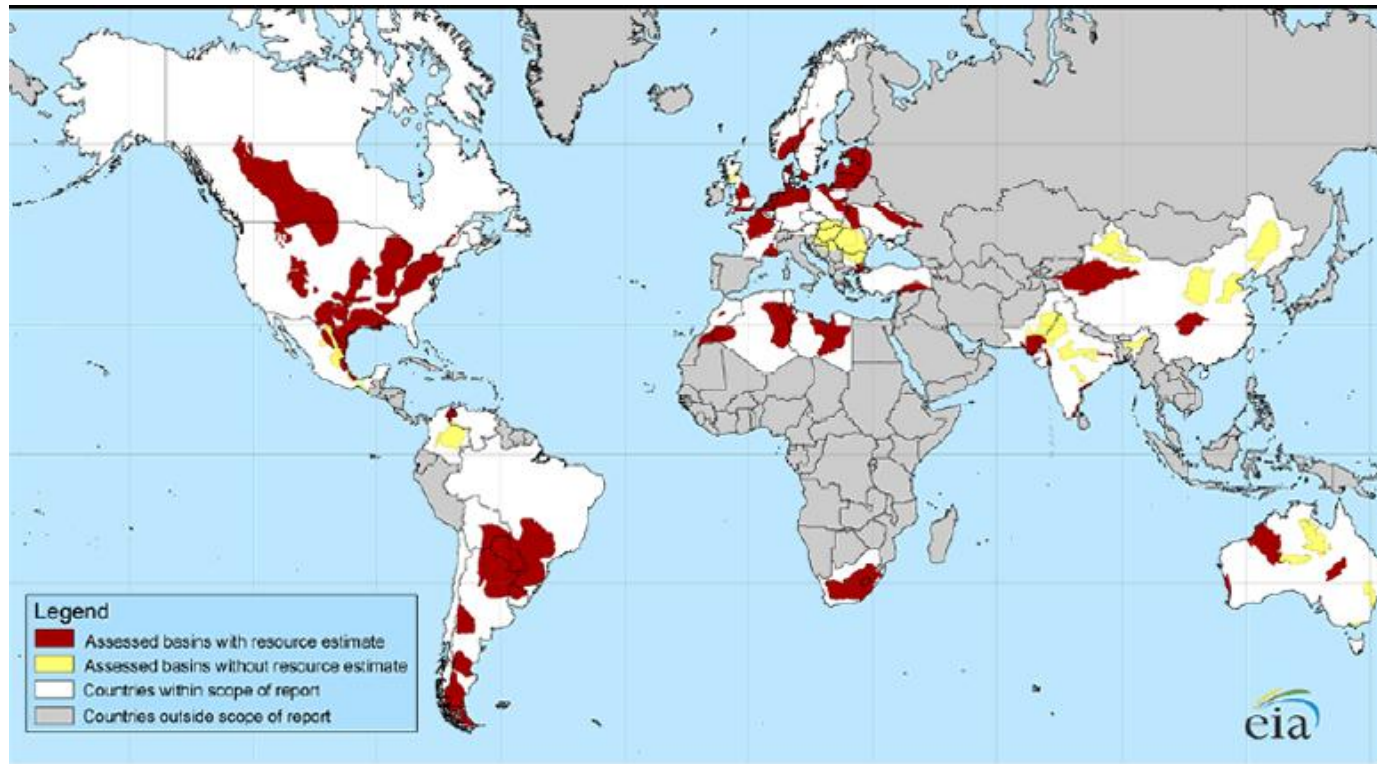


Applying lessons from the Bakken, Marcellus and Utica to Shale Plays Worldwide

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PRA
Platte River Associates, Inc.

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Marcellus & Utica Shale Plays

- “ Platte River Associates, Inc. has been developing Petroleum System software since 1985, which is an extremely useful tool for evaluating key qualities of shale gas formations.
- “ These tools have been used to complete an evaluation of the Utica and Marcellus shales of New York.
- “ **The method of study can be used to aid in evaluating gas-prone organic-rich shale plays worldwide.**
- “ Platte River has expanded its shale gas evaluation into Pennsylvania using a similar approach.
- “ Results from the study have been organized in both Petra and ESRI ArcMap databases and are now being offered as a comprehensive tool for companies working the Marcellus shale.

Bakken Shale Play

- “ Platte River Associates (PRA) has also released their extensive Bakken/Three Forks study with an in-depth evaluation of the Bakken Shale.
- “ While the study details the geochemistry and thermal history as related to the Bakken Shales, **the method of study can be used to aid in evaluating liquid-prone organic-rich shale plays worldwide.**
- “ Within the study, PRA has developed a 3-D model that was used to evaluate these organic-rich shales with respect to hydrocarbon potential through geologic time.
- “ For one PRA client the study led directly to the acquisition of 70,000 acres which has since become a major producing field in the Bakken shale play.

