

**TIMOTHY L. HOWER, P. E.**  
*Chief Executive Officer*



**MHA Petroleum Consultants LLC**

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**EDUCATION**

- B. S., Petroleum Engineering, Penn State University, 1981
- M. S., Petroleum Engineering, Penn State University, 1983

**PROFESSIONAL PROFILE**

In excess of thirty-five years of petroleum engineering evaluation experience including:

- Supervision/Project Management of technical studies including
  - Independent Expert on major international unitization and equity redetermination projects, mergers and acquisitions, arbitrations, and joint venture field development programs.
  - Integrated geological modeling, reservoir characterization and numerical simulation studies conducted worldwide.
  - Evaluation, assessment and field development planning for shale gas and shale oil reservoirs in the US, Europe, China, South Africa and Australia.
  - Reserve valuations, equity studies and acquisition due diligence of major oil and gas assets located in the domestic US and worldwide.
  - Assessment and evaluation of enhanced oil recovery (EOR) projects, including waterflooding, CO<sub>2</sub> injection, miscible and immiscible natural gas injection.
- Evaluation and optimization of underground gas storage projects, including Compressed Air Energy Storage (CAES) projects located in the U.S., Europe and Australia. Conducted industry training courses on reservoir engineering of underground gas storage reservoirs, and co-authored an industry textbook on gas storage reservoir management.
- Unconventional gas reservoir development (coalbed methane, shales, tight gas). Authored and presented industry training courses on coalbed methane and tight gas reservoirs.
- Black oil, compositional, and unconventional reservoir simulation studies (North/South America, Europe, Africa, Australia, New Zealand and China).
- Design and implementation of pressure transient testing programs for reservoir characterization and evaluation.
- Development and instruction of reservoir engineering, enhanced oil recovery (EOR), production optimization and reservoir simulation industry training courses offered through

OGCI-Petroskills.

- Manager of software client support and instruction of training courses for the ECLIPSE suite of software products.
- Expert witness testimony and testimony before various regulatory commissions, the London High Courts, the High Court of New Zealand, and the Supreme Court of South Australia.

Registered Professional Engineer: Colorado, Wyoming U.S.A.

## WORK EXPERIENCE

MHA PETROLEUM CONSULTANTS, LLC., Denver, Colorado:

(July, 1997 - Present) **CEO and Petroleum Engineering Consultant**

Responsible for the day to day operations of an organization of approximately 25 people with active engineering projects throughout the world. In charge of staff development, staff recruitment, development of new business and new business contacts, as well as maintaining relationships with the company's existing client base. Project Manager of numerous engineering consulting projects worldwide. Instruction and development of industry training courses.

ENRON OIL & GAS COMPANY, Denver, Colorado and Houston, Texas:

(October, 1995 to June, 1997) **Engineering Manager**

In charge of a staff of reservoir, production engineers, and support personnel. Responsible for property evaluations, exploration and exploitation drilling programs, secondary recovery design and implementation, reservoir simulation studies, reserve and acquisition evaluations, and annual budgeting and forecasting for EOG's largest division.

INTERA Petroleum Division, Denver, Colorado:

(October, 1990 to September, 1995) **Sr. Manager, E&P Studies; Consulting Engineer**

Manager of the North American consulting group which included a staff of more than 30 geologists, geophysicists, petrophysicists and engineers. Responsible for staff development, staff recruitment, and profit/loss for Intera's largest global consulting group. Provided engineering, simulation and software support services for clients in North and South America, Europe, Africa, Australia and China.

CNG Development Company, Pittsburgh, Pennsylvania:

(October, 1988 to September, 1990) **Staff Engineer**

Management of oil and gas properties in conventional and unconventional (tight sands, shales, and coalbed) reservoirs. Production forecasting, field optimization, reserve estimates, formation evaluation, and depletion and drainage studies.

TENNECO OIL Exploration and Production, Denver, Colorado:

(June, 1983 to September, 1988) **Senior Reservoir Engineer**

Responsible for management of oil and gas properties in the Rocky Mountain Region. Unitization studies for several enhanced recovery projects in North Dakota. Lead engineer for Tenneco's significant interests in the San Juan Basin of New Mexico.

## PROFESSIONAL MEMBERSHIPS

- Elected in 2015 as a Society of Petroleum Engineers (SPE) Distinguished Member.
- C. Drew Stahl Distinguished Alumni Achievement Award presented by the Pennsylvania State University, April 2011.

