

**JOAN TILDEN**  
*Senior Geomodeler*



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## **EDUCATION**

- M. S., Petroleum Engineering, December 1996, Colorado School of Mines, Golden, CO.
- GPA: 3.98 / 4.0
  - Thesis: Investigation of Water and Low Interfacial Tension Imbibition Processes in Different Rock Types (IOR Techniques for Fractured Sandstone and Carbonate Reservoirs)
- B. S., Earth Science, May 1980, University of Waterloo, Waterloo, Ontario, Canada.
- Honors Co-operative Program
  - Thesis: The Nature and Origin of Porosity in the The Terminus Field (Middle Silurian), Southwestern Ontario.

## **PROFESSIONAL PROFILE**

Geoscientist with over 35 years in oil and gas exploration and field development. Expert in 3D geocellular modeling. Fully integrated geoscience and reservoir engineering background with degrees in Earth Science and Petroleum Engineering.

- 16 years experience in advanced 3D geocellular modeling using *Petrel* software.
- Expert reservoir characterization skills including interpretation and integration of geologic, petrophysical, seismic and reservoir engineering data into 3D static and dynamic models.
- Geologic analysis including mapping, stratigraphic and structural analysis, core analysis, depositional and facies modeling.
- Evaluation of oil and gas exploration and field development prospects for enhanced recovery, optimization, acquisition and divestiture. Resource play assessments including economic analysis.
- Applied reservoir engineering skills include quality control and upscaling of 3D static models to *Eclipse* simulation models, pre- and post-processing of *Eclipse* models, some history matching/prediction experience.
- Single well to fieldwide production analysis, oil and gas reserves determination and audits including quarterly and yearly reserve reporting, economic analysis.
- Worldwide experience in sandstones, carbonates, coalbed and coal mine methane, tight gas, shale gas, shale oil, fractured reservoirs and EOR projects.
- Excellent oral, written, and presentation skills with experience as legal expert witness, equity determination expert, testimony before State regulatory agencies, and guest lecturer at Colorado School of Mines.

## **PROFESSIONAL EXPERIENCE**

ALGONQUIN RESOURCES INC., Dillon, Colorado  
(2012 to present) **President / Senior Geomodeler**



Provide geoscience consulting services to a variety of worldwide clients on part-time basis. Particular emphasis on 3D geocellular static and dynamic modeling including teaching/mentoring with *Petrel* software. Geomodeling projects in sandstones, carbonates, shale oil, EOR, and fractured reservoirs.

**MHA PETROLEUM CONSULTANTS INC., Denver, Colorado**  
(2000 to 2012) **Project Manager; Senior Geoscientist / Reservoir Engineer**

Completed over 50 reservoir characterization studies worldwide for the evaluation of exploration and field development prospects, enhanced recovery processes, acquisition and divestiture opportunities. Responsible for the construction of more than 50 *Petrel* 3D geocellular models of oil and gas reservoirs (sandstone, carbonate, coalbed and coal mine methane, tight gas, shale gas and fractured reservoirs).

- *Petrel* model build workflow involved reservoir characterization and integration of geologic, petrophysical, geophysical and engineering data. Tasks included database compilation, analysis and quality control; construction of structural framework including seismic horizons and faults; stratigraphic gridding, mapping and distribution of well log/core lithology and facies including the use of seismic attributes; population of 3D grid with upscaled petrophysical rock properties; volumetric calculations; and uncertainty analysis using the *Petrel* Process Manager.
- Upscaling, including rigorous quality control, of *Petrel* 3D static models to *Eclipse* simulation models. Construction of *Eclipse* input data files using *Petrel* RE module. Post-processing of *Eclipse* models using *Petrel* and *Eclipse Office*.
- Many projects involved in-house mentoring and tutoring of the *Petrel*-to-*Eclipse* workflow process for client geologists, reservoir engineers, and project managers. Also provided expert quality control and review of existing client *Petrel* models.

Experienced with reservoir characterization and analysis of *unconventional* and *fractured* reservoirs. Geocellular modeling, upscaling of static models to simulation models, production analysis.

- Tight gas: US, Canada, Europe
- Shale oil/gas: Mancos shale, Marcellus, Baxter shale, Second White Specks, Eagleford, Mississippian Lime, Woodford, Bakken, Niobrara
- Coalbed methane and coal mine methane: US, United Kingdom, Australia

Evaluation of oil and gas exploration and development prospects, assets, resource plays, and acquisition and divestiture opportunities. Reservoirs evaluated include oil and gas, tight gas, coalbed methane, shale gas and shale oil.

- Integration and analysis of geologic and production data to determine asset value and/or prospectivity for client. Risk and uncertainty analysis performed. Determination and prediction of well/field production and reserves.
- Member of multi-discipline evaluation team contracted to major E&P company, and also to smaller independent producer, to assess and develop potential exploration prospects in the Rocky Mountains.

Engaged as Licensed Geologist by 9 clients for regulatory agency testimony and legal proceedings. Also retained as Geologic Expert in 4 Equity Determination studies.

- Expert witness geologic testimony and report writing, preparation for trial proceedings.
- Testimony preparation and/or presentation in support of oil and gas infill and downspacing hearings in Wyoming and Colorado.
- Preparation of state regulatory hearing data related to gas storage operations in Illinois. Testimony related to gas storage operations before Michigan state agency.

- Performed geologic interpretation, static modeling, and uncertainty analysis as team member of chosen Expert for 4 Equity Redeterminations (Alaska, Algeria, Norway, and New Zealand).

