JERJES W. PORLLES, Ph.D.

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Summary

Experienced petroleum engineer with a strong background in reservoir, completion, and production engineering across conventional, unconventional, and geothermal reservoirs. Holding a Ph.D. in Energy Engineering from the University of North Dakota, he has led innovative projects in reservoir simulation, well design, enhanced oil recovery, and geomechanics. In his recent role, Dr. Porlles has been actively involved in business development initiatives for Latin America, fostering strategic collaborations and expanding energy technology outreach in the region. He has also contributed to the design of advanced geothermal wells and energy storage wells, focusing on wellbore integrity, efficient completions, and sustainable production strategies. His technical expertise and business acumen make him a valuable asset in the evolving energy landscape.

Education

PhD. Energy Engineering, University of North Dakota, US **Dec 2024**
Dissertation proposal: "Hydraulic Fracturing Modeling and Reservoirs Simulation Optimization of Enhanced Geothermal System for Economical Energy Production."

M.Sc. Petroleum Engineering, The University of Utah, Utah, US **Dec 2019**
Thesis: "Integrated porosity method for estimating the OGIP in the Muerto Formation (unconventional) of N.W. Peru"

B.S. Petroleum Engineering, Universidad Nacional de Ingeniería, Lima, Peru **Dec 2003**
Thesis: "Productive behavior of horizontal wells through the design of a partial penetration pressure test."

Relevant Experience

Reservoir Engineer at Teverra. **May 2022– April 2025**

- Developed and modeled well for geothermal and energy storage applications, including complex wells in Alaska, applying advanced modeling and engineering practices to ensure safety, efficiency, and subsurface integrity.
- Developed and optimized 3D numerical reservoir models for synthetic geothermal reservoirs using **CMG-STARS** and Volsung, improving energy extraction efficiency.
- Performed geomechanical modeling and wellbore stability analysis for super-hot rock geothermal reservoirs, utilizing **ABAQUS** to simulate complex stress conditions.
- Conducted production optimization studies using **PIPESIM**™, integrating reservoir simulation and completion techniques to enhance fluid flow and thermal recovery in geothermal wells.
- Spearheaded business development initiatives across Latin America, identifying opportunities, fostering client relationships, and promoting Teverra's regional subsurface engineering and energy solutions.
- Developed and modeled well for geothermal and energy storage applications, including complex wells in Alaska, applying advanced modeling and engineering practices to ensure safety, efficiency, and subsurface integrity.

Graduate Research Assistant at The University of North Dakota. **Jan 2020– Dec 2021**

- Geomechanical and reservoir modeling characterization of unconventional and geothermal reservoirs in the Williston Basin (USA) modeling a discrete fracture network and continue fracture network, using **3DEC** and **XSITE**.
- Developing lab test analysis to determine geomechanical parameters of unconventional formations to design hydraulic fracturing in the Department of Petroleum Engineering laboratories at UND.
- Integrated numerical simulations and field data to optimize enhanced geothermal system (EGS) recovery using **RESFRAC** and CMG-STARS, improving heat extraction efficiency and sustainability.
- Conducted advanced production and completion (well design) analysis for geothermal and unconventional formations, leveraging Pipesim to optimize well designs and production strategies.
- Conducted **CO_2 Huff-and-Puff** enhanced oil recovery (EOR) simulations in unconventional formations, optimizing production strategies using **CMG-GEM** and **ECLIPSE** to evaluate reservoir performance. Executed Core-Fluid interaction tests in laboratory settings, analyzing reservoir rock and fluid properties to enhance recovery mechanisms in both petroleum and geothermal reservoirs.

Production and Reservoir Engineering Instructor for Prisma Energy SRL - Peru. **Oct 2019 – Jan 2020**

- Instructing advanced reservoir engineering concepts, including EOR techniques, CO_2 and waterflooding optimization, and production forecasting, using **CMG**, Eclipse, and Kappa Suite.
- nstructor for reservoir and production geothermal engineering, focusing on geothermal energy extraction, well performance optimization, and sustainable resource development, using **GEOPHIRES** and **MRST-MATLAB** for geothermal reservoir simulations.

Production and Reservoir Engineer, Alliance Schlumberger – Ecopetrol, Casabe, Colombia. **Jul 2014 – Sep 2015**

- Reservoir surveillance and reserves estimation for production and injection optimization, utilizing SAHARA™, OFM, and Eclipse to analyze waterflooding and polymer injection performance in the Casabe oilfield.
- Designing, implementing, and supervising well testing operations, including pressure buildup, drawdown, and production logging tests (**PLT**) in horizontal wells, using **SAPHIR™** for well test interpretation and PDG-ESP data analysis.
- Monitoring and optimizing waterflooding and polymer injection processes to enhance oil recovery, ensuring efficient fluid displacement and sweep efficiency in a mature oilfield.
- Developed well designs using **WellCat,** optimizing casing and tubing stress analysis to ensure well integrity and

performance under complex operating conditions.

