

# TIPS

## GGG Modeling Results

### Choosing Flow Algorithm is Very Important

#### This Month:

##### GGG Modeling

Why flow algorithms could make or break a project

##### Reserves in the Arctic

What does the arctic have that we don't?

##### MetroPetro

Canada won't sit idly by...

##### Staff Spotlight

Just who *is* the guy that does the newsletter?

Granger J. Low

Getting good modeling results often requires careful attention to choice of multi-phase flow algorithm. Proven makes sure we always use modeling software that includes algorithm options – especially including OLGAS.

In a project completed for a client several years ago, Proven found that modeling high water-gas ratios tested the limits of most modeling algorithms. We found successful history matching only with one algorithm – the OLGAS method implemented by Neotech in their Forgas and Wellflow software. The client's gas pool produced over 1000 barrels of water per million standard cubic feet (bbl/MM) of water.

Petroleum engineering literature addresses modeling of water-gas ratios. However, none of the literature addresses water gas ratios over 100 bbl/MM.

Not all multiphase flow algorithms are created equal. Most were created for specific fluids, specific flow patterns, or specific computational methods. Using the wrong algorithm in a situation could make your model poorly predict gathering system performance.

OLGAS is a steady state form of the dynamic mechanistic model that is the proprietary property of Scandpower of Norway.

Proven modeled gas lift systems to lift wet gas that contained over 1000 bbl/MM. The objective of the model was to determine optimal compressor sizing and the effect of dewatering the gathering system.

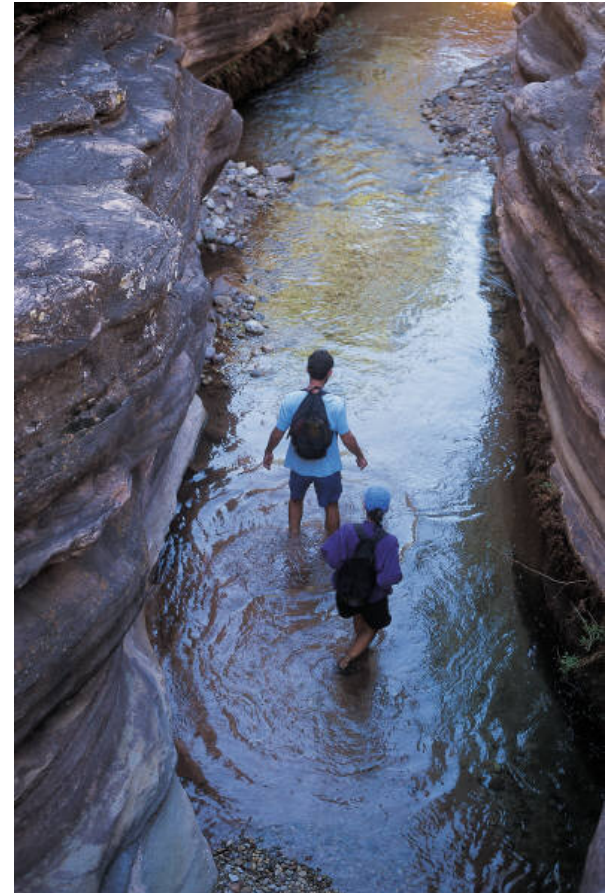
After building the reservoir, wellbore, and pipeline model we used history matching to ensure

**“...Good modeling results often requires careful attention to choice of multi-phase flow algorithm”**

the model represented the field conditions well. We found that the ability to history match was impossible using less rigorous multi-phase flow algorithms.

Among other conclusions, we noted for the client that there were several chokes in the pipeline system. We showed the increased gas production that could be obtained by removing the chokes.

Modeling the addition of new dry gas streams helped the client see the upside of re-staging their compressor.





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# Oil Reserves in the Arctic

## Why does the world suddenly care?

Recently, the USA and Russia have been showing aggressive behavior towards claiming Canada's arctic regions for themselves. Canadian Prime Minister

Stephen Harper has pledged to protect Canada's arctic.

Why the sudden interest in the arctic? It's just ice and snow, isn't it?

Currently, it has been estimated that there is at least 0.585 billion bbl of recoverable oil and 6.57 Tcf of recoverable natural gas that has been found. With the petroleum market doesn't appear to lose steam any time soon, it goes without saying that those arctic reserves are extremely valuable.



## Company News

### That guy that does the newsletter

Brandon Low has worked in various capacities at Proven Reserves since 2000 and is currently a marketing editor and office technician.

Brandon was born and raised in Calgary, but has also lived in the USA and Japan for several years. He is currently completing a degree in Japanese and Communications at Brigham Young University in Provo, Utah.

Brandon has worked on Proven's newsletter and marketing efforts since 2003, and occasionally works as a freelance artist and drafter.



In his spare time, Brandon enjoys creating and appreciating art in many forms. He has run a personal web-comic during his high school years, and currently maintains a regular blog. Brandon also works at keeping up his second language of Japanese whenever he can. He also enjoys video gaming when he has the time.

Thanks me!

## MetroPetro



Canada seeks to defend its arctic resources

[click for larger image](#)

## Upcoming Events

**CWLS Technical Luncheon**  
Sept. 5, 2007  
Calgary, Alberta  
[www.cwls.org](http://www.cwls.org)

**APEGGA Professional Development Days**  
Sept. 17-18, 2007  
Calgary, Alberta  
[www.apegga.com](http://www.apegga.com)

**SPE Technical Luncheon**  
Sept. 17, 2007  
Calgary, Alberta  
[www.speca.ca](http://www.speca.ca)

