

Smith Leggett

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Education

- 2018 – May 2022 *Ph.D. Petroleum Engineering*
Texas A&M University; GPA: 4.0
Advisors: Dr. Dan Hill and Dr. Ding Zhu
Dissertation: "Investigations of the Low-Frequency Distributed Acoustic Sensing Response to a Propagating Hydraulic Fracture."
- 2010 – 2014 *B.S. Mechanical Engineering*
The University of Texas at Austin; GPA: 4.0
Conducted undergraduate research in thermal/fluid/systems modeling of waste heat recovery from the exhaust of a diesel engine.

Conference Papers

- In Press Leggett, S., Kerr, E., Zhu., D., Hill, A.D., (2022). "Interpretation of Fracture Initiation Points by In-Well LF-DAS in Horizontal Wells." SPE Hydraulic Fracturing Technology Conference and Exhibition 2023. SPE-212328-MS
- 2022 Leggett, S., Kerr, E., Zhu., D., Hill, A.D., (2022). "Rapid Estimations of Dynamic Hydraulic Fracture Fronts from Cross-well Low-Frequency Distributed Acoustic Sensing Strain-Rate Measurements". Unconventional Resources Technology Conference 2022. URTEC-3722728-MS. <https://doi.org/10.15530/urtec-2022-3722728>

Peer Reviewed Journal Publications

- In Preparation Leggett, S., Kerr, E., Zhu., D., Hill, A.D., (2022). "Shape Factors to Improve Estimates of Hydraulic Fracture Geometry from the Zero Strain Rate Location Method Using Low-Frequency Distributed Acoustic Sensing Measurements." *Interpretation*.
- 2022 Leggett, S., Reid, T., Zhu., D., Hill, A.D. (2022). "Experimental Investigations of the Low-Frequency Distributed Strain-Rate Response to a Propagating Hydraulic Fracture," SPE-209135-PA. doi: <https://doi.org/10.2118/209135-PA>.
- 2021 Leggett, S., Zhu., D, Hill, A.D. (2021). "Thermal Effects on Far-Field Distributed Acoustic Strain-Rate Sensors." SPE Journal. doi: <https://doi.org/10.2118/205178-PA>.
- 2014 Allouache, A., Leggett, S., Hall, M., Tu, M. et al., (2014). "Simulation of Organic Rankine Cycle Power Generation with Exhaust Heat Recovery from a 15 liter Diesel Engine," *SAE Int. J. Mater. Manf.* 8(2):227-238, 2015, doi:10.4271/2015-01-0339.

Work Experience

- 2022 *Student Intern – National Energy Technology Lab – Department of Energy*
Conducted a literature review on pore-scale micro-CT imaging of gas hydrates in synthetic and natural pressure cores; processed X-ray CT images for visualization of cores; proposed experiments for gas hydrate pressure cores.

- 2018 – 2022 *Graduate Research Assistant – Texas A&M University*
Performed lab-scale hydraulic fracture experiments with embedded fiber optic sensors and developed models to characterize hydraulic fracture propagation from low-frequency distributed acoustic sensing (DAS) strain and strain-rate measurements.
Constructed and integrated thermal and geomechanical models to interpret distributed temperature and acoustic sensing (DTS/DAS) data.
Analyzed fiber optic data from the DOE funded Austin Chalk Eagle Ford Field Laboratory
- 2019 – 2020 *Part Time Engineering Consultant – PetroEdge IV*
Managed oil and gas production allocations for leases employing huff-n-puff IOR.
Performed decline curve analysis and economics on frac-hit wells.
Forecasted production and ran economic cases for a gas lift workover program.
- 2017 – 2018 *Facilities Engineer (Field based) – Occidental Petroleum*
\$700M+ capital efficiency improvement by modularizing vintage test separators.
Led the management of change (MOC) program for facility maintenance projects.
Sized and specified pressure vessels, centrifugal pumps, pipes, valves, fittings, and pressure safety valves for tank batteries.
- 2016 – 2017 *Workover/Completion Specialist (Field based) – Occidental Petroleum*
Managed well sites for workover operations including cement squeezes, sucker rod, ESP, gas lift, acidizing, wireline, slickline, and casing repairs.
Led a culture of safe operations through a behavior-based observation program.
- 2014 – 2016 *Production/Completions Engineer – Occidental Petroleum*
Designed and executed value added well repair, enhancement, and production optimization projects including paraffin removal, acid stimulations, artificial lift parameter adjustments, lift revisions and repairs of gas lift, plunger lift, sucker rod pump, and ESP systems.
Led the recompletion of two vertical wells with hydraulic fracture treatments in up hole pay.
Designed vertical gas well fracture treatments; wrote slickline, wireline, and coil-tubing cleanout procedures; created frac, coiled tubing, and workover cost estimating tools.

Teaching Experience

- 2022 *Instructor: Nodal Analysis and Well Optimization (PETR 5314)*
- 2020 *Associate Certification*
Center for the Integration of Research, Teaching, and Learning (CIRTL). Trained on latest research into effective STEM teaching practices.
- Fall 2019 – Spring 2020 *Guest Lecturer/Teaching Assistant/Grader for Production Engineering (PETE 662)*
Volunteered to serve as the teaching assistant for an introductory engineering course.
Held weekly office hours. Created homework and exam solutions.

Memberships/Organizations/Service/Personal

Society of Petroleum Engineers

Husband and father

Volunteered one semester to teach English to Palestinian refugees in Irbid, Jordan