Mao Romero Velasquez, PhD

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Senior Directional Drilling | Remote Drilling Operations | Applied Drilling Technology

Analyze Engineering Processes & Establish Sustainable Solutions to Drive Cross-Functional Process Efficiencies

Analytical and data-driven professional with extensive experience in drilling operations covering directional drilling, applied drilling technology, and remote automation drilling. Track record of conducting effective research in enhanced oil recovery using low-salinity waterflooding and oil-in-water emulsion into rock core samples. Proven success tracking current operations and best practices and engaging collaborative efforts to improve processes. Fluent in Spanish, Portuguese, and English.

Technical Skills

- Directional Drilling Software: Logix & Insite, Compass, WellPlan, & WellArquitec
- Reservoir Simulation Software: IMEX, STARS, GEM, & CMOST
- Computing Languages: MatLab, Fortan, & Python
- Other: Microsoft Office, AutoCAD, LadView, & OPTO 22 PAC Controllers

Professional Experience

HALLIBURTON, Houston, TX

Drilling Automation Engineer 2019 - 2020
Performed remote drilling of oil and gas wells across Norway, Saudi Arabia, Iraq, and USA (North East, Permian, Colorado, and North Dakota) with focus on saving operational cost for clients.

- Controlled rotary steerable motor (iCruise) parameters in real-time using Logix automation software, actualizing well plan design and wellbore placement with minimal tortuosity, thus reducing operator time and costs, and driving faster job completion.
- Identified and analyzed natural tendencies of bottom-hole assembly and introduced into automation software, resulting in optimization of steering capabilities.

Apply Drilling Technology Engineer 2018 - 2019
Monitored drilling operations in real time with focus on increasing efficiencies and avoiding non-productive time due to drill-string damage, measure tool failures, and wellbore instability.

- Adjusted drilling parameters, including flow rate, weight on bit, and drill-string rotation, as needed, to mitigate vibration and improved rate of penetration.
- Completed daily reports, covering vibration analysis, torque and drag plots, base time and depth log plots, and recommendations for optimizing drilling performance.

Senior Directional Drilling, Sperry Drilling 2012 – 2015 / 2017 - 2018
Led directional drilling across CA, CO (Niobrara and Codell formations), ND (Bakken and Three Forks formations), WY (powder river basin). Drilled oil and gas wells were following well plan design or new geologist target in lateral section using positive displacement motor (mud motor).

- Conducted bit projection calculations after every survey for wellbore placement and anti-collision purpose, leveraging findings to maintain safe practices in alignment with company policies.

POLLUTION CONTROL TECHHNOLOGIES, Laramie, WY 2016 - 2017

Senior Engineer
Executed experiments in laboratory setting for removal of Mercury element from combustion gases generated in coal plant and conducted under controlled conditions.

- Designed and implemented automatic control process using analog and digital input / output signal, controlling temperature, pressure and time while making power product.

NATIONAL UNIVERSITY OF ENGINEERING, Peru (Temporary Position) 2015

Visiting Professor, Petroleum & Mechanical Engineering Graduate Programs
Enhanced oil recovery methods, directional drilling, and economics applied to natural gas and renewable energy.

- Taught 3 energy sector courses to Master and PhD students, ensuring preparedness upon entry into professional environments.

UNIVERSITY OF WYOMING, USA 2009 - 2011

Research Assistant, Enhanced Oil Recovery Institute
Conducted enhanced oil recovery laboratory experiments injecting water with low salinity concentration into Berea and sandstone core rock samples for single phase and 2 phases (oil / water).

- Participated in CO2 miscible and immiscible injection into core samples to evaluate improvements in oil recovery.
- Simulated dynamic reservoir for oil field with 178 producer and injected wells in WY to collect historical data of last 40 years, leveraging findings to forecast next 20 years production / waterflooding performance and drive improvements in oil recovery.

Education

- Currently Attending: Post-Graduate Program in Intelligence and Machine Learning Certification, Texas McCombs at University of Texas at Austin - McCombs School of Business, 6-month online program
- **Post-Doctorate in Petroleum Engineering**, Enhanced Oil Recovery Institute at the University of Wyoming, Laramie, WY
- **Doctor of Philosophy (PhD) in Mechanical Engineering, Focus: Petroleum & Energy**, Pontifical Catholic University of Rio de Janeiro (PUC-Rio), RJ, Brazil
- Two years' experience writing program using Fortran language to model flow of single-phase and 2-phase (oil and water) fluid invading into capillary network which represented the porous medium of rock core sample
- **Master of Science (MS)**, Mechanical Engineering, Focus: Thermal Science, Pontifical Catholic University of Rio de Janeiro, RJ, Brazil
- Used MatLab to model wax deposition that occurs during offshore oil transportation using pipelines
- **Bachelor of Science (BS)**, Naval Engineering, National University of Engineering, Peru

Publications

1. "Study of low-salinity waterflooding for single- and two-phase experiments in Berea sandstone"
   Authors: Mao I. Romero, Pubudu Gamage, Haifeng Jiang, Curtis Chopping, Geoffrey Thyne. Journal of: Petroleum Science and Engineering. Vol. 110, p, 149–154. 10/2013
2. "Capillary-driven mobility control in macro emulsion flow in porous media".
   Authors: Victor Raul Guillen, Mao I. Romero, Marcio S. Carvalho and Vladimir Alvarado, Journal of: Multiphase Flow. Volume 43, p. 62-65, 07/2012
3. "Experiments and Network Model of Flow of Oil-Water Emulsion in Porous Media"
   Authors: Mao I. Romero, Marcio S. Carvalho and Vladimir Alvarado, Journal: Physical Review E, v. 84, p. 046305, Section: Fluid dynamics. 10/2011
4. "Numerical Analysis Wax Deposition in a Pipeline due to Molecular Diffusion"
   Authors: Pereira, F. F.; Assunção, P. M.; Oliveira, R.; Romero, O. J.; Romero, Mao, Journal: fourth Latin American CFD Workshop Applied to the Oil & Gas Industry, RJ, Brazil, 2010

REFERENCE

- Julien Mark, PhD. Global Drilling Automation Manager, Halliburton, e-mail: Julien.Marck@halliburton.com
- Naveen Nair. Drilling Engineering Design Manager, Sperry at Halliburton, e-mail: Navee.Nair@halliburton.com
- Laramie Coker. Directional Drilling Coordinator, Sperry at Halliburton. Laramie.Coker@halliburton.com