Provided 8 years of in-house reservoir engineering services to rapidly growing oil and gas exploration company active in the Uinta Basin, Utah. Tight gas, shale gas, and oil reservoirs.

- Responsible for all company reservoir engineering projects: well database setup with ongoing production and completion updates, production analysis with single well and multiwell techniques, rate-time analysis. Interfaced on daily/weekly basis with upper management team as well as company drilling/completion engineers, geologists, landmen.
- Monthly, quarterly and year-end reserve reports. Client representative and liaison with Nederland Sewell for annual year-end bank reporting.
- Represented company in multiple investor, partner, and bank meetings with prepared presentations.

Skilled in gas storage reservoir characterization and modeling (aquifer storage and depleted hydrocarbon storage reservoirs). Completed 14 gas storage reservoir studies; fields located throughout US and in Europe.

- 3D geocellular models built and upscaled to *Eclipse* simulation models.
- Analysis of storage potential and reservoir capacity, injection/withdraw characteristics, and field optimization.
- Some *Eclipse* history matching and prediction experience with conceptual, single well and full field models of gas storage and other reservoirs.
- Retained as Expert geologic witness in 5 year legal proceeding involving one of largest US gas storage fields.

Highly skilled in project management and coordination of multi-discipline teams. Excellent written, oral, and presentation skills.

- Fully integrated geoscience-reservoir engineering background facilitates interaction and full participation in project work related to both disciplines.
- Proven ability to simultaneously manage and coordinate multiple diverse and varied worldwide reservoir studies. Proposal writing, budgeting, project documentation,.
- Exceptional teamwork skills developed after more than a decade of multi-discipline project work within MHA and with worldwide clients.
- Invited guest lecturer at Colorado School of Mines (Geology Department, multi-discipline lecture class).

### MARATHON OIL, Technology Center, Denver, Colorado (1997 - 2000) **Advanced Reservoir Engineer**

Member of Reservoir Engineering Team responsible for technology and new knowledge transfer to all Marathon business units. Primary work area in the Permian Basin including the giant Yates field.

- Experience in all aspects of reservoir characterization and modeling including development of geologic model with well log interpretation, gridding, construction of 3D earth model (*Stratamodel*), upscaling, *Eclipse* model generation, history matching, and prediction.
- Completed *Eclipse* simulation projects ranging from conceptual 1D black oil models to highly complex full field and basinal 3D models.
- Responsible for modeling Texas Permian Basin fields including the giant fractured Yates oil field.

Reservoir fluid properties characterization of black oil and compositional reservoirs.

- Decline curve analysis of production data.

### COLORADO SCHOOL OF MINES, Golden, Colorado

(1994 – 1996) **Petroleum Engineering Masters Student and Teaching Assistant**

Assisted Petroleum Engineering Department Chairman (Dr. Craig Van Kirk) with senior reservoir engineering course.

- Create and grade assignments as well as tutor senior students in reservoir engineering topics.
- Instructed senior students on the use and application of *Eclipse* (three phase) numerical simulation software.

### TILDEN ENGINEERING, Denver, Colorado

(1989 - 1994) **Consulting Geoscientist**

Consulting geoscientist for several independent oil and gas companies.

- Specializing in coalbed methane and tight gas exploration projects in US and Europe.
- Generated exploration prospects through basin analysis utilizing well logs, mud logs, core analysis and subsurface mapping.

### AMOCO PRODUCTION COMPANY, Denver, Colorado and Calgary, Alberta

(1980 - 1989) **Petroleum Geologist**

Developed thorough background in exploration, development, and production geology through rotation of assignments between business units.

- Responsible for geologic interpretation and analysis of US and Canadian tight gas Rocky Mountain reservoirs (Wamsutter, Wattenburg, Deep Canadian Basin). Developed predictive models for tight gas production at Wamsutter field.
- Geologic team member of Engineering Exploitation Group responsible for geologic input to IOR waterflood and CO<sub>2</sub> injection projects located in the Rocky Mountains.
- Reservoir management duties included field pattern modification, delineation of bypassed oil, identification of infill/step-out/deepening candidates, and geologic input for numerical simulation models. Developed predictive reservoir models for sandstone, carbonate, tight gas, and fractured reservoirs involving petrophysical analysis of logs, core, and production data.
- Managed all geologic operations for Alaska offshore exploration drilling program for two years. Completed wellsite duty on numerous oil and gas exploration and development wells in the Rocky Mountains.

## **SOFTWARE AND COMPUTER SKILLS**

Schlumberger *Petrel* and *Eclipse* software. *Petra* software. Microsoft Word, Excel, Powerpoint. Familiarity with *Aries*, *Crystal Ball*, *Fekete RTA*, *Landmark Prizm*.

## **PROFESSIONAL LICENSES AND MEMBERSHIPS**

- Wyoming Professional Geologist, License No. PG - 3522
- Texas Professional Geoscientist, License No. 5400
- American Institute of Professional Geologists (AIPG) – CPG 09075
- American Association of Petroleum Geologists (AAPG), Certified Petroleum Geologist # 5264
  
- Society of Petroleum Engineers (SPE)
- American Association of Professional Geologists (AAPG)
- Rocky Mountain Association of Geologists (RMAG)
- Society of Professional Well Log Analysts (SPWLA)

## **PUBLICATIONS**

SPE 59060. Fracture Characterization a Key Factor in Yates Steam Pilot Design and Implementation (Feb. 2000).

## **PERSONAL**

Dual American and Canadian citizenship. Interests include downhill, cross-country and skate skiing, hiking and biking.