Oscar Cortez

Senior Reservoir Engineer | Consulting & Digital Transformation Expert

@ oscarcortez@me.com 3465810874 Houston, Texas /oskrgab oskrgab

PROFESSIONAL SUMMARY

Senior Reservoir Engineer with 12+ years of upstream experience specializing in reservoir simulation, production forecasting, and reserves estimation for conventional and unconventional assets. Proven track record in delivering high-impact consulting solutions for complex reservoir challenges across upstream operations, including Carbon Capture & Storage (CCS), waterflooding optimization, and field development planning. Expert in combining traditional reservoir engineering methodologies with advanced data analytics and digital technologies to drive asset performance optimization and strategic decision-making. Master's degree in Analytics from Georgia Tech, bringing quantitative rigor to reservoir characterization and uncertainty management.

CORE COMPETENCIES

Reservoir Engineering Expertise

Reservoir Simulation | Production Forecasting | Reserves Estimation | Material Balance | Pressure Transient Analysis | Fluid Characterization | Well Testing | Field Development Planning | Waterflooding

Technical Software & Tools

Eclipse | Intersect | Petrel | Techlog | Saphir | OFM | Python | MATLAB | Power BI | SQL

Reserves & Economics

SEC Guidelines | PRMS Standards | Reserves Certification | Probabilistic Forecasting | Type Curve Analysis | Economic Evaluation | Risk Analysis

Digital & Analytics

Data Analytics | Machine Learning | Uncertainty Quantification | Cloud-Based Platforms | Automation & Workflows

Consulting & Leadership

Client Engagement | Team Leadership | Multidisciplinary Collaboration | Technical Mentoring

PROFESSIONAL EXPERIENCE

Senior Reservoir Engineer – CCS Consulting

SLB – Digital Subsurface Solutions 11/2022 – Present

Houston, Texas

- **Reservoir Engineering Consulting:** Lead technical reservoir engineering for Carbon Capture & Storage (CCS) consulting projects across the US, conducting site screening, injection capacity analysis, and dynamic modeling for clients ranging from 40-200 MT CO2 injection capacity over 20-30 year project lifecycles
- **Dynamic Modeling & Simulation:** Develop and execute high-resolution reservoir simulation models using Eclipse CO2STORE and CO2SOL modules, performing plume migration analysis, pressure pulse forecasting, and Area of Review (AoR) calculations for regulatory permit applications (EPA Class VI)
- **Production Forecasting & Reserves:** Design probabilistic production forecasting workflows combining decline curve analysis, type curve methods, and reservoir simulation to deliver P10/P50/P90 profiles for new well candidates and workover opportunities, supporting field development planning for major operators
- **Client-Facing Technical Leadership:** Manage relationships with client technical teams and senior management at major energy companies, delivering reservoir engineering recommendations and strategic insights that drive investment decisions and regulatory approvals
- **Advanced Analytics Integration:** Apply machine learning and statistical methods including Tensor Regression to develop surrogate reservoir models for pressure pulse prediction, enabling thousands of rapid scenario analyses for Area of Review calculations in CCS projects

- **Digital Transformation:** Develop custom software solutions using Python to automate reservoir engineering workflows, enabling rapid prototyping of Field Development Planning tools and probabilistic forecasting applications deployed to client teams

Reference: Ibrahim El-Sayed – ibrahim.el-sayed@hotmail.com

Senior Reservoir Engineer – Asset Performance Solutions

Schlumberger – Shaya Consortium | 03/2016 – 11/2022

Quito, Ecuador

- **Reservoir Simulation & Modeling:** Led development of high-resolution dynamic models (1-3 MM cells) for 17-field asset (223 MMBls 2P reserves), performing history matching, uncertainty analysis, and production forecasting for waterflooding and horizontal well development strategies
- **Reserves Estimation & Certification:** Conducted reserves estimation using Decline Curve Analysis (DCA), Type Wells, and Reservoir Simulation methods, working directly with Ryder Scott auditors to certify Proved Developed Producing (PDP), Proved Undeveloped (PUD), and 2P/3P volumes in compliance with SEC and PRMS guidelines
- **Production Forecasting:** Designed and validated production calculations for quarterly rolling forecasts and annual Field Development Plans, utilizing probabilistic approaches (Monte Carlo simulation) to quantify uncertainty and manage risk for 500+ wells across multiple reservoirs
- **Field Development Planning:** Created integrated Field Development Plan workflows combining reservoir simulation, decline curve analysis, economic evaluation, and facilities planning to optimize $80M+ annual capital investment decisions and maximize asset value
- **Technical Analysis & Evaluation:** Performed pressure transient analysis, production allocation, material balance calculations, and waterflooding surveillance for ongoing field operations, delivering technical recommendations for well interventions and pattern optimization
- **New Well & Workover Proposals:** Identified and proposed 50+ new well and workover candidates using reservoir simulation, volumetric analysis, and nodal analysis, resulting in 10+ successful horizontal wells with average initial production of 1,500 BOPD and incremental production increase from 5 kBOPD to 30 kBOPD at field level
- **Waterflooding Strategy:** Led subsurface strategy for waterflooding implementation across multiple fields, conducting analytical screening, pattern design using streamline allocation, and performance monitoring resulting in 7 kBOPD incremental production
- **Client & Stakeholder Management:** Collaborated with National Oil Company (PetroEcuador) technical teams and management to align reservoir engineering deliverables with contractual requirements, annual work plans, and investment strategies
- **Data Analytics & Automation:** Developed Python-based tools and Power BI dashboards to automate reservoir engineering workflows for production forecasting, reserves analysis, and field development planning, reducing analysis time from days to hours

