Engineering Intern

Continuing Education

- **Confined Space - OSHA Regulations Under OSHA 29 CFR 1910 1926 Permit Required and Non-Permit Confined Space Standards** - On-Site Evaluation, 2025
- **Electrical Engineering - P2002 AC Generators and Motors** - CPE Solutions, LLC - (Process Engineering Consultants) - Online, 2025
- **Petroleum - P1008 BOPE: Blow out Prevention** - CPE Solutions, LLC - Process Engineering Consultants) - Online, 2025
- **Electrical Engineering - ODP9000 On Demand - 9000 Degrees F - Electrical ARC Flash** - CPE Solutions, LLC - (Process Engineering Consultants) - Online, 2025
- **Laws and Ethics - RF1105 Texas Ethics for PEs** - CPE Solutions, LLC - (Process Engineering Consultants) - Online, 2025
- **Project Management - ODP8530 On Demand - Forensic Engineering Insight** - CPE Solutions, LLC - (Process Engineering Consultants) - Online, 2025
- **Health and Safety - POD4453 On Demand - Forensic Engineering** - CPE Solutions, LLC - (Process Engineering Consultants) - Online, 2025
- **Electrical Engineering - OD1106 On Demand - Noise Cancellation Technology** - CPE Solutions, LLC - (Process Engineering Consultants) - Online, 2025
- **Electrical Engineering - E1011 Control of Hazardous Energy** - CPE Solutions, LLC - (Process Engineering Consultants) - Online, 2025
- **Health and Safety - ODS3125 on Demand - Fire Safety: Fire Prevention and Managing Emergency Situations in the Workplace** - CPE Solutions, LLC - (Process Engineering Consultants) - Online, 2025
- **Electrical Engineering - E1017 Transformers** - CPE Solutions, LLC - (Process Engineering Consultants) - Online, 2025

Professional Affiliations

National Association of Fire Investigators (NAFI)

- Member

Institute of Electrical and Electronics Engineers (IEEE)

- Member

International Association of Direction Drillers (IADD)

- Member

Society of Petroleum Engineers (SPE)

- Member

International Association of Arson Investigators (IAAI)

- Member

Publications

“The Implications of Post-Fire Physical Features of Cylindrical 18650 Lithium-Ion Battery Cells,” Nagourney, T., Jordan, J., **Marsh, L.**, Scardino, D., May, B. Fire Technology. January 20, 2021.

<https://doi.org/10.1007/s10694-020-01077-8>

Presentations

“Lithium-Ion Battery Safety,” presented to the Fire Risk Management Class at OSU, April 7, 2025.

“Lithium-Ion Battery Safety,” presented to the Fire Risk Management Class at OSU, November 7, 2024.

“Lithium-Ion Battery Safety,” presented to the Fire Risk Management Class at OSU, April 2024.

“Lithium-Ion Battery Safety,” presented to the Fire Risk Management Class at OSU, November 2021.

“Lithium-Ion Battery Safety,” presented to the Fire Risk Management Class at OSU, April 2021.

“Lithium-Ion Battery Safety,” presented to the Fire Risk Management Class at OSU, April 2020.

“Hidden Electrical and Battery Hazards in Commercial Claims,” presented at ESI/Houston Claims Association CE & CLE Educational Afternoon, November 2019

Patents

US Patent #5,417,295, “Method and system for the early detection of the jamming of a core sampling device.” Vikram Rao, Bobby Wilson, and Laban Marsh. May 23, 1995

US Patent #6,788,219, “Structure and method for pulse telemetry.” Cili Sun, Laban Marsh, and Bipin Pillai. September 4, 2004

- US Patent #6,963,290**, “Data recovery for pulse telemetry using pulse position modulation.” Laban Marsh, Cili Sun, Bipin Pillai, and Leonardo Vianna. November 8, 2005
- US Patent #7,068,182**, “Method and apparatus for mud pulse telemetry.” Christopher Golla, Laban Marsh, Paul Rodney, Cili Sun, Bipin Pillai, and Paul Beene. June 27, 2006.
- US Patent #7,106,210**, “Method and apparatus for mud pulse telemetry.” Christopher Golla, Laban Marsh, Paul Rodney, Cili Sun, Bipin Pillai, and Paul Beene. June 12, 2006
- US Patent #7,167,101**, “Method and apparatus for telemetry.” Christopher Golla, Laban Marsh, Paul Rodney, Cili Sun, Bipin Pillai, and Paul Beene. January 23, 2007
- US Patent #7,216,533**, “Methods for using a formation tester.” Doug McGregor, Gregory Gilbert, Mark Proett, James Fogal, David Welshans, Glenn Gray, Svetosar Simeonov, Laban Marsh, Jean Michael Beique, and James Stone. May 15, 2007
- US Patent #7,394,064**, “Measuring the weight on a drill bit during drilling operations using coherent energy.” Laban Marsh. July 1, 2008
- US Patent #7,444,362**, “Method and system for sending a reduced representation of logging data to a log analysis application.” Laban Marsh, Robert Schave, and Alp Kozak. October 28, 2008
- US Patent #7,480,207**, “Filtering and detection of telemetry.” Laban Marsh. January 20, 2009
- US Patent #7,628,227**, “Measuring the weight on a drill bit during drilling operations using coherent energy.” Laban Marsh. December 8, 2009
- US Patent #7,777,643**, “Optical communications with a bottom hole assembly.” Cili Sun, Laban Marsh, Billy Bankston, and Jay Martin. September 17, 2010
- US Patent #7,966,875**, “Methods and apparatus for measuring formation properties.” Mark Proett, James Fogal, James Dudley, Laban Marsh, David Welshans, Jean Michael Beique, John Hardin, William Hendricks, Gregory Gilbert, Mark Sitka, and James Stone. June 28, 2011
- US Patent #8,880,349**, “Mud pulse telemetry.” Bipin Pillai, Laban Marsh, James Dudley, and Ronald Spross. November 4, 2014
- US Patent #9,068,442**, “Determining the order of devices in a downhole string.” Christopher Golla and Laban Marsh. June 30, 2015
- US Patent #9,417,353**, “Remote processing of well tool sensor data and correction of sensor data on data acquisition system.” Laban Marsh, Stuart Sargeant, and Barry McKay. August 16, 2016
- US Patent #9,638,033**, “Mud pulse telemetry.” Bipin Pillai, Laban Marsh, James Dudley, and Ronald Spross. May 2, 2017
- US Patent #9,785,675**, “System and method for classifying and storing well data.” Laban Marsh and Wilbert Chenevert. October 10, 2017



US Patent #10,465,504, "Sensor data compression for downhole telemetry applications." Chris Gao, Laban Marsh, and Paul Rodney. November 5, 2019

US Patent #10,472,956, "Mud pulse telemetry." Bipin Pillai, Laban Marsh, James Dudley, and Ronald Spross. November 12, 2019