Reservoir and Well testing Engineer, Repsol Exploración Peru, Lima, Peru **Jul 2008 – Dec 2013**

- Reservoir characterization and Integrated reservoir modeling of gas condensate field (Kinteroni, Peru) and heavy oil field (Iquitos-Peru), using PETEX suit (**Prosper, GAP, MBAL, REVEAL)**
- Production allocation of gas condensate by **TIETO™** (Energy Component).
- Training on Margarita and Huacaya gas fields (HP-HT) Santa Cruz, Bolivia.
- Core characterization of sedimentary rocks to determine flow units and capillary pressure curves by **SCAL** from ECLIPSE™. PVT characterization by empirical correlations and **PVTi** from ECLIPSE™.
- Reserves evaluation and calculation to be validated by an internal and external auditor, according to PMRS.
- Design, implementation, supervision, and interpretation of Buildup, Draw Down, and PLT in gas condensate and heavy oil wells by SAPHIR™. Training by Kappa Bs.As, Argentina.

Reservoir Engineer, Petrobras, Talara, Peru **Jul 2004 – Jun 2008**

- Waterflooding and dry gas injection monitoring and surveillance.
- Design, implementation, supervision, and interpretation of Fall-off and injectivity test in dry gas wells.
- Design and monitor hydraulic fracturing for low permeability reservoirs (Ostrea and Mogollon Formations) by **Fracpro**™. All wells must be fractured due to low permeability.
- Training on drilling, hydraulic fracturing, workover, and fishing operations.

Volunteer Work and Affiliations

- Member of SPE Geothermal Technical Section Team as a Director of Geothermal Engineering.
- Member of ARMA, AAPG, and SPE.
- President of ARMA student chapter The University of North Dakota 2020-2021.
- President of **SPE** student chapter National University of Engineering – 2003 Lima, Peru.
- Member of Technical Committee: **SPE** Water Management Workshop for Oil & gas: Best practicesand New Technologies. Lima - September 2015

Skills

Language:

- Spanish native speaker.
- English (proficient reading, writing, listening, and speaking)//Portuguese (proficient reading and listening).

Computer:

- Programming Matlab, Python. Petroleum software: Pipsesim, Kappa suit, CMG, Resfrac, Eclipse, and E- stimplan.
- Geothermal software: Volsung, RESFRAC.

Publications Record

- Porlles J. (2024).Borehole Stability Analysis for an Injection Well in Superhot Rock Drilled with Millimeter Wave Technology. 58thUS Rock Mechanics/Geomechanics Symposium Golden, Co, USA.
- Afari, S., Ling, K., Sennaoui, B., Maxey, D., Oguntade, T., & Porlles, J. (2022). Optimization of CO2 huff-n-puff EOR in the Bakken Formation using numerical simulation and response surface methodology. Journal of Petroleum Science and Engineering, 215, 110552. https://doi.org/https://doi.org/10.1016/j.petrol.2022.110552.
- Afari, S. A., Ling, K., Maxey, D., Sennaoui, B., & Porlles, J. H. (2023). Experimental investigation of gaseous solvent huff-n-puff in the Middle Bakken Formation. Petroleum Science, 20(6), 3488–3497. https://doi.org/https://doi.org/10.1016/j.petsci.2023.07.007
- Porlles J (2024) An Experimental Study of the Effect of Long-Term Time-Dependent Proppant Behavior Under HP-HT Reservoir Conditions. SPE Annual Technical Conference and Exhibition, October 16–18, 2023 (San Antonio, TX).
- Porlles J. (2024) Geo-Mechanical Characterization of a Well to Store Hydrogen. SPE Annual Technical Conference and Exhibition. 57th US Rock Mechanics/Geomechanics Symposium Atlanta, USA.
- Porlles, J., Afari, S., & Jabbari, H. (2024) Simulation-Based Economic Modeling of Hydraulic Fracturing for Enhanced Geothermal System. IntechOpen. doi: 10.5772/intechopen.112622
- Porlles J. (2023) Geomechanics Considerations for Superhot Rock and Millimeter Wave Drilling. 2023 Geothermal Rising Conference – Reno, NV
- Porlles J. (2023) Synthetic Geothermal Reservoirs: Optimized Drilling Patterns for Cost-Effective Efficient Energy. Geothermal Rising Conference – Reno, NV
- Porlles J. Alamooti, M. (2023) Comparison and Analysis of Multiple Scenarios for Enhanced Geothermal Systems Designing Hydraulic Fracturing . PROCEEDINGS, 48th Workshop on Geothermal Reservoir Engineering Stanford University, Stanford, California, February 6-8, 2023.
- Eagle-Bluestone, J., Alamaoti, M., Porlles, J., Gosnold, W. (2021) Book title: "Utilization of thermal potential of abandoned wells: Fundamentals, applications and research update". Elsevier.
- Gosnold, W; Alamooti, M; Fry, N; Porlles, J. (2021). Decarbonizing by Pivoting from Fossil Fuels to Geothermal. GRC – Reno.
- Porlles J, Jabbari H., (March 2022). Simulation-based Patterns Optimization of Enhanced Geothermal System. 56thUS Rock Mechanics/Geomechanics Symposium Santa Fe, New Mexico, USA.
- Porlles J, Jabbari H., (March 2022). Hydraulic Fracturing modeling for Enhanced Geothermal Systems. 56thUS Rock Mechanics/Geomechanics Symposium Santa Fe, New Mexico, USA.
- Alamooti, M.; Porlles, J; Fry, N.; et al. (October, 2021): Mandaree, North Dakota: A case study on oil and gas well

