

D^r Denis Bataillon

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SENIOR RESERVOIR GEOLOGIST

Senior Reservoir Geologist in the **oil and gas** industry with **20 years of experience** gained in different operating environments. Extensive expertise in project coordination, geological interpretation, 2D/3D integrated geomodelling, prospect generation, HIIP/reserves evaluation, uncertainty analysis and risk assessment, new well target proposal, fluid flow simulation and field development plan creation. Direct experience gained in North and West Africa, Caspian and Asia on small to giant clastic and carbonate fields.

Recent involvement in the **hydrogeology** industry on hydrothermal project in France and deep water exploration in West Africa.

PROFESSIONAL SKILLS

- **Geosciences**

- ✓ **Geological interpretation** – Performed regional and reservoir geological studies including complex depositional and structural environments, carbonate, clastic and salt dominated structures.
- ✓ **Oil & Gas Development and Exploration** – Full delivery of hydrocarbon field development plan including appraisal and development well targets. Participation to petroleum system evaluation, ranking of plays, prospects generation and new exploration well targets.
- ✓ **Hydrogeology** – Geological synthesis and 3D integrated geomodelling.
- ✓ **Data analysis** – Basic well log analysis. Univariate, bivariate, geological trend, vertical proportion curve and spatial analysis including variogram modelling.
- ✓ **GIS** – Geolocalisation, geological analysis, basic SQL requests.
- ✓ **Structural framework** – Complex numerous faults network building for giant field with careful assessment of their relationship with stratigraphy in extensive or compressive structural context.
- ✓ **Seismic** – Time-to-depth conversion and Velocity model calibration to well formation tops.
- ✓ **Stratigraphic** – Stratigraphic column characterization, well formation correlation, seismic horizons mapping with tie to well formation tops and isochore computation.
- ✓ **3D stratigraphic grid** – Fine geological grid building, flow unit analysis, primary and flow-based upscaling.
- ✓ **Geobody modelling** – Salt dome or channel modelling using seismic volume rendering, pixel or object base approach and closed triangulated surface envelope.
- ✓ **Geostatistics and Property Modelling** – Facies and rock property modelling using geostatistical stochastic and deterministic methods based on primary hard data and secondary soft data.
- ✓ **Volume in place** – Use of nested multi-realizations tool for HIIP evaluation, characterisation of most impacting parameters, geological uncertainty analysis and related risk assessment.
- ✓ **Reservoir Engineering** – RCAL and SCAL. Decline curves analysis, well flow performance, pressures build-up and rft interpretation. History matching, forecast and field development plan. Streamline flow simulation using multi-realizations tool to calculate flow based reserves ranking and related risks assessment.

- **Project management**

- ✓ Coordination, follow-up and integration of in-house and outsourced G&G studies. Recognised ability to manage projects and partners' relationships overall. Rigorous quality control and technical reporting are essential deliverables.
- ✓ Mentoring junior staff and training colleagues or clients on software functionalities. Dedicated team player.
- ✓ Creation and optimisation of innovative modelling workflows. Searching for modelling best practices and automation process script.

- **Software knowledge**

Petrel, Gocad-Skua, Kingdom, ArcGis, QGis, Eclipse_100, 3DSL, Saphir, Interpret II, VfpI, WellFlow, OFM.

- **Languages**

French (mother tongue), English (fluent written and spoken), Italian (good spoken)

PROFESSIONAL EXPERIENCE (details & deliverables p3)

