MAMMAD MIRZAYEV, PhD, EIT

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**Risk and Asset Management Engineer**

**Innovator | Optimizer | Collaborator**

**PROFILE**

Reservoir Engineer with over 10 years of experience in engineering, asset evaluation, and risk-informed decision making within the energy and infrastructure sectors. Experienced in applying statistical modeling, and leading technical risk assessments, evaluating innovative solutions, and fostering cross-functional collaboration to deliver impactful projects aligned with sustainability and climate change goals. Skilled in data analytics, project coordination, with a strong foundation in safety, cost-benefit analysis, and regulatory compliance.

Expertise in:

* Reservoir Engineering
* Data Analytics
* Reservoir Characterization and Geostatistics

PROFESSIONAL EXPERIENCE

**University of CalgarY,** Calgary, AB **June 2022 – Present**

Reservoir Engineer, Geological CO2 Storage

Assessed the economic capacity and potential for secure geologic storage of CO2 (CCS) at large scale in Alberta. Simulated reservoir models evaluating containment, injectivity, and capacity for CO2 storage in deep saline aquifers to understand limitations and provide reservoir optimization opportunities.

* Performed statistical field appraisal of Cardium, Viking, Nisku, and Leduc formations for gas storage (H2 and CO2) by leveraging p10, p50, p90 values of permeability, porosity, and Kv/Kh CDF plots in a homogeneous simulation model; While Sandstones (Cardium & Viking) have better containment, Carbonates (Nisku & Leduc) have higher injectivity.
* Implemented Monte Carlo simulation to quantify uncertainty in reservoir parameters (permeability, porosity), leading to a more accurate assessment of CO2 storage capacity and enhancing the reliability of carbon sequestration projects.
* Examined the feasibility of storing 5 Mt/year of CO2 into Nisku formation in the Wabamun Lake area; Injection capacity limit is constrained by the formation fracture pressure and could be alleviated with optimum number of wells.
* Developed risk assessment frameworks for evaluating storage site suitability, incorporating statistical analysis, uncertainty quantification, and regulatory requirements.

**Norwegian University of Science and Technology,** Trondheim, Norway **Oct 2019 – Apr 2022**

**Production Optimization Engineer**

Programmed and implemented codes in Python. Developed Mixed-Integer Linear Programming (MILP) models for optimally allocating available lift gas among production wells. Interpreted full-suite well logs of the 20 wells for formation evaluation and ranked wells based on the analysis.

* Analyzed and optimized Step Rate Tests (SRT) of 20 wells from the North Sea clastic reservoirs Brent, Statfjord, and Sognefjord: (1) Achieved 26% reduction in test duration, (2) increased total revenue by $6600 per day.
* Created Excel VBA based simulator which automatically pulls data from the field database and interprets them for production optimization.
* Interpreted full suite well logs of the 20 wells for formation evaluation and ranking wells based on the analysis.
* Spearheaded the integration of real-time data from operational pipelines into reservoir simulation models, accelerating analysis and optimization of Gaslift capacity by 6%.

**State Oil Company of the Republic of Azerbaijan (SOCAR)**, Baku, Azerbaijan **Aug 2018 – Oct 2019**

Geoscientist Feb 2019 – Oct 2019

Managed exploration drilling campaigns, developed 3D geological models for reservoir evaluation, and conducted reserves estimation. Performed well log interpretation and optimized drilling strategies through pressure and fracture gradient analysis.

* Built static geological model in Petrel/SGEMS to be used for reservoir simulation work
* Created pore pressure and fracture gradient trends for optimum mud weight selection
* Interpreted full-suite well logs, including NMR and geophysical logs, for petrophysical analysis and reservoir characterization.

Reservoir Engineer Aug 2018 – Feb 2019

Conducted RTA (Rate-Transient Analysis) and PTA (Pressure Transient Analysis) tests and interpreted them. Ran various simulation cases with different well patterns to optimize field development plan.

* Analyzed wells’ performance via pressure transient analysis (PTA) for potential well treatment purposes to optimize drainage strategy: It resulted in a 4% improvement in wells’ productivity.
* Collaborated with production and operations teams to schedule and prioritize well-intervention activities, leading to reduced downtime and improved well performance tracking.
* Performed sensitivity analyses to identify which uncertain parameters have the most significant impact on reservoir performance.

EDUCATION and professional membership

**PhD –** Chemical and Petroleum Engineering **Jan 2013 – June 2018**

University of Calgary (UCalgary), Calgary, Canada

• CGPA: 3.86/4.0

**BSc** – Petroleum and Natural Gas Engineering **Sep 2008 – June 2012**

Middle East Technical University (METU), Ankara, Turkey

• CGPA: 3.84/4.0 (High Hons)

Software and programming skills

• **Programming:** Python, Matlab

• **Softwares:** geoSCOUT, Accumap, CMG, Petrel, ValNav, Tableau, SQL, VBA, Microsoft Office

**AWARDS/aCHIEVEMENTS**

* Faculty of Graduate Studies Travel Awards – International student (2016)
* Chemical and Petroleum Engineering Graduate Excellence Scholarship Award for PhD students (2014, 2015)
* Petroleum Society of Canada Scholarship (2013)
* Ursula & Herbert Zandmer Graduate Recruitment Scholarship (2012)
* BP Summer Intern Presentation Contest – Second place (2011)
* Middle East Technical University – High Honors Award (2010-2012)
* BP Undergraduate Scholarship (2008 – 2012)
* National Chemistry Olympiad Winner, Azerbaijan (2005, 2006, 2007)
* 38th International Chemistry Olympiad participant, South Korea (2006) - Gold Medal

Volunteering

* **Graduate Student Association,** Academic Standing Committee Volunteer (2014)
* **University of Calgary Teaching and Learning Grant,** Adjudication Committee Volunteer (2015 - 2016)
* **Let’s Talk Science,** Sponsorship Chair (2023 – 2024)
* **ODTU Alumni Association of Canada**, Alberta Province Representative (2025 – Present)