

BUTTERWORTH, Eyon G., P.Eng.

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A Professional Engineer (APEGA) with 27 years of experience in reservoir engineering with expert technical knowledge and experience, specializing in classical reservoir engineering and reservoir simulation with experience in thermal recovery methods and unconventional resource plays. Was responsible for reserve coordination and economic evaluations of projects and acquisitions, instrumental in the acquisition of a valuable new gas asset in 2017. Collaborated in a highly experienced cross functional team developing reservoir models for Suncor in-situ assets that optimized operations and future development plans.

CAREER HISTORY:

Butterworth Petroleum Consulting November 2018 to Present
Petroleum Engineering Consultant

- Providing reservoir engineering support, technical services, and training for experienced reservoir engineers
 - Reservoir Engineering advisor for tight gas play development in the Ukraine
 - Unconventional Resource Assessment and Valuation using SPE-PRMS guidelines
 - Reservoir modeling and simulation, well testing design and interpretation
 - Software program design utilizing Excel VBA and MS Visual Studio
 - Training for experienced Reservoir Engineers in new technical approaches, in particular for tight gas play development

Condor Petroleum Inc. November 2014 to April 2018
Senior Reservoir Engineer

- Engineering technical expert for company's merger and acquisitions pursuits
- Created reservoir testing, monitoring, appraisal, and development plans for the company's assets in Kazakhstan and Turkey
- Provided technical and operational expertise for the company's well completion, testing and stimulation activities
- Lead the company's reservoir engineering activities, including the Shoba Oil Field (Kazakhstan) and Poyraz Ridge Gas Field (Turkey)
- Lead corporate reserves reporting Kazakhstan, Turkey, and Calgary and liaised with third party evaluators
- Developed economic models for existing company assets, creating production forecasts and development plans vital for the company's business planning

LightStream Resources January 2012 to September 2014
Senior Reservoir Engineer – Enhanced Oil Recovery

- Designed, reviewed, and implemented secondary/enhanced oil recovery schemes for tight unconventional oil reservoirs (Bakken and Cardium formations), water injection, gas injection
- Reservoir modeling and simulation of primary and EOR processes in the Bakken and Cardium formations
- Evaluated new technologies for well workovers and completions
- Well test and hydraulic fracture analysis, incorporating analytical methods, to determine optimum fracture spacing and in-situ reservoir properties required for reservoir modeling

Marathon Oil Canada Corporation
Senior Reservoir Engineer – In-Situ Development

June 2010 to July 2011

- Geo-body modeling and geostatistical modeling of Marathon's Birchwood Oil Sands lease (CMG STARS) for economic appraisal and project viability study
- Reviewed competitor's projects to validate reservoir simulation output for Marathon's Birchwood Project
- Developed cap-rock integrity testing program, including vendor selection, review of the results and geomechanical modeling

Athabasca Oil Sands Corporation
Senior SAGD Reservoir Engineer – Geology Technology and Reservoir

November 2009 to April 2010

- Created Geo-body modeling and geostatistical modeling of AOSC's McKay River and Dover assets (CMG STARS)
- Collaborated with cross functional teams to develop thermal wellbore design (QFLOW) and start-up skids for SAGD wells
- Key technical contact for EUB supplementary information requests associated with AOSC's McKay River commercial application
- Designed competitor analysis database for use in A&D and asset benchmarking
- Joint Industry Project representative with Alberta Innovates collaborating with industry peers on technical application of new technologies

Suncor Energy Inc.
Reservoir Engineer – Natural Gas and In-Situ Recovery

April 2006 to September 2009

- Created an innovative approach in collaboration with geoscience team to develop thermal reservoir models used to optimize development of undeveloped areas for core asset, saving drilling costs and optimizing resource recovery
- Mentored and assisted junior engineers with reservoir simulation
- Led the design, development, and implementation of Suncor's new computing environment for reservoir simulation
- Reservoir engineering specialist providing instructions to field operations to optimize safe and reliable production
- Conducted thermal wellbore modeling to optimize steam injection rates with QFLOW, a thermal wellbore simulator, resulting in reduction of costs and increases in production
- Created disposal well applications and monitored disposal scheme Liaison for CMG and IBM accounts related to reservoir simulation

Pengrowth Corporation/Calpine Canada Resources Ltd.
Reservoir Engineer, Engineering and Operations

August 2001 to March 2006

- Performed major reservoir studies and analysis of Pengrowth's Heavy Oil properties acquired in June 2004 from Murphy Oil
- Participated in day-to-day operations of the Judy Creek Beaverhill Lake Project helping to optimize operations
- Built reservoir models: integrated geological/production/petrophysical information, ran various scenarios, provided results and recommendations
- Reservoir models completed (Exodus Reservoir Simulator):
 - mature waterflood (nine years production, seven years injection), Cecil Sand, N.E. B.C.
 - newly implemented waterflood/gas injection, Northpine Sand, N.E. B.C.
- Updated/reviewed existing simulation models
- Acted as liaison with the Alberta Research Council for reservoir activities and applications
- Conducted well test analysis on Pengrowth's wells (vertical and horizontal)

- Worked with engineers to ensure understanding of test procedures and appropriate testing to attain specific objectives
- Conducted year end reserves analysis, developed area budgets, and ran project economics

PetroStudies Consultants Inc.