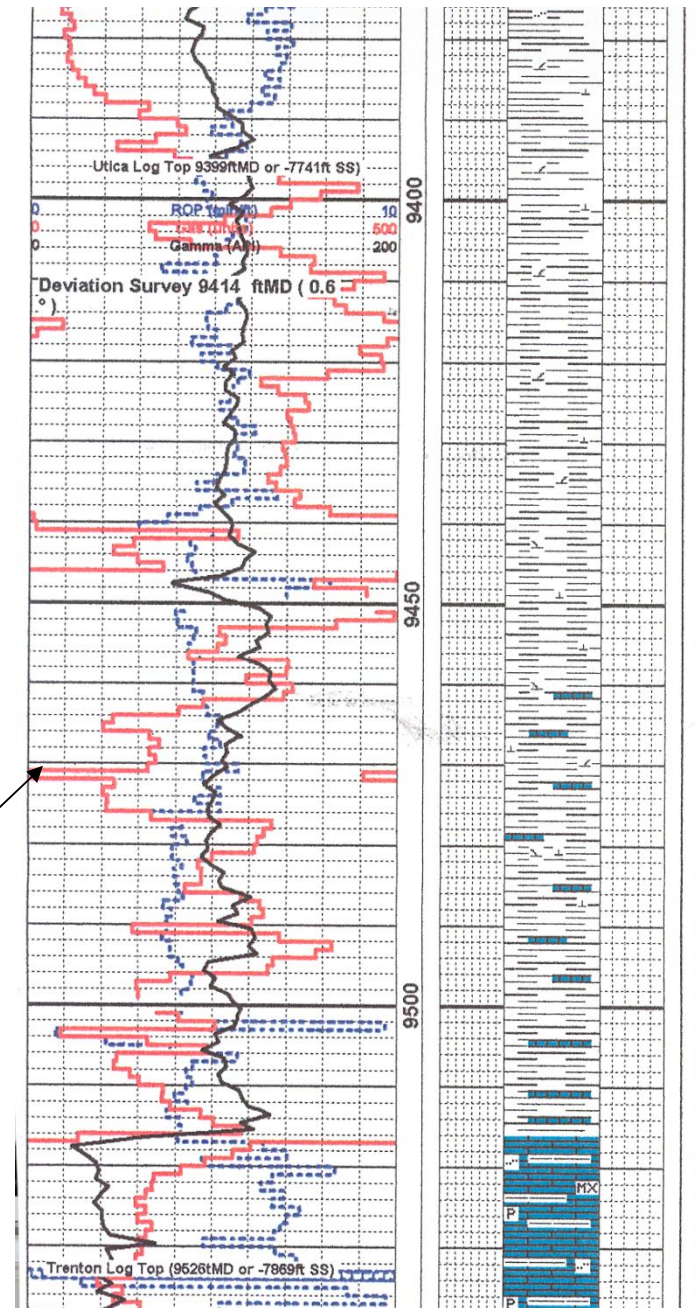
Why The Utica Shale?

- The Utica is considered the source rock for most of the east's Cambrian through Silurian reservoirs.
- The shale has been described as being "*sub-bituminous*", and *fresh samples can be **ignited***.



Why The Utica Shale?

- Early success:
 - Forest Oil in Quebec
 - Range Resources in Pennsylvania (4.4 MMcf/day)
- Rich Organic Content: Eastern NYS, 2-15% (present day)
- Excellent Gas Quality: 90% to 97% methane (Eastern New York)
- Notable shows of gas through the Utica section, Lobdell #1, Chenango Co., the Leslie #1, Delaware Co., **Konstantinides #1**, Chemung Co., Maxwell #1, Steuben Co., and the Puskarenko #1, Herkimer Co.



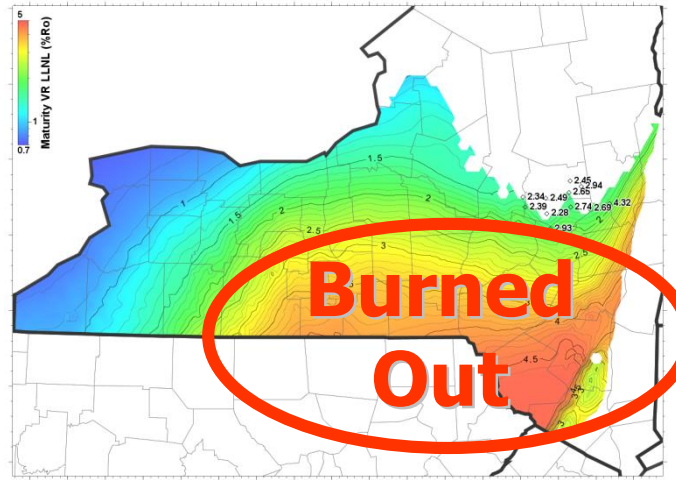
PI/Dwights PLUS on CD Well Summary Report

