Conventional Wisdom: A Different Approach

Exploration in the Central Utah Thrust Belt
Thrust Belt Province – Oil and Gas Field Distribution

Canadian productive salient

Thrust Belt of Western North America

Wyoming productive salient

600 MMBO, 13TCFG

150 MMBO (2 fields)
Covenant & Providence Fields
Bedrock Geology - State of Utah

Leading Edge Thrust Belt

20,000 square miles
Covenant Field Discovery

- December 22, 2003
  Navajo penetrated at 5840 ft with strong oil shows

- Second Navajo penetration at 8150 feet

500’ Oil Fluorescence
Utah Thrust Belt Play
Conventional Wisdom

• Salt Diapir Anticlines versus Thrust Belt
• Source Rock Over Mature - No Cretaceous Source
• Drilling Problems are too Severe
• Previous Drilling Tested Structures
• Poor Seismic Imaging
Salt Diapir versus Thrust Belt

Location of Covenant Field
Salt Diapir

Figure 1: Structural relationships of the San Poole Valley, Gunnison Plateau area, interpreted from seismic and proprietary geologic data.
**Structural Cross-Section**  
Central Utah Thrust Belt - 2004

Fold trends extends 40 miles North/South (4 structures)
Structural Cross-Section
Covenant Fault-Bend Fold
**Conventional Wisdom - Poor Seismic Imaging**

The Truth - Large Structures can be Mapped with 2D & 3D Seismic

6 out of 25 wells tested structural crest, with 2 New Field Discoveries (Covenant 2003 and Providence 2008)
**Conventional Wisdom - No Source Rock**

The Truth - Mississippian Formations are Excellent Source Rocks

- Measured over 15%TOC
- Corrected (PG) 25% TOC
- 1000+ ft over 2% TOC
- Highly oil-prone OM
- In thermal maturity range

**Presenter’s Notes:** this slide combines a picture of the “smoking gun” source rock (I didn’t identify where the numbers came from nor did anyone ask). I made the joke that if you want black source rocks, the effective SR for this play is “blacker than black”. PG stands for “pre-generation” – where we correct the numbers back using organic matter w/ thermal maturity to estimate the numbers of pre-generation.
Future?

• Mississippian and Permian reservoirs
• Source could open up potential in other states
• Mississippian shale plays could be developed in new areas
• Additional Navajo Sandstone fields
How to Tell Good Ideas From Bad Ideas

• Gather all the data you can, use your instinct to determine what information is pertinent

• Some information, even though true, doesn’t have a bearing on the problem you’re trying to solve

• Think in the big picture

• Failures - dry holes tell a story that can lead to success (Chevron Salina Unit #1 1981)

• Use all the technology and science you can to discern good ideas
Advice to Oil and Gas Finders

• Develop Creativity - look at play areas and prospects with a different and new perspective.

• Creativity can be learned, it’s like learning to draw.

• Exploration is an art.
Advice to Oil and Gas Finders

• You can’t be an expert at everything
• Maintain collaboration with creative talent
  Geochemistry – Dave Wavrek
  Structural Geology – Dan Schelling
  Wolverine Staff
• Work with people who are willing to take drilling risks and who are willing to mentor
  Sid Jansma Jr.
  Sam Cerny
Advice to Oil and Gas Finders

• Maintain a learning attitude
• Experience is a great teacher, but it must be supplemented with new skills and concepts
Be Persistent and Enthusiastic
There are lots of reasons not to drill

- It’s not in the budget
- Your ideas have only a limited use in their present form
- It’s more trouble than it’s worth
- Technical staff pulls back from project
- It’s a bone yard
“There’s gold, and its haunting and haunting
   It’s luring me on as of old
Yet it isn’t the gold that I’m wanting
   So much as finding the gold”
   Robert Service – “The Spell of the Yukon”

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