September 1998 to July 2001

Reservoir Simulation Engineer

- Modeled hydrocarbon reservoirs for the purpose of developing optimum depletion strategies to meet specific financial, conservation or other goals of the company's clients.
- Major reservoir studies completed (Exodus Reservoir Simulator):
 - waterflood, Halfway formation in N.E. B.C.
 - conventional oil pool, Crossfield formation in south central Alberta
 - gas storage reservoir model, Kiskatinaw formation of N.W. Alberta
 - single well coning model for a Glauconitic reservoir in central Alberta
 - conventional oil pool under active water drive, Sawtooth formation, S.W. Alberta
- Updated/reviewed previously completed reservoir studies.
- 2-D and 3-D simulations of SAGD start-up operations (Exotherm Thermal Reservoir Simulator).
- Analytical analyses including Nodal Analysis calculations.
- Visual Basic Programming

Galas and Associates Ltd.

September 1996 to June 1998

Reservoir Engineer

- Developed a feasibility study which assessed the use of horizontal well technology in a heavy oil, Peace River sandstone reservoir.
- Modeled hydrocarbon reservoirs for the purpose of developing optimum depletion strategies to meet specific financial, conservation or other goals of the company's clients.
- Major reservoir studies completed (CMG's IMEX Black Oil Simulator):
 - Glauconite reservoir in S.E. Alberta. History match of 26 wells and optimisation of future
 - recovery from the pool by evaluation of horizontal wells and improvements to the pressure
 - support scheme.
 - Halfway reservoir in NW Alberta. Optimised the waterflood scheme, improve the accuracy of
 - the reserves estimate and optimise the recovery from the pool through adjusting the well pattern,
 - converting selected wells to water injection or in-fill drilling.
 - Polymer Flood Pilot Project, Upper Bowes (Sawtooth) Carbonate Formation with a medium
 - gravity oil, central Montana, geostatistical reservoir characterization.
- Conducted year-end reserves review for Gulf Canada, Pembina region of Alberta.

Independent Consultant

January 1996 to August 1996

A.O.S.T.R.A.

December 1993 to January 1996

Reservoir Engineer**EDUCATION:**

B.Sc. Mechanical Engineering
University of Calgary, 1993

PROFESSIONAL AFFILIATIONS:

Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Society of Petroleum Engineers (S.P.E.)

INDUSTRY TRAINING:

Unconventional Resource Assessment and Valuation
Introduction to Seismic Interpretation
EOR Methods to Enhance Oil Production: Mature and Emerging Technologies
Practical Field Applications of SAGD Technology
Workshop on the practical Aspects of Water and Gas Coning/Cresting
Applied Open-hole Log Interpretation
ENCH 621: Topics in Reservoir Simulation
Geology for Engineers
Geostatistical Reservoir Modeling
F.A.S.T. Well test for Windows

SOFTWARE:

Reservoir Simulation: Exodus, Exotherm, IMEX, STARS, Eclipse
Reservoir Modeling: Petrel
Thermal Wellbore Modeling (Q-Flow)
Microsoft Office (Excel, VBA, Word, PowerPoint, Access, Teams, Project)
Accumap, GeoScout, GeoVista
Oilfield Manager, PVR
IHS's F.A.S.T. suite (WellTest, ValiData, VirtueWell, R.T.A.) and ResBalance
Visual Studio, VB.Net and C++
ValueNavigator

PAPERS:

“Application of a Thermal Simulator with Fully Coupled Discretized Wellbore Simulation to SAGD”, T.B. Tan, E.G. Butterworth, P. Yang, presented at the 51st Annual Technical Conference of the Petroleum Society, June 2000, Calgary, Alberta, Published, in The Journal of Petroleum Technology, January 2002, Volume 41, No. 1.

HOBBIES AND INTERESTS:

Soccer Coach (CSA C Licensed Trained) – Foothills Soccer Club, U16 Boys Tier 2
Photography
Astronomy and Astrophotography
Woodworking
Computer Programming, Web Design

REFERENCES AVAILABLE ON REQUEST