| General Information | | | |
|---------------------|------------------------|---------------------|----------------|
| State | : NEW YORK | Final Status | : UNKWN |
| County | : HERKIMER | Drill Total Depth | : 700 |
| Field | : UNKNOWN | Log Total Depth | : |
| Operator Name | : UNKNOWN | True Vertical Depth | : |
| Lease Name | : C WADELL | | |
| Well Number | : 1 | Spud Date | : JAN 01, 1921 |
| API Number | : 31043000020000 | Comp Date | : JAN 01, 1921 |
| Regulatory API | : 31039010360000 | | |
| Init Lahee Class | : D | Hole Direction | : VERTICAL |
| Final Lahee Class | : U | Reference Elevation | : |
| Permit Number | : | Ground Elevation | : 1220 |
| Geologic Province | : ADIRONDACK UPLIFT | KB Elevation | : |
| Formation at TD | : 253VRNN VERNON /SH/ | | |
| Oldest Age Pen | : 253 SILURIAN CAYUGAN | | |
| Township | : WINFIELD | District | : |
| Lot | : | Section or Equiv | : |
| Ref Latitude | : 42.9166666 | Ref Longitude | : -75.1666666 |
| Map Quad Name | : WINFIELD | | |

| Additional Location Information | | | |
|---------------------------------|------------------|-----------------|---|
| Footage Location | : 19600 S 6450 W | LAT/LONG | : |
| Latitude | : 42.8628900 | Latitude (Bot) | : |
| Longitude | : -75.1666666 | Longitude (Bot) | : |

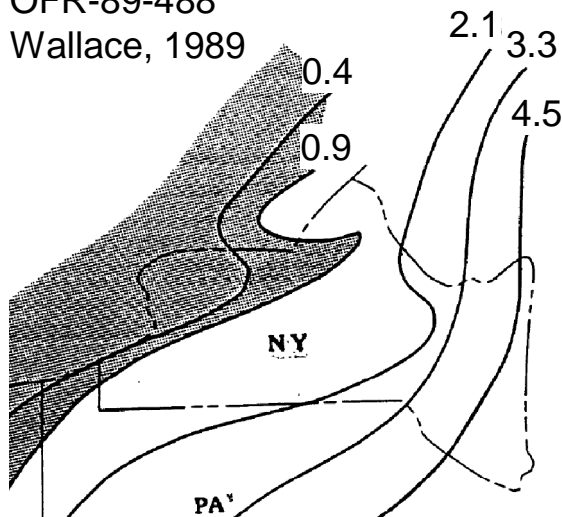


Utica Shale: Present Day Maturities (%Ro)

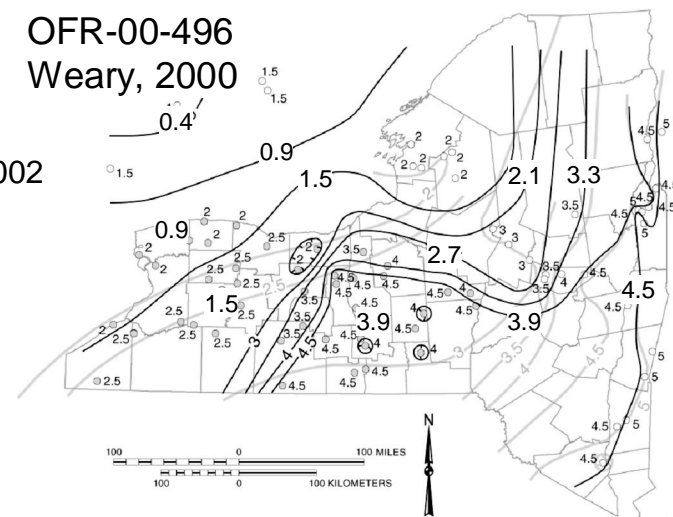


Based on Conodont Measurements (Ordovician)

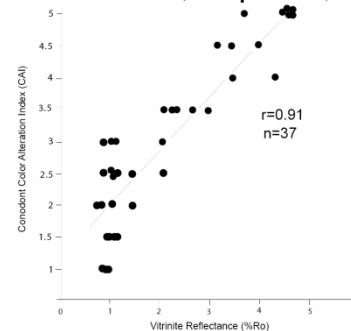
OFR-89-488
Wallace, 1989



OFR-00-496
Weary, 2000



OFR-02-302; Repetski, 2002



Why does this highly mature (burned out) Utica Shale have significant gas shows throughout New York?

- “ Over the last 7 years Platte River Associates has developed the software technology, expertise and successful track record to answer such questions for shale plays worldwide.
- “ For further information contact China Leonard: c.leonard@platte.com or visit the website: www.platte.com