

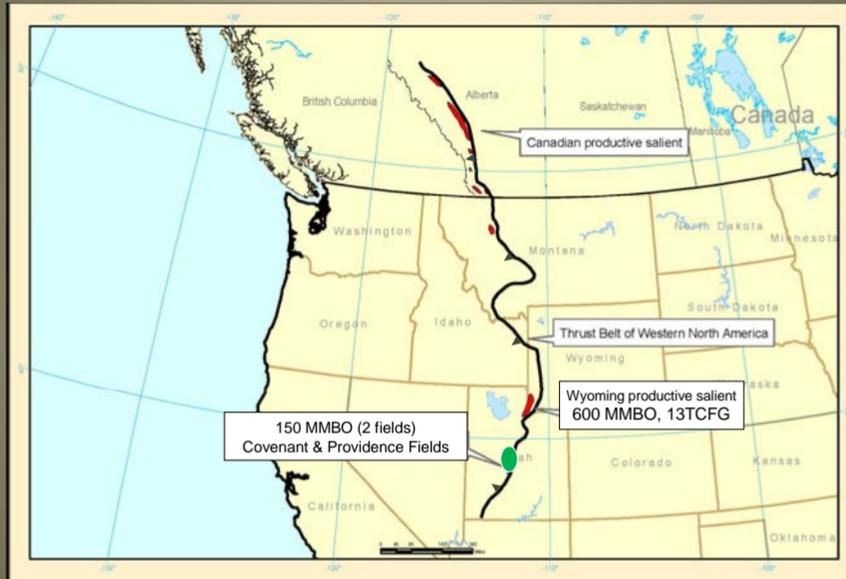
Doug Strickland - Jayden Consulting LLC

Conventional Wisdom: A Different Approach

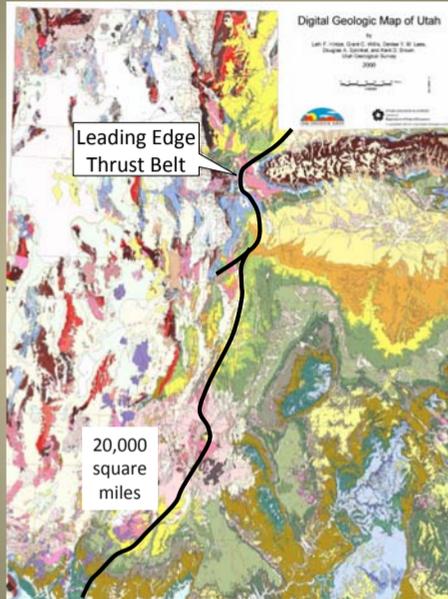


Exploration in the Central Utah Thrust Belt

Thrust Belt Province – Oil and Gas Field Distribution



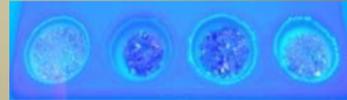
Bedrock Geology - State of Utah



Covenant Field Discovery



- December 22, 2003
Navajo penetrated at 5840 ft
with strong oil shows
- Second Navajo penetration
at 8150 feet



500' Oil Fluorescence



Jayden Consulting LLC
Grand Rapids, Michigan

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

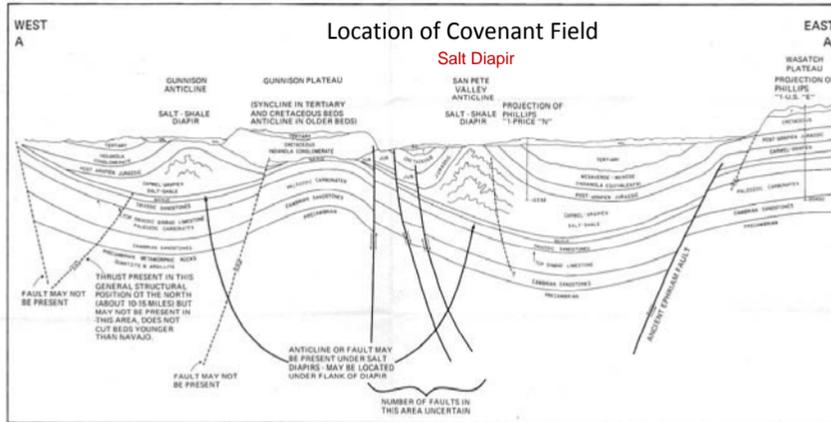
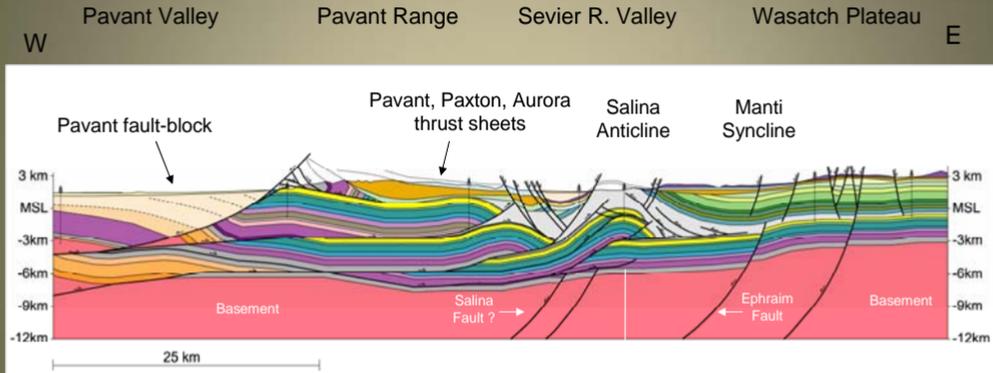


