Isabelle Pelletier

Professional Summary

August 22, 2025

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Professional Preparation

Academic Background

Ph.D., Geochemistry/Hydrogeology, Institut de Physique du Globe de Paris (IPG-P) and Institut Francais du Petrole (IFP), December 1997

Professional Appointments

Research Scientist Associate, Bureau of Economic Geology (October 2018-Present)
3D geomodeler working with TexNet-CISR. Building a 3D earth model of the Permian Basin.

Department Manager (Petroleum Engineering, Production Geological and Geophysical [G&G], Reservoir G&G), OMV E&P, Vienna, Austria (August 2014-July 2015)
Responsible for a team of about 10 G&G junior and senior staff; I supported their technical engagements. I scouted for integrated projects with branch offices or head office, where individual developments could be fulfilled simultaneously. I helped the PE-Production G&G department to develop its own vision aligned with the one from its parent division. I contributed to definition of standards, guidelines, and workflows, including the software portfolio and the reservoir characterization technology portfolio. I also supported any decision where geology was involved in high-budget or high-profile business projects (e.g., well exploration in New Zealand costing EUR40M, near-wells in Pakistan, etc.).
My main projects were as follows:
(1) Field developments including Erdpress and Matzen fields, Austria; Preajba-Cartojani fields, Romania (with OMV Petrom); Tasbulat Oil Corporation (TOC) or Aktas-Tasbulat-Turkmenoi fields, Kazakhstan (with OMV Petrom)
(2) Quality control processes in reservoir characterization
(3) Internal corporate OMV J-function database

Senior Geologist (Subsurface Development Division, Halfdan Asset, Study Group), Maersk Oil and Gas, Copenhagen, Denmark (April 2012-June 2014)
Halfdan field was the youngest discovery in the Danish Business Unit. Production had started in late 1999, benefiting from the experience gathered in neighboring Dan and Tyra fields. Two reservoirs were being produced mainly from horizontal wells, both in chalk deposits: Tor Formation (Maastrichtian) and Ekofisk Formation (Danian). Tor reservoir was water flooded.
I was responsible for building a new model for the greater Halfdan field, focused on assigning values for each property (e.g., porosity and permeability) of all grid cells in the model of the Ekofisk reservoir. The objective of the new model was to help identify new potential drilling locations and support water injection, knowing that the gas cap of Ekofisk reservoir was leaking through some wells producing from Tor reservoir. Understanding routes of communication between the two stacked reservoirs was essential. I was fostering integrated work on a daily basis with sedimentologists, petrophysicists, geophysicists, reservoir and petroleum engineers, and drilling teams. Challenges were: moving away from the homogeneous and layer-cake chalk conceptual model, much slumping affecting the stratigraphy but often below seismic resolution

(local compartments?), seismic interpretation of attributes with very strong reflectors and weak ones, long horizontal-well trajectories' uncertainty, contacts' uncertainty, tight reservoir with a tilted free water level, and dynamic trapping. I also supported gas-initially-in-place (GIIP) mapping for Ekofisk reservoirs.
The team delivered the first-phase model in December 2013, the second, which went through a loop of fluid simulation, in March 2014 without any convergence issue and with initialization success. Uncertainty assessment of key parameters and risk analysis were considered through Phase 2 in the context of, for example, near-field exploration, targeting deeper reservoir parts, producing the gas cap vs. improving the water-injection scheme, bypassed oil, etc.
Due to my experience, I was invited also to support important drilling decisions such as new wells or refining trajectory. I was also invited to review other projects (gate process) and to provide input for reserve processes.

