

El Kheir Zemouri

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KEY SKILLS

- Carbonate, shallow- and deepwater clastic play analysis
- Conventional and unconventional plays – heavy oil and shale gas
- Planning and execution of exploration, appraisal and development wells
- Well operations including geo-steering, and operating in over-pressured or sour reservoirs
- Green and brown field (re)development
- Sequence stratigraphy
- Interpretation of geological environments from logs, cores and outcrop data
- Petrophysical interpretation to optimise production including low resistivity reservoirs
- Assimilation and integration of geological, petrophysical, and engineering datasets
- Interpretation of geological and petrophysical data using Petrel, Kingdom, Geolog and OFM
- Familiar with PPGUA regulations and procedures

SELECTED PROJECTS AND ACHIEVEMENTS

I am a result driven petroleum geologist with 25+ years of oil and gas experience gained in large and small E&P organizations with a proven track record of finding oil and increasing productivity. I have worked on a wide variety of projects during my career and I have summarised several here to give a flavour of the breadth and depth of my experience.

Lead Geoscientist, EnQuest, Malaysia

While in this role, I took two commitment wells through the PETRONAS MR process to gain partner and regulator approval to drill the wells. They were executed successfully and delivered approximately 2,000 bopd/well. I also implemented a well-by-well review of 300+ wells that resulted in the identification of 20 workover and 100 re-completion opportunities. To date, 8 of these have been executed and have added 4500 bopd production at an average cost of \$8/bbl.

Subsurface Manager, Petrofac, Tunisia

Hands-on in this role, I proposed, planned, and delivered flawlessly shallow water 3D seismic acquisition/processing/interpretation, drilling of 2 successful development wells. This allowed a higher gas production rate, extended the production plateau by 3 years, and increased reserves by 150%. In addition, I proposed to fully perforate an idle well over the entire reservoir section. This was another big success for the company as the flow rate from this well has increased by 100% and revealed the presence of a 10 meters oil rim underneath the gas column. When the decision was taken to hook up this well as another producer, I recommended the inclusion of a long-term pressure gauge to monitor reservoir pressure during the construction of the flow line to the CPF, as production has already started from other wells. Pressure data analysis revealed a bigger gas accumulation and confirmed a 150% increase in oil and gas reserves.

Senior Geologist, CNPC International, Algeria

I was the principal geologist in charge of a project that consisted of the greenfield development of 14 fields at different stages of development and appraisal in Block 438b, Oued Mya Basin, Algeria. I worked on development and production optimisation and linkage with existing surface facilities for oil processing to discover and unlock more reserves, and upgrade existing export and processing facilities. Specifically, I designed and acquired 3D seismic surveys to reduce risk in defining future well locations and carried out an integrated evaluation of all the reservoirs comprising seismic interpretation, core description, well correlation, petrophysical evaluation, sedimentological study to establish the depositional environment model and plan a 3 well drilling program. I prepared all required documents pre-drill data package and geological operations program, supervised all drilling operations and delivered the post-drilling report. The first well flowed 4,500 bopd.

Senior Geologist, Sonatrach, Algeria

I delivered a comprehensive study of oil and gas resource trend analysis from historical data of all discovered, undeveloped, and developed Algerian oil and gas fields. The results reshaped Sonatrach's exploration strategy and led to the discovery of 7 new commercial accumulations at a very low cost per barrel. Wells flowed at 3800 – 4700 bopd during testing from fractured reservoirs and also from low resistivity reservoirs as low as 0.02 Ohmm. I also contributed to HMN3 well location proposal with an integrated sedimentological study that included core data image logs and dipmeter logs analysis. This well encountered a thick reservoir section with very good reservoir properties and flowed 20 mmscfd. After attending a data room, I recommended that Sonatrach should farm-in to C1-40, Ivory Coast and drill the Baoab-1x prospect, which subsequently flowed 6500 bop

PROFESSIONAL EXPERIENCE

I am currently preparing a series of on-line lectures on the geological application of wireline logs, formation evaluation, and petroleum geology that I intend to offer on YouTube or LinkedIn.