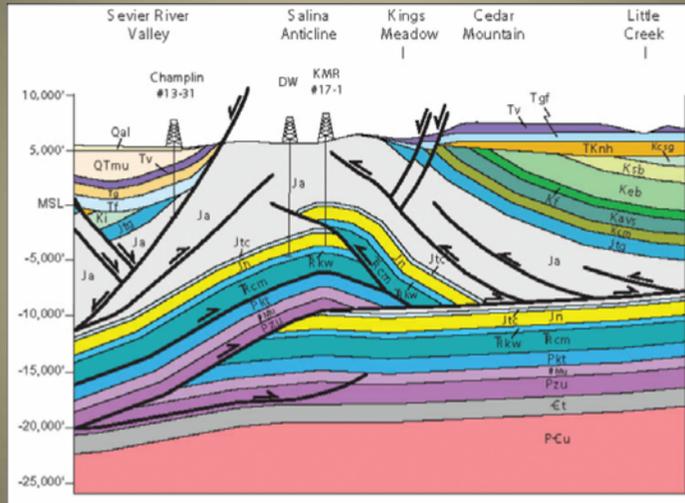
FIGURE 1—STRUCTURAL RELATIONSHIPS OF THE SAN PETE VALLEY—GUNNISON PLATEAU AREA. INTERPRETED FROM PUBLISHED AND PROPRIETARY GEOLOGIC DATA.

Structural Cross-Section Central Utah Thrust Belt - 2004



Fold trends extends 40 miles North/South (4 structures)

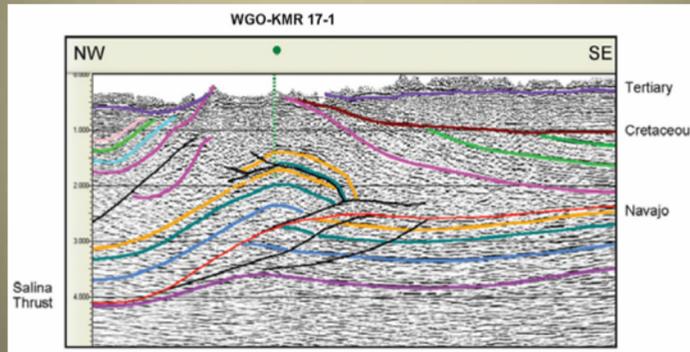
Structural Cross-Section Covenant Fault-Bend Fold



Conventional Wisdom - Poor Seismic Imaging

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

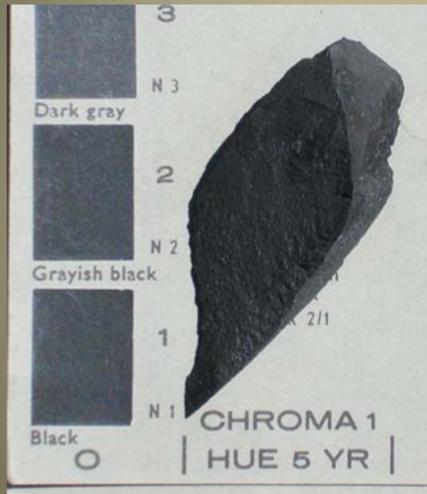
6 out of 25 wells tested structural crest, with 2 New Field
Discoveries (Covenant 2003 and Providence 2008)



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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



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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 your 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



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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



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Grand Rapids, Michigan

Enjoy the hunt!

“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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