Chief Development Geoscientist (Technology Group, previously Development Department), Kuwait Energy Company (KEC), Head Office, Salmiya, Kuwait (June 2009-March 2012)
My position's objectives were (1) to provide leadership and direction to KEC's Development Geoscience (DG) function to ensure that DG staff reach their full potential and that DG activities were technically sound and provide a good return on investment (for KEC worldwide), (2) to review all studies where geoscience expertise was needed, head office and regional offices included, (3) to lead some Field Development Plan (FDP) studies, (4) when needed, to carry geomodeling tasks/projects, and (5) to mentor junior staff, focusing especially on direct reports.
To achieve the aforementioned goals, I had to facilitate and manage fit-for-purpose DG processes and procedures. I set and helped ensure compliance with required geoscience standards. In 2011, a new company structure was rolled out, and I embraced the role of project-planning coordinator for all projects the Technology Group had to follow up on or review. This included the development of templates, guidelines, and support tools accessible for the rest of the company via KEC's portal (SharePoint) in coordination with the Project Management Team. It also included coordination with the human resources and information technology departments for resources planning/development/availability/mobility.
Within this new structure I was assigned as project leader of the following: (1) four technical projects, including Yusr field's (Area A, Egypt Eastern Desert) FDP; Bilousivsky and Chernosky fields' (Ukraine) FDP update; Luzskoye field's (Russia) FDP, new technology, and data exploratory analysis project; (2) three nontechnical projects, including coordination with Fugro Robertson Ltd. for development projects outsourced to them, technical project planning, and training coordination.
I also provided technical support to acquisitions and divestment activities and supported KEC Reserves processes.
The different geological environments of KEC assets were included carbonate shelf including reef buildup, shallow marine, fluvial plain, and rift area. The different categories of hydrocarbon reservoirs included tight gas and oil, condensate, and heavy oil.

Areas of Expertise

Areas of Expertise

Consistent J-function, more-realistic compartmentalization:
To properly calculate a saturation-height function, multidisciplinary data (logs, pressure, fluid data, and sedimentological facies) need to be integrated, such that appropriate rock types are agreed upon among petrophysicists, geologists, and reservoir engineers. Geo2Flow software provides a platform for such integration and quality control. It also helps with analyzing field compartmentalization and validating geomodel assumptions. Final results (saturation model, rock types, and rock functions) can be directly generated on the Petrel platform. Applied while with OMV E&P.

Field development:
Whatever the asset age (appraisal, green, or mature), its development needs to be planned according to its potential (e.g., initial in-place, oil or gas, light or heavy oil, etc.) as well as its

present and short- to medium-term economics. I recommend an ideal approach that begins with a data screening before agreeing on any scope of work through a proper project framing, which requires patience and the involvement of all relevant disciplines. Uncertainties and risks are sought and identified from that beginning and revised/rescaled regularly later on. To ensure good progress, project stakeholders and accountabilities are defined also through the project framing. Building a fine-resolution 3D grid model of the reservoir(s) is not necessarily useful, like with high-permeability gas intervals.

Global seismic interpretation:
New tools (e.g., PaleoScan, OpendTect) allow global interpretation of faults and horizons, with easy use of attributes. The conventional tools (e.g., Petrel, RMS) oblige the interpreter to work mostly sequentially. To reach a consistent interpretation, the interpreter has to complete many lengthy loops. With a tool like PaleoScan, a first pass can be delivered in 2 or 3 weeks (one-third of usual time), providing more time for discussion and better integration of sedimentological data. Those tools also come with seismic stratigraphy slicers. Applied when with the Bureau of Economic Geology, OMV E&P, and Maersk Oil.

Live-integrated reservoir characterization and modeling:
Hands-on experience in most parts of an integrated reservoir characterization project: data gathering and screening (BlueBack Reservoir GDI, Data Desk, Techlog); geophysical interpretation of horizons and faults (Petrel, PaleoScan, RMS); velocity model and well tying with synthetic logs; definition of well lithofacies on the basis of sedimentological knowledge; basic petrophysical interpretation (Techlog), saturation functions integrating petrophysics, sedimentology, and fluid data like Pc (Geo2Flow); 3D structural modeling; deterministic and geostatistical 3D property modeling based on seismic (inversion) attribute when available, including facies modeling; 2D and 3D mapping; upscaling and its quality control (streamline simulator); basic black-oil and compositional simulation models (ECLIPSE); flow-simulation optimization (CougarFlow); 4D interpretation; economics (Merak) quality control; uncertainties and risks; model quality-control processes.