Reference: Edgar Fernandez – erincon2@slb.com

Reservoir Engineer

Schlumberger – Kamana Consortium | 02/2015 – 03/2016

Quito, Ecuador

- Led multidisciplinary reservoir engineering efforts for 3-field asset exploitation strategy, performing reservoir simulation, production forecasting, and subsurface uncertainty management
- Conducted pressure and rate transient analysis for well performance evaluation and reservoir characterization
- Created comprehensive databases of fluid and rock properties through PVT analysis validation, core data QC, and petrophysical interpretation
- Developed reservoir simulation models for field performance prediction and development scenario optimization
- Provided technical recommendations for new well locations and workover candidates based on integrated reservoir analysis

Reference: Claudio Fonseca – cfonseca6@slb.com

Reservoir Engineer

Schlumberger – Petrotechnical Services (PTS) | 08/2013 – 02/2015

Quito, Ecuador

- Delivered integrated reservoir characterization and simulation consulting projects for three major fields (Indillana, Eden-Yuturi, Sacha) in Ecuador, providing technical solutions to optimize development scenarios

- Performed production analysis, data quality control, production allocation, and material balance calculations to support reserves estimation and field development decisions
- Conducted PVT analysis validation and fluid characterization studies for reservoir simulation input
- Executed Special Core Analysis (SCAL) data quality control and created saturation functions using capillary pressure and relative permeability data
- Validated well events consistency with production and field reports to ensure data integrity for reservoir modeling

Reference: Isaac Cols – imorantes@slb.com

EDUCATION

Master of Science in Analytics

Georgia Institute of Technology | 01/2021 – 05/2023

Atlanta, Georgia

- Advanced coursework in Machine Learning, Statistical Methods, High-Dimensional Data Analytics, Simulation & Modeling
- Capstone Project: Applied Tensor Regression to develop surrogate models for pressure pulse prediction in CCS projects, enabling rapid Monte Carlo analysis for Area of Review calculations

Bachelor of Science in Petroleum Engineering

Escuela Superior Politécnica del Litoral (ESPOL) | 03/2008 – 04/2013

Guayaquil, Ecuador

CERTIFICATIONS & PROFESSIONAL DEVELOPMENT

Reserves Estimation & Reporting (SLB)

2019

Advanced Reservoir Simulation (SLB)

2017 – 2020

Machine Learning – Stanford University

2016 – Present

Data Science with Python

2020 – Present

KEY PROJECTS & TECHNICAL ACHIEVEMENTS

- **CCS Consulting Portfolio:** Delivered 5+ major CCS feasibility studies including Air Products (Louisiana, 200 MT CO2), Clean Energy (California, 40 MT), and Tallgrass (Wyoming, 10 MT/year), providing reservoir engineering expertise for site characterization, capacity estimation, and regulatory compliance
- **High-Resolution Reservoir Modeling:** Pioneered development of 1.5-2 ft vertical resolution models with sub-unit characterization for heterogeneous reservoirs, achieving predictive accuracy of 85%+ for water breakthrough timing in waterflooding projects
- **Horizontal Well Optimization:** Developed real-time reservoir modeling workflow using LWD data during drilling operations, optimizing ESP selection and reducing equipment pulling costs by $0.7M per well through accurate production forecasting
- **Reserves Certification:** Led reserves estimation process for 223 MMBls 2P asset, coordinating with Ryder Scott auditors and delivering probabilistic forecasts using uncertainty analysis that supported successful reserves booking
- **Waterflooding Implementation:** Designed and executed waterflooding strategy for depleted fields including pilot screening, pattern optimization using streamline analysis, and full-field expansion resulting in 6x production increase (5 to 30 kBOPD)
- **Cloud-Based Simulation:** Led transition to cloud-based reservoir simulation using SLB DELFI On-Demand platform, reducing simulation runtime by 92-96% and enabling agile decision-making for large-scale models (3M+ cells)
- **Field Development Planning Automation:** Created comprehensive Python-based FDP tool integrating decline curve analysis, economic evaluation, and activity scheduling, reducing scenario analysis time from weeks to hours for annual planning cycles

SELECTED PUBLICATIONS

- Mejía, S., Guzman, L., Khataniar, S., et al. (2025). "Reservoir Boost AI: Redefining Waterflood Management in Mature Assets." *Abu Dhabi International Petroleum Exhibition and Conference*, Abu Dhabi, UAE. SPE-229361-MS.