- Chairman – Denver Section of the SPE; 2001/2002.
- SPE *Henry Matson Technical Service Award*, May 2000, for innovative contributions in the field of engineering in gas reservoirs.
- Chairman; SPE Reprint Series on Layered Reservoirs
- Editor; SPE Reprint Series on Reservoir Management
- Professional Engineering Registration Committee
- General Chairman, 1993 SPE Low Permeability Reservoirs Symposium
- Program Chairman, SPE Low Permeability Reservoirs Symposium (1995, 1998, 2000)
- SPE Gas Technology Committee; SPE Reprint Series Committee
- SPE Distinguished Lecturer Selection Committee
- General Chairman; 2005 SPE Rocky Mountain Technical Conference

## PUBLICATIONS

1. Sipeki, J. and Hower, T.L., “Impact of Operator’s Best Practices, Completion Design and Well Density on Projected Ultimate Recoveries of Horizontal Bakken Wells in Williams County, North Dakota”, to be presented at the 2013 Unconventional Resources Technology Conference (URTeC), Denver, Colorado, 12-14 August.
2. Aldrich, J., Hower T.L., and Sipeki, J., “Assessing and Advancing a CBM Resource Play Towards Commerciality – A Case Study From the UK; PEDL 159 Solway Basin”, presented at the AAPG 2012 International Convention, Singapore, September 2012.
3. “Certification of Reserves and Resources for CSG Assets”, workshop presented at the Asia Pacific CBM Forum, 8 May 2011, Brisbane.
4. “Modeling Unconventional Gas Reservoirs”, workshop presented 20-21 February 2010, Adelaide, Australia.
5. “Performance Evaluation of CSG Reservoirs”, workshop presented 17-19 February 2010, Brisbane, Australia.
6. “Reservoir Aspects of Unconventional Gas Resources: Coalbed Methane, Shales and Tight Gas”, workshop presented at the SMi Unconventional Gas Conference, London, April, 2009
7. “Coalbed Methane Geology, Engineering and Reserves”, workshop presented January, 2009, Kuala Lumpur, Malaysia.
8. “Coalbed Methane – Progressing from Resource to Reserves”, workshop presented at the SMi Unconventional Gas Conference, London, March, 2008
9. “Coalbed Methane Reserves Workshop”, Brisbane, Australia, 2008
10. “Recent Developments in Forecasting Coal Seam Methane Production”, presentation for the Brisbane, Australia SPE Section, 15 February 2005.
11. “A U.S. Perspective. Forecast for the Future – Reliability of Supply and Deliverability of Coal Seam Methane Resources”, presentation at the December 2003 Australian CBM Conference in Brisbane.

12. Hower, T.L., "Coalbed Methane Reservoir Simulation: An Evolving Science," paper SPE 84424 presented at the 2003 SPE Annual Technical Conference and Exhibition, Denver, Colorado, 5-8 October.
13. Hower, T.L., Jones, J.E., Goldstein, D., Harbridge, W.: "Development of the Wyodak Coalbed Methane Resource in the Powder River Basin," paper 84428 presented at the 2003 SPE Annual Technical Conference and Exhibition, Denver, Colorado, 5-8.
14. Gas Reservoir Management, Applied Reservoir Engineering, Reservoir Engineering for Others; technical training manuals for OGCI/Petroskills industry training courses; 2001/2002.
15. *Principles of Reservoir Engineering* and *Reservoir Engineering Mechanisms*, technical training manuals for British Petroleum Corp., Sunbury, UK; 1999.
16. *Managing Water-Drive Gas Reservoirs*, co-author of the textbook published by the Gas Research Institute, Chicago, Ill, 1993.
17. *Gas Reservoir Management* and *Gas Reservoir Modeling*, technical training manuals for Amoco Production Company, Houston, Texas, 1993.
18. Hower, T.L., Fugate, M.W., and Owens, R.W.: "Improved Performance in Aquifer Gas Storage Fields Through Reservoir Management", paper SPE 26172 presented at the 1993 Gas Technology Symposium, 28-30 June, 1993, Calgary, Alberta.
19. Hower, T.L., and Owens, R.W.: "Reservoir Management of a Gulf Coast Water-Drive Gas Field", presented at the 1992 International Gas Research Conference, 16-19 November, Orlando, Florida.
20. Hower, T.L., Lewis, D.R., and Owens, R.W.: "Recovery Optimization in a Multi-reservoir Offshore Gas Field with Water Influx", paper SPE 24865 presented at the 1992 SPE Annual Technical Conference and Exhibition, 4-7 October, Washington, D.C.
21. Hower, T.L., and Decker, M.K.: "Identifying Recompletion Candidates in Stratified Gas Reservoirs", presented at the 1992 Mid-Continent Gas Symposium, 13-14 April, Amarillo, Texas.
22. Hower, T.L. and Jones, R.E.: "Predicting Recovery of Gas Reservoirs Under Water-Drive Conditions", paper SPE 22937 presented at the 1991 SPE Annual Technical Conference and Exhibition, 6-9 October, Dallas.
23. Hower, T.L.: "Using Depletion Ratios to Select and Evaluate Drilling Locations in Naturally Fractured Gas Reservoirs", paper SPE 20758 presented at the 1990 SPE Annual Technical Conference and Exhibition, 23-26 September, New Orleans.