- **CV Associés (www.group-cva.com), Bayonne-Pau-Paris – FR & Geneva - CH. May 2017 – Present**
Member of CVA's geoscience expert team as Sr Reservoir Geologist
Mission 2: performing 3D integrated geomodelling using Gocad-Skua for deep water exploration in West Africa.
Mission 1: performed for Pierre-Fabre Group in Avène - France from Sept. to Dec. 2018. Synthesis of existing geosciences studies and further geological acquisition, analysis and modelling proposal.
- **Geopetrol International (www.geopetrol.com), Geneva - CH. May 2011 – Aug 2015**
Geosciences Manager
Responsible for the follow-up of the in-house and outsourced G&G projects on exploration and development assets. This role required me to integrate studies performed for petroleum system characterization, prospect generation, geological risk assessment, reserves evaluation and well proposal. I was also responsible for the geological interpretations and 2D/3D geomodelling using ArcGis, Kingdom and Petrel. Managed the G&G database and software performing evaluation, training and support. I mentored also junior geologists. Direct experience gained on Asian fields on clastic depositional environment.
- **ENI SpA - E&P (www.eni.it), Milan - Italy. Sept. 07 – Aug. 10**
Senior Reservoir Geologist & Geomodeller
Responsible for the geological interpretation, 3D geomodelling on Petrel and Gocad and for the mentoring of junior staff. This role required me to deploy best modelling practices integrating various static and dynamic parameters to assess HIIIP and reserves quantification, to characterise critical geological parameters and to advise on new well placement. Direct experience gained on small to giant North African produced fields on carbonate and clastic depositional environments.
- **BP - Geomodelling Services Ltd (www.geomodelling.com), Penryn - UK. Jul. 05 – Nov. 06**
Senior Reservoir Geologist & Geomodeller
As a senior Gocad geomodeller consultant I was directly involved in BP geosciences projects to implement advanced modelling solutions and advise clients on field exploration and development decisions. I also mentored client users and supported internal deployment of workflows. Direct experience gained in Caspian and West African fields on clastic depositional environment and salt dominated structures.
- **Earth Decision Sciences (www.earthdecision.com), Paris - France. Aug. 01 to May 05**
Senior Gocad Geomodelling Consultant
Responsible for building integrated 3D reservoir geomodels on Gocad from structural framework to streamline flow simulations. This role required me to devise with the client, to implement appropriate modelling solutions based on a multidisciplinary approach and to create innovative workflows. Also responsible for the delivery of trainings, 2nd level support and key client presentations on all Gocad Suite modules. Direct experience gained in North Sea, North & West Africa and UAE.
- **Perenco (www.perenco.com), Paris - France. Nov. 97 to Aug. 01**
Reservoir Engineer
Responsible for reservoir engineering studies including black oil simulation using ECLIPSE. Performed history matching, sensitivity studies and production forecasts to advise on new well recommendations and field development plans for small producing assets including depleted reservoirs needing enhanced oil recovery. Delivered Pressure Build-up, RFT and Well performance analysis. Direct experience gained in West Africa and Colombia on clastic depositional environment.
- **IFP (Institut Français du Pétrole - www.ifp.fr), Rueil - France. Sept. 92 to Dec. 96**
PhD - Experimental Flow in Porous Media
Observed, measured and interpreted oil film stability mechanisms and assessed their impacts on three-phase gravity flows in porous media. Performed laboratory experiments including infrared spectroscopy acquisitions. Data analysis done using Matlab and Optilab. Developed partnerships with external resources and provided training and support to IFP colleagues.

PERSONAL INTEREST

Volley-ball, climbing, mountaineering, skiing, Tai-chi-chuan, Yoga, Jodo and playing Saxophone

PROFESSIONAL TRAINING

- 2018 **GIS - MOOC Part-1** - École Polytechnique Fédérale de Lausanne (6 weeks).
- 2010 **Formation evaluation by means of Logs** – ENI (10 days).
- 2008 **Applied Geostatistics** on Isatis– Nautilus (5 days).
- 2007 **Petrel** – Schlumberger (5 days).
- 2002 **Geostatistics** - Geovariances (5 days).
- 1999 **Reservoir Simulation** on Eclipse - Schlumberger (5 days).
- 1998 **Build-up Interpretation** on Saphir - Kappa Engineering (5 days).

EDUCATION

- 1996 **Doctorate in Quantitative Geosciences – Fluid Mechanics in Porous Media**
Institut Français du Pétrole (IFP), Université Paris VII
- 1992 **M.Sc.2 (DEA) in Quantitative Geosciences**
IFP School (ENSPM), École des Mines de Paris, Université Paris VI & VII
- 1991 **M.Sc.1 (Maîtrise) in Internal Geophysics**
Institut de Physique du Globe de Paris (IPGP), Université Paris VII (Denis Diderot)
- 1990 **Bachelor (Licence) in Geology**
Université Grenoble I (Joseph Fourier)

PROFESSIONAL DETAILS & DELIVERABLES

• Geopetrol International

Geosciences Manager

- ✓ **Myanmar** – Managed and performed exploration studies on Pyalo, a sandstone onshore condensate gas field of RSF-9 block in the central basin characterized by a complex compressive structural context. Follow-up and integration of the G&G studies including a regional structural model, 2D/3D seismic interpretation, log correlation and petrophysical analysis. Built a Kingdom project including cultural data, wells and logs, 2D/3D seismic surveys, perforation and production data. Built a 2D reservoir model including net pay evaluation and HIIP reserves assessment. Also built a GIS project in ArcGis data geo-referencing.
- ✓ **India** – Managed development studies on Kharsang, a sandstone onshore oil field of the Assam Arakam basin located in a complex stratigraphic and structural context of east Himalayan border. Transferred a 3D geological grid from Jewel to Petrel, performed reservoir properties geostatistical interpolation and computed HIIP. Presented and delivered Petrel model to Indian partners.
- ✓ **Database management** – Implemented a complete review of the G&G database organisation and advised on the SI upgrade for the data storage and backup. Responsible for farm-in/out dataset management.
- ✓ **G&G software** – Responsible for software evaluation, installation, support and training to colleagues.