Project management/leadership:
I unknowingly started project management when planning my Ph.D. research project. Today I follow the Project Management Institute (PMI) procedure, which many companies have adopted, with defined tollgates, peer reviews, and peer assists. My foci when leading a project are as follows: (1) helping define project scope, people and other resources, time schedules, costs, and contingencies (for example, with a framing workshop); (2) agreement on deliverables and RACI chart from the beginning to prevent later misalignment of the project and its stakeholders; (3) avoid too many called meetings; (4) keep all parties aware of what the others are doing and their progress, addressing technical and circumstantial issues early to ensure cost-effective, timely, and quality delivery.

Presentations

Invited Presentations

Understanding Causal Factors of Induced Seismicity: Integrated Geologic Modeling of the Delaware Basin (seminar): presented to American Association of Petroleum Geologists (AAPG) Women's Network, presented at AAPG Annual Convention & Exhibition, virtual, October 1, 2020.

Understanding Causal Factors of Induced Seismicity: Integrated Geological Modeling of the Delaware Basin, TX and NM: presented to American Association of Petroleum Geologists Women's Network, presented at American Association of Petroleum Geologists Annual Convention & Exhibition, Houston, Tex., virtual, October 1, 2020.

Presentations

Preliminary Hydrogeological Modeling of Deep Injection in the Delaware Basin for Pore Pressure Characterization with Application to Induced Seismicity: presented at American

Geophysical Union, Fall Meeting, online everywhere, December 2020.

Integrating velocity measurements from earthquake tomographic inversion with other technologies: presented to S21C: Recent Advances in Interpretations of Tomographic Images I, presented at AGU Fall Meeting 2019, Moscone Center, San Francisco, Calif., December 10, 2019.

Basin-Scale Hydrogeological Modeling of the Fort Worth Basin Ellenburger Group for Pore Pressure Characterization: presented at American Geophysical Union, Fall Meeting, San Francisco, Calif., December 2019.

Publications

Published Reports

Ambrose, W. A., Rogers, H., Smith, D. C., Scanlon, B. R., Paine, J. G., Nicot, J.-P., Young, M. H., Loucks, R. G., Hentz, T. F., Reed, R. M., Ogiesoba, O. C., Olariu, M. I., Fu, Q., Flaig, P. P., Zhang, J., Hattori, K., Roberts, A., Zeng, H., DeJarnett, B. B., Radjef, E., Periwal, P., Peng, S., Duncan, I. J., Ren, B., Jensen, J., Male, F., Dommisse, R., Eastwood, R., Carr, D. L., Zhang, T., Ko, L., Larson, T., Lawton, T., Covault, J., Sylvester, Z., Goodman, E., Calle, A., Smye, K. G., Pelletier, I., Dunlap, D. B., Lambert, J., and Sivil, J. E., 2021, State of Texas Advanced Resource Recovery (STARR) 2018-2020 biennium report: The University of Texas at Austin, Bureau of Economic Geology44 p.

Published Abstracts

Gao, R., Nicot, J.-P., Hennings, P., Smye, K. G., Pelletier, I., and Horne, L., 2020, Preliminary hydrogeological modeling of deep injection in the Delaware Basin for pore pressure characterization with application to induced seismicity (abs.): 2020 American Geophysical Union Fall Meeting, Dec. 1-17, no. MR019-0008.

Gao, R., Pelletier, I., Horne, L., Nicot, J.-P., and Hennings, P., 2019, Basin-scale hydrogeological modeling of the Fort Worth Basin Ellenburger Group for pore pressure characterization (abs.): Abstract H53C-01 presented at AGU 2019 Fall Meeting, San Francisco, Calif., December 9-13.

Pelletier, I., Huang, D., and Savvaidis, A., 2019, Integrating velocity measurements from earthquake tomographic inversion with other technologies (abs.): American Geophysical Union 2019 Fall Meeting, Recent Advances in Interpretations of Tomographic Images I, San Francisco, Calif., December 10, no. S21C-08, 1 p.