conversion to geothermal district heating systems for rural communities. In Decarbonizing existing oil and gas fields via EGS and direct use. 2021 Geothermal Rising Conference, San Diego CA.
- Porlles J, Panja P, McLennan J, Sorkhabi R., (March 2020). Integrated porosity methods for estimation of gas-in-place in the Muerto Formation of Northwestern Peru. Journal of Petroleum Science and Engineering. https://doi.org/10.1016/j.petrol.2021.108558.
- Morales, W., Porlles, J., Rodriguez, J., Taipe, H., & Arguedas, A. (2018, August 9). First Unconventional Play From Peruvian Northwest: Muerto Formation. Unconventional Resources Technology Conference. doi:10.15530/URTEC-2018- 2903064. https://www.onepetro.org/conference-paper/URTEC-2903064-
- Porlles, J. W. (2014, September 24). Prediction of Horizontal Well Production Performance by Design of a Pressure Test of Partial Penetration in Heavy Oil Fields. Society of Petroleum Engineers. doi:10.2118/171060-MS https://www.onepetro.org/conference-paper/SPE-171060-
- Porlles, J. W. (2014, May 21). Strategy for the Development of Shale Gas in Peruvian Fields. Society of Petroleum Engineers. doi:10.2118/169469-MShttps://www.onepetro.org/conference-paper/SPE-169469-
- Agudelo, O. C., Acosta, T. J., Tellez-Mejia, C. E., Gonzalez-Bello, P., Navas, E. E., Duran, J. P., & Porlles,
- J. (2016, June 13). Casabe: Water Injection Optimization and Surveillance in a Mature Field. Society of Petroleum Engineers. doi:10.2118/180774-MS https://www.onepetro.org/conference-paper/SPE-180774-
- Astudillo, D. F., & Porlles, J. W. (2010, January 1). Multidisciplinary Workflows Applied in Reservoir Characterization: A Heavy Oil Field Case Study During Early Stages of the Asset Life-Cycle. Society of Petroleum Engineers. doi:10.2118/139236-MS. https://www.onepetro.org/conference-paper/SPE-139236-
- Huerta Quinones, V. A., Lanchimba, A. F., & Porlles, J. W. (2012, January 1). Modeling Condensate Banking Phenomena in Lean Gas Condensate Reservoirs. Society of Petroleum Engineers. doi:10.2118/153388-MS https://www.onepetro.org/conference-paper/SPE-153388-
- Mora, G., Bonfanti, B., Porlles, J., Casas, J., & Agudelo, O. (2016, June 13). Channeling Identification: A Routine Surveillance Exercise for SuccessfulWaterflooding Management in Casabe Alliance. Society of Petroleum Engineers. doi:10.2118/180814-MS. https://www.onepetro.org/conference-paper/SPE-180814-
- Azancot. A., Porlles, J (2015). Alternative for acquisition and analysis of production profiles in a mature field with multilayer deposit and high water cut.ACIPET/TEC-263 XVI Colombian Petroleum Congress. Bogotá, Colombia.
- Porlles, J. (2011). Modeling Condensate Banking by Well Testing. INGEPET Peruvian petroleum congress. Lima, Peru. EXPL-5-JP-92-N
- Porlles, J. Acosta, T. J., Tellez-Mejia, C. (2015) Integración y determinación de propiedades de yacimientos y daño a la formación mediante el uso de sensores de fondo instalados en bombas ESPCP- Campo Casabe. ". SPWLA C.A.F.E. Bucaramanga – Colombia. http://www.uis.edu.co/webUIS/es/rss/imagenes/noticia_1153_5020_2.pdf

References

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