Foued BADROUCHI, PhD

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Current Position: Assistant Professor, Consultant

✓ **University of North Dakota,** PE Department, USA   **June 2021 – Up to date**

Assistant Professor
Drilling simulator lab Manager
Slurry Loop Project Advisor and Manager
SPE UND Faculty Advisor and Presidential Award Winner

Education

University of North Dakota, USA

College of Engineering and Mines

PhD Petroleum Engineering   *2018 – 2021*

University of M'hamed Bougara Boumerdes, Algeria

Faculty of Oil and Chemistry ex-INH

<u>Master Graduation</u>: Master of engineering in Petroleum Production Engineering   *September, 2017*

<p style="text-align:center"><strong style="color:red">Master Degree Valedictorian</p>

<u>Bachelor Graduation</u>: Bachelor degree in Petroleum Production Engineering   *July, 2015*

<p style="text-align:center"><strong style="color:red">Bachelor Degree Valedictorian</p>

Bardo secondary School, Tunis, Tunisia   *2011 - 2012*

Degree: Baccalaureate High school diploma (**Grade: very good 16.62/20**)

Field: Mathematics

Provided Trainings

Advanced Drilling & Well Control Training with Practical Hands-On

One-week training including Drilling Simulator practice. **Insight**: Advanced topics in drilling which are part of well construction will be covered in this course. The sequence of constructing a well will be discussed and practiced through a project. Well Control theory and application as well as real practice on a drilling simulator will be performed.

Advanced PVT Short Course with data QC and PVT Cell Hands-on Experience

One-week training including PVT Cell practice. **Insight**: This course helps participants gain a better understanding of the relationship between the five reservoir fluids with an emphasis on the Siluro-Ordovician crudes found in the Williston Basin and the Cedar Creek Anticline and how to manage problem concerning reservoir fluid properties with increased confidence. The course will present the methods and tools for obtaining values of reservoir fluid properties from laboratory data and correlations.

Naturally Fractured Reservoirs: Geomechanical and Geological Aspects

3 Days training. **Insight**: This course covers geomechanical, geological and engineering concepts, methodology and technology used to characterize, evaluate and manage Naturally Fractured Reservoirs (NFRs). The course explains how to detect and predict subsurface natural fracture occurrence and intensity from cores and well logs than determine fractured rock properties affecting reservoir performance.

Relevant Experience

✓ **ARMA Conference Reviewer,** USA   **January 2018 – Up to date**

Petroleum Drilling Applications
2020 ARMA conference session called

✓ **Schlumberger,** NAG, Algiers, Algeria   **April 2017 – January 2018**

 Reservoir engineer

✓ **SEREPT** (ETAP-OMV Corporation), Sfax   **August – September 2016**

 Title: **Offshore** Well Optimization and Artificial Lift

✓ **CTKCP** ETAP-KUFPEK-CNODC Corporation, Tunis   **August - Septembre 2015**

Title: Production problems: SLK1 study and amelioration of production proposals

✓ **Schlumberger,** Hassi Massaoud Algeria   **July – August 2015**

 Title: One-month Summer Internship Segment: Well Testing

✓ **SEREPT** (ETAP-OMV Corporation), Offshore, Sfax   **July – August 2013**

 Title: One-month work Internship

✓ **CTKCP** ETAP-KUFPEK-CNODC Corporation, Tunis   **July 2014 – August 2014**

Impact of the seasonal temperature variation on the production at SIDI EL KILANI.

Projects

- **Slurry Loop Project: Built a large scale flow loop to study the cuttings transportation in vertical, horizontal and deviated wellbores**
- **Design of a new caliper**
- **Gas condensate reservoirs problems, solutions and development**
- **Well Testing and Saphire Software Lecturer (UND)**
- **And many others**

Conference Talks

Smart Drilling USA 2022, Houston Texas: Speaker   *June 2022*

1- Fishbone Drilling Technology: Alternative Stimulation and Promising Results

2- Insight on Hole Cleaning Research: Cuttings Transportation in Vertical, Horizontal and Deviated Wellbores

International Network of Algerian Scientists, Algeria   *August 2021*

Fundamentals of Fracking and Unconventional Oil Exploration

54th U.S. Rock Mechanics/Geomechanics Symposium, Golden, Colorado   *June 2020*

Analytical and Experimental Analysis of the Rolling and Lifting of Cuttings in Deviated Wellbores

Bakken Oil Show, Williston, North Dakota   *October 2019*

Hole Cleaning Optimization in Deviated Wellbores

Awards

SPE Presidential Award (SPE UND SC)   *2022*

Outstanding Advisor Award, UND   *2022*

API outstanding group achievement award (UND PE Department)   *2021*

Activities

UND PE Newsletter "Unconventional", Editor *2021 - Up to date*

Helped editing more than 5 issues of the Petroleum Engineering newsletter

UND CEM Teaching Council, Member *January 2022- Up to date*

Representative of the Petroleum Engineering Department in the College of Engineering and Mines (CEM) Teaching Council. The teaching Council meets twice a month and discusses diverse topics to improve the teaching experience for both faculty and students in the CEM at UND.

Alice T. Clark Scholars Mentoring program, Mentee *September 2021- Up to date*

Completed year 1 of the program which is part of the Faculty Development as part of the Teaching Transformation and Development Academy.