• ENI SpA - E&P

Senior Reservoir Geologist & Geomodeller

- ✓ **Libya** – Built Petrel 3D geomodel of Bu-Attifel, a sandstone onshore giant oil field of block A100 in the Sirte basin. This included structural framework generation with a hundred faults, stratigraphic correlation from a hundred of wells, fine geological 3D grid building and geostatistical facies and petrophysical properties interpolations. Sedimentological model and RFT pressure profiles were carefully integrated into the model. Performed also uncertainty analysis using Gocad-Jacta tool and delivered upscaled 3D grid & properties for reservoir flow simulations.
- ✓ **Libya** – Updated Petrel 3D geomodel of Bouri, a carbonate offshore giant oil & gas field of block NC41 in the Pelagian basin. Provided geological support for production history matching process including new development well target location and quick look trajectory design using Petrel RE.
- ✓ **Tunisia** – Built a Petrel 3D geomodel of Karma, a sandstone offshore oil field of the Adam block in the Ghadames basin. Proposed several successful new well targets. Delivered upscaled flow simulation grid and properties. Provided geological support for history-matching process with a special focus on permeability field based on build-up Kh evaluation.

- **BP - Geomodelling Services Ltd**

- Senior Reservoir Geologist & Geomodeller**

- ✓ **Angola** – Modelled complex salt bodies of Block-31, a large offshore deep water exploration block in Congo basin. Built complex salt dome closed envelope from seismic interpretation using Gocad unstructured mesh multi-Z surfaces and DSI Gocad proprietary interpolation algorithm. Created and optimised smart workflow to automate surface creation. These salt envelopes were a critical input for BP proprietary velocity modelling process and pre-salt formation seismic interpretation.
 - ✓ **Azerbaijan** – Built a geostatistical well velocity model of ACG, a clastic offshore giant oil field in the South Caspian Basin. The 3D velocity property was computed from well Vp logs and used for pore pressure and well stability calculation. Provided command script files for automated 3D velocity interpolation. Delivered a complete documentation and trained client users for project hand-over.

- **Earth Decision Sciences**

- Senior Gocad Geomodelling Consultant**

- ✓ **Algeria** – Performed Gocad reservoir static and dynamic uncertainty study for Block 208, a sandstone onshore exploration block in Berkin basin. Uncertainty study was performed on static reservoir properties using Jacta nested multi-realizations tool to provided HIIIP distribution range and to characterized most critical reservoir parameters. Innovative workflow consisted in integrating dynamic data within the static loop: thanks to short streamline computation time a dynamic flow simulation was automatically run for each static realisation using 3DSL to assess producible reserves distribution.
 - ✓ **Geomodelling** – Create innovative workflow and process automation for salt closed envelope modelling using multi-Z triangulated surface and Gocad proprietary DSI interpolation algorithm which received internal and external acknowledgements.

- **Perenco**

- Reservoir Engineer**

- ✓ **Cameroon** – Performed history matching and production forecast on Kribi, a sandstone onshore oil field of the Douala basin. Proposed a field development plan including a water injector to maintain the pressure support in a high depletion context.
 - ✓ **Gabon** – Performed history matching and production forecast on Turnix, a salt piercement steeply dipping flanks offshore sandstone field. A major optimisation of the hydrocarbon initially in place evaluation was obtained to accurately match the depletion and secondary gas cap production thanks to an initial quick-look flow simulation. The full dynamic study allowed to provide a field development plan including new appraisal production wells.
 - ✓ **Colombia** – Performed history matching and production forecast on Trinidad, a clastic onshore oil field in the Llanos basin. Hydrodynamic context showing an infinite aquifer was providing high pressure support with high water cut. Proposed a field development plan including new infill producing and water disposal wells.

- **IFP (Institut Français du Pétrole)**

- PhD – Experimentation on Flow in Porous Media**

- ✓ **Experimentation** – Performed three-phase flow gravity drainages in a 50µm*1cm*2cm cell. Oil film thicknesses were measured along time using infrared spectroscopy to characterize the dynamic of the thinning process respect to the oil film spreading/non-spreading behaviour on a water film covering a quartz support.
 - ✓ **Experimentation** – Performed three-phase flow gravity drainages in a 15cm*25cm 2D pore network. Produced oil volumes were measured and remaining saturations were assessed by picture analysis to characterise the impact of the oil film spreading/non-spreading on water film covering a quartz support on the oil cumulative production.