- Smith, T., Shukla, P., Mukku, V.K.R., Cortez, O., et al. (2025). "Enhanced Geothermal Systems Modeling and Optimization Workflows for Power Production from Geothermal Reservoirs." *SPE Energy Transition Symposium*. SPE-228334-MS.
- Mejia, S., Cortez, O., et al. (2024). "Unlocking Commingled Production Using Geochemical Production Allocation." *International Petroleum Technology Conference*, Dhahran, Saudi Arabia. IPTC-23972-MS.
- Mendez, M., Cevallos, G., Molina, E., et al. (2019). "From Concept to Execution: A Successful Integrated Exploitation Philosophy." *SPE Reservoir Characterisation and Simulation Conference and Exhibition*, Abu Dhabi, UAE. SPE-196734-MS.
- Naranjo, M.A., Freire, J.L., Lafournère, J.P.B., et al. (2017). "Tackling the Challenges of a Mature Field with Multiple Oil-Water Contacts: Case Study in the Shushufindi-Aguarico Field, Oriente Basin, Ecuador." *SPE Latin America and Caribbean Petroleum Engineering Conference*, Buenos Aires, Argentina. SPE-185491-MS.

PATENTS

- Sorgi, C., **Cortez Gomez, O.G.**, Sheth, S., Tönshoff, T., De Gennaro, V., Maudiut, A. (2025). "Subsurface Geomechanics and Flow Modeling and Quantitative Risk Assessment." U.S. Patent Application Publication No. US 2025/0103782 A1. Filed Sep. 25, 2024. Published Mar. 27, 2025. Assignee: Schlumberger Technology Corporation.

AWARDS & PROFESSIONAL RECOGNITION

- **ECP Reservoir Symposium Winner** (2022): Recognized for innovative real-time horizontal well modeling methodology
- **Reservoir Symposium Finalist** (2023): Co-authored digital transformation case study on cloud-based simulation deployment
- **Innovation Award – SPE Gulf Coast Hackathon** (2023): Developed machine learning solution for CO2 monitoring (34 competing teams)
- **Henri Doll Award for Innovation** (2017): Waterflooding project in mature field revival at Geomarket Reservoir Symposium
- **Harry Cameron Prize for Integration Value** (2017): Global Reservoir Symposium recognition for multidisciplinary collaboration
- **Featured in SLB Success Stories** (2023): Cloud-based reservoir simulation adoption showcased on corporate website and Digital Forum

LEADERSHIP & THOUGHT LEADERSHIP

- **Field Development Planning SIG Leader** (2020-2021): Elected leader for global special interest group, organized 11 technical webinars and monthly newsletter reaching 500+ reservoir engineers worldwide
- **Technical Mentoring:** Mentored 10+ reservoir engineers, data scientists, and graduate students in reservoir simulation, production forecasting, and advanced analytics applications
- **University Instructor:** Guest lecturer for "Elements of Reservoir Engineering" and "Geomodeling & Reservoir Simulation" at Escuela Superior Politécnica del Litoral (2018-2019)
- **Conference Presentations:** Regular presenter at SPE and IPTC conferences on reservoir engineering topics including waterflooding, uncertainty management, and digital transformation
- **Thesis Advisor:** Supervised 5+ graduate thesis projects on topics including waterflooding analysis, material balance for commingled production, and analytical forecasting methods
- **SPE Membership:** Active member of Society of Petroleum Engineers, Ecuador Section (2013-Present)

TECHNICAL SKILLS SUMMARY

Reservoir Engineering Software

Eclipse (Blackoil, Compositional, CO2STORE, CO2SOL), Intersect, Petrel (Static & Dynamic Modeling), Techlog (Petrophysics, Saturation Height Modeling), Saphir (Well Test Analysis), OFM (Production Analysis)

Data Analytics & Programming

Python (Pandas, NumPy, Scikit-learn, PyMC, Matplotlib), MATLAB, SQL, Power BI, Excel (Advanced VBA), Git version control

Digital Platforms

SLB DELFI (On-Demand Reservoir Simulation, Petrel Studio), Microsoft Azure, Cloud-based HPC, Agile Development (Azure DevOps)

Reservoir Engineering Methods

Decline Curve Analysis, Type Curve Analysis, Material Balance, Pressure Transient Analysis, Saturation Height Modeling, Relative Permeability, PVT Analysis, Uncertainty Quantification (Monte Carlo), Geostatistics, Streamline Simulation