



# Woodford Exploration in the Anadarko Basin

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# Woodford Exploration

## Basic Requirements for Shale Play

a.) Thickness

b.) Depth

c.) Barriers

d.) Maturity

e.) TOT

f.) Gas Content

g.) Porosity

h.) Permeability

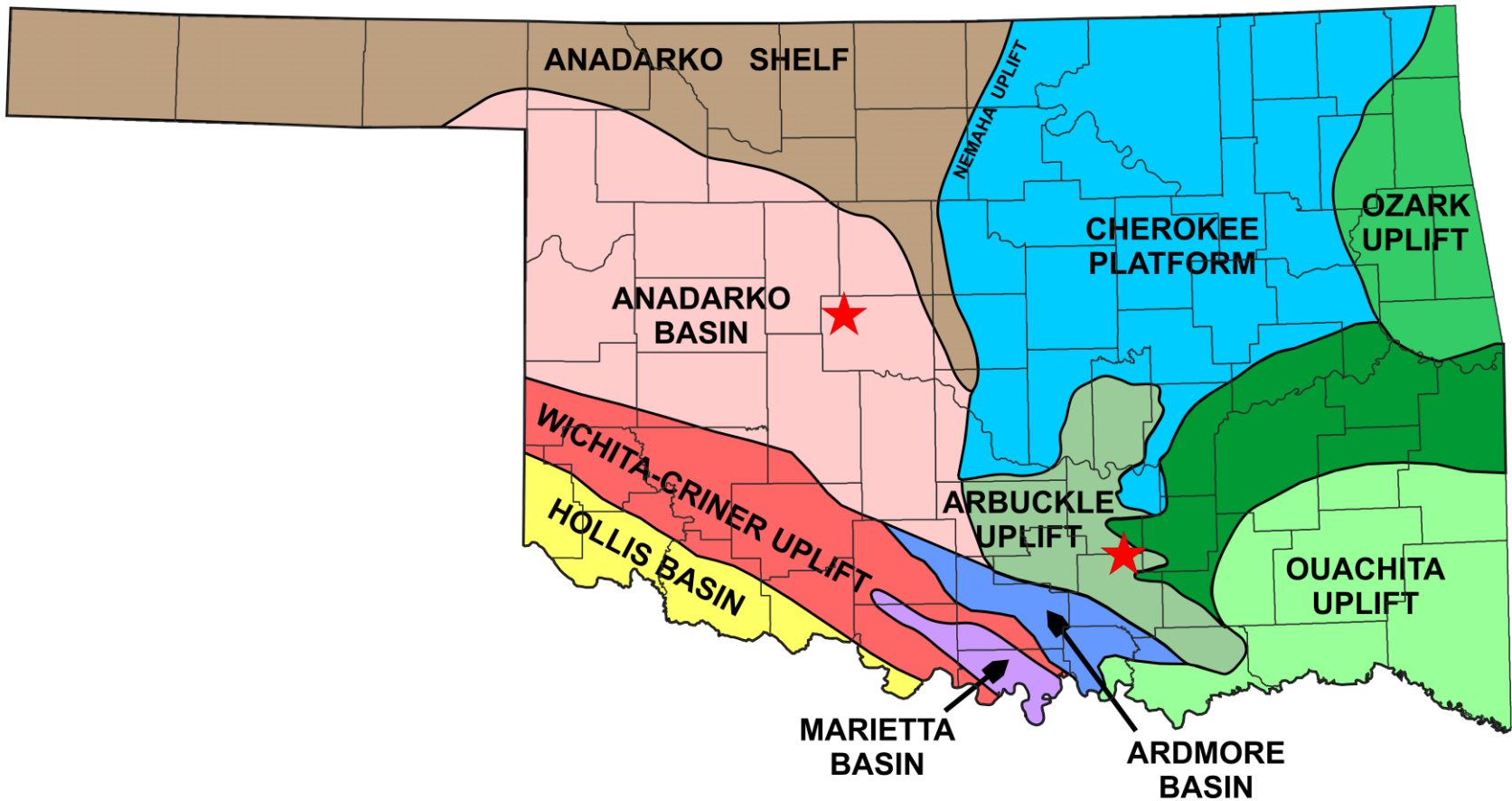
i.) Pressure Gradient

j.) Gas Volume