SPE "Society of Petroleum Engineers, Faculty Advisor *2019 - Up to date*

University of North Dakota Student Chapter.

SPE "Society of Petroleum Engineers" President *2019 - 2021*

University of North Dakota Student Chapter.

SEG "society of exploration geophysicists", Production Team Leader *2015 - 2017*

Bomerdes University, Algeria.

E&P Magazine - Hart Energy , Member *March 2012- Up to date*

Inno-Brains group (*Founder and Leader*) *Mai 2014- June 2017*

General Secretary and President of the C.E.E.B *2014 –2017*

Responsible of the information on the C.E.E.B *2012 – 2013*

C.E.E.B (Communauté des Etudiants Etrangers de Boumerdes) « Community of Foreign Students in Boumerdes ».

Additional

COMPUTER SKILLS *Applications: Microsoft Excel/PowerPoint/Word*
Microsoft Visual Basic
Programming: Matlab, PASCAL
Petroleum softwares: Surfer, Saphir, PIPESIM, SWPM, PROSPER, GAP, MBAL
Certificated from Schlumberger (NEXT training): OLGA, Eclipse, Petrel RE, Techlog

LANGUAGES *Arabic: native*   *English: Advanced*
French: fluent   *Italian: Elementary*

PERSONAL SKILLS *Goal oriented, creative, culturally sensitive, responsible, able to multitask, Opened to challenges, fast learner, Good inter-personal communication and social skills, team-building and Leadership Skills, Creative approach to problem solving and punctual.*

INTERESTS/HOBBIES *Reading, Fishing, Sport, Social Media.*

Publications

1. *Akash, O., Vamegh, R., Djabelkhir, N., Badrouchi, F., Damjanac, B., Zhang, F., 2019. Lattice simulations of hydraulic fracture reorientation from perforations. 53rd U.S. Rock Mech. Symp.*
2. *Badrouchi, F., 2021. Hole Cleaning and Cuttings Transportation Modelling and Optimization. University of North Dakota.*
3. *Badrouchi, F, Aymond, A., Haerinia, M., Badrouchi, S., Selvaraj, D.F., Tavakolian, K., Ranganathan, P., Eswaran, S., 2020. Cybersecurity vulnerabilities in biomedical devices: A hierarchical layered framework. Internet Things Use Cases Healthc. Ind. 157–184.*
4. *Badrouchi, F, Badrouchi, N., Rabiei, M., Rasouli, V., 2019. Estimation of elastic properties of bakken formation using an artificial neural network model. 53rd U.S. Rock Mech. Symp.*
5. *Badrouchi, F., Rasouli, V., Badrouchi, N., 2022. Impact of hole cleaning and drilling performance on the equivalent circulating density. J. Pet. Sci. Eng. 211, 110150.*
6. *Badrouchi, Foued, Scott, N., Feilen, H., Badrouchi, N., Tomomewo, O.S., Benouadah, N., Rasouli, V., 2020. Analytical and Experimental Analysis of the Rolling and Lifting of Cuttings in Deviated Wellbores. 54th U.S. Rock Mech. Symp.*

7. Badrouchi, F., Wan, X., Bouchakour, I., Akash, O., Rasouli, V., Damjanac, B., 2019. Lattice simulation of fracture propagation in the Bakken formation. 53rd U.S. Rock Mech. Symp.

8. Badrouchi, N., Badrouchi, F., Tomomewo, O.S., Pu, H., 2020. Experimental investigation of CO2-EOR viability in tight formations: Mountrail County Case Study, in: 54th US Rock Mechanics/Geomechanics Symposium.

9. Badrouchi, N., Hui, P., Steven, S., Badrouchi, F., 2021. Evaluation of CO2 enhanced oil recovery in unconventional reservoirs: Experimental parametric study in the Bakken. Fuel 312.

10. Badrouchi, N., Jabbari, H., Badrouchi, F., Tomomewo, O.S., 2019. Comparing different methods of permeability measurement for Bakken core samples: Steady-state vs. Aspike & Multi-pulse. 53rd U.S. Rock Mech. Symp. 1–6.

11. Badrouchi, N., Pu, H., Smith, S., Yu, Y., Badrouchi, F., 2022. Experimental investigation of CO2 injection side effects on reservoir properties in ultra tight formations. J. Pet. Sci. Eng. 215, 110605.

12. Foued, B., Vamegh, R., 2021. Simulation of settling velocity and motion of particles in drilling operation. J. Pet. Sci. Eng. 196, 107971. https://doi.org/10.1016/j.petrol.2020.107971

13. Book Chapter First Author
Book Title: Internet of Things Use Cases for the Healthcare Industry
Publisher: Springer Nature
Chapter: Cyber Security Vulnerabilities in Biomedical Devices: A Hierarchical Layered Framework
Badrouchi F. et al. (2020) Cybersecurity Vulnerabilities in Biomedical Devices: A Hierarchical Layered Framework. In: Raj P., Chatterjee J., Kumar A., Balamurugan B. (eds) Internet of Things Use Cases for the Healthcare Industry. Springer, Cham. https://doi.org/10.1007/978-3-030-37526-3_7