Lead Geoscientist, EnQuest, Malaysia

May 2015 – Jul 2018

- Acting as the senior development geologist and leading a team of geoscientists to deliver 12 integrated Petrel static models and integrated G&G and RE studies on all the fields and reservoirs in the PM8E PSC including Seligi field, an Enquest - Petronas JV.
- Using only previous data from Partner, I identified and suggested a suitable area within the Seligi Field for a water flooding pilot project based on well correlations, historical production, and historical gas injection data. These areas were confirmed by static and dynamic models and as being the most suitable locations for a water injection trial.
- I supervised, QC'd, and validated all G&G work, including seismic interpretation, mapping, well correlation, petrophysical evaluation, and Petrel geological modelling of Seligi, Serudon and Tanjoun Baram Fields; obtained Partner approved of all workflows throughout all the milestone review gates and agreed to transfer these static models to the reservoir engineering team for initialisation and history matching.
- Identified, proposed, and undertook all aspects of the approval gateway process for 2 commitment wells. The wells have been drilled and are both flowing 4000 bopd.
- I suggested and conducted a complete well-by-well review (Seligi and PM8, 300+ wells and 12 reservoir intervals, all at different stages of development).
- Established a well reactivation program that contributed to a 5000 bopd increase in daily production. Specifically, I developed a program of workovers, add perforations, cement packers, identification of behind casing opportunities and bypassed oil, and acquisition of new pressure data to reduce uncertainty in dynamic modelling.
- Provided reservoir connectivity input into the reservoir management plan that focussed on increasing recovery factors by implementing new development plans, such as a new gas injection scheme, water flood, and WAG injection.
- Field development plan for undeveloped and the heavily produced reservoirs redevelopment plan
- Exploration for upside potential in the surrounding areas of the fields and deeper reservoirs objectives.

Exploration/Development Manager, EnQuest, Egypt

Jul 2013 – Apr 2015

- In this position, I was also simultaneously acting as the development geologist for the Northwest October asset, located in the Red Sea. I prepared all pre-drill documentation for drilling operations and data acquisition, and mobilised the drilling team to complete the seabed survey and procure long lead items. The NWO well discovered an oil field, which required evaluation of the exploration well and further appraisal to unlock additional reserves in the Mokatom area of the Rudeis carbonate reservoir formation.

- I completed the evaluation of existing G&G data and incorporated it into a new Petrel static model, from which I defined an appraisal well location, and prepared and submitted FDPs for the additional drilling.
- Attended data rooms and evaluated the North Amer asset in the Red Sea for further business acquisition in Egypt.

Subsurface Manager, PETROFAC, Tunisia

May 2007 – Jun 2013

Acting Subsurface Manager in Petrofac IES Tunisia with hands on to bring existing wells into safe and ready status to production, unlock additional resources, chase and assess any potential farm-in opportunity to grow and expand company portfolio in the country. Accordingly, I established and implemented the following plan.

- Upgrade existing wells into safe production status (tubing clearance check, pressure tests, changed defective and leaking Christmas trees).
- Proposed, designed and acquired a 3D seismic survey in a challenging location (shallow water Kerkennah).
- Rebuild of an integrated static model in Petrel based on interpretation of the new seismic data and field study of the Reineiche reservoir outcrops. I proposed a 2+2 infill drilling program. I set up a drilling team, planned, and executed successfully drilling operations that tested very good producing wells and confirmed the anticipated oil rim in the Lower Lutetian, nummilitic, carbonate reservoir in the Chergui Field.
- Fulfilled the role of subsurface manager and acted as operation geologist during all drilling preparation, execution, and well completions.
- Provide a full development plan for the field, as per the regulations, which was approved by the Partner.
- Designed reservoir management plans to acquire relevant surveillance data periodically (long-term pressure gauges run in wells) integrated with monitoring daily production data to optimise well deliverability and reservoir performance. Consequently, gas and condensate production significantly increased and met the daily gas supply requirement for the client.
- For business development purpose, to expand and grow in Tunisia, I attended several data rooms and assessed several blocks and fields in Tunisia (Chaal, Zarat, Didon, Elyssa, Cosmos and offshore Sfax.)

Senior Geologist, CNPC International, Algeria

Oct 2005 – Apr 2007

- I was the principal geologist in charge of a project that consisted of the greenfield development of 14 fields at different stages of development and appraisal in Block 438b, Oued Mya Basin, Algeria. I worked on development and production optimisation and linkage with existing surface facilities for oil processing to discover and unlock more reserves, and upgrade existing export and processing facilities.
- I designed and acquired 3D seismic surveys to reduce risk in defining future well locations and carried out an integrated evaluation of all the reservoirs, comprising seismic interpretation, core description, well correlation, petrophysical evaluation, and a sedimentological study to establish the depositional environment model that resulted in a 3 well drilling program. I prepared the pre-drill data package and geological operations program, supervised all drilling operations, and delivered the post-drilling report. The first well tested flowed 4,500 bopd.
- Prepared FFR/FDP for 14 fields in Block 438b.

Senior Geologist, SONARTRACH

Dec 1989 – Oct 2005

- Seconded to TOTAL Pau for Timimoun gas field development in 2004 – 2005. I was part of the team that built an integrated geological model of the fluvio-deltaic Lower Devonian reservoir and carried out seismic interpretation of stratigraphic features and sequences to identify potential appraisal well locations. I was the

operations geologist for 2 successful appraisal wells. I reacted fast to take the appropriate measures to safely handle unexpected H₂S kicks during a frac-job.

- Principal geologist between 1999 and 2004 in a Sonatrach International business development team, attending data rooms to identify the best investment opportunities. During this period, I evaluated the potential of Blocks 50 and 51, onshore and offshore Oman; Blocks 103,113, and 5-1b, offshore Vietnam; Alba Field, offshore Equatorial Guinea; Blocks 1, 2A, and 2C, Orange Basin, South Africa; Blocks 102, 103, and 40 offshore Ivory Coast, West African margin (with Ranger Oil UK); Blocks 3D and 7E, Sudan; Kebili Block, Tunisia (with MOL Hungary); El Ouara Block, Tunisia (with PlusPetrol); Block 34 deep water petroleum system offshore Angola; and Tenge Field, Kazakhstan (with Anglo-Deutch Houston). This gave me an in-depth knowledge and experience in doing due diligence studies and valuable worldwide experience in different sedimentary basins and petroleum systems.
- I delivered a comprehensive study of oil and gas resource trend analysis by basin, reservoir, and fluid type from historical data of all discovered, undeveloped, and developed Algerian oil and gas fields. The results reshaped Sonatrach's exploration strategy and led to the discovery of 7 new commercial accumulations at a very low cost per barrel as the wells targeted new reservoirs in areas surrounding existing fields or deeper objectives within existing producing fields.
- Evaluation of coal bed methane CBM potential in the Bechar Basin, West Algeria from surface data which led to the identification of the first targets for commercial shale gas exploration in the country.
- Part time lecturer of geological application of wireline logs, petrophysics, and formation evaluation, 99 –01
- Assessed the petroleum system, identified drilling locations, and carried out post-drill assessments for the northern Algeria Mesozoic Basin, the Illizi Basin, and the tight reservoirs associated with the Cambrian-Ordovician Ahnet Basin.

EDUCATION & CERTIFICATION

- Applied Geo-Statistics for Reservoir Modelling SCRF program (1998-1999) University of Stanford
- Postgraduate Diploma in Reservoir Evaluation and Management (1996) Heriot Watt University
- BSc. Petroleum Geology (1989) Algerian Petroleum Institute (IAP)

LANGUAGES

English – fluent; French – fluent; Berber and Arabic – native speaker.

COMPUTER SKILLS

Petrel, Kingdom Suite, GeoLog, ELAN, OFM, Microsoft Office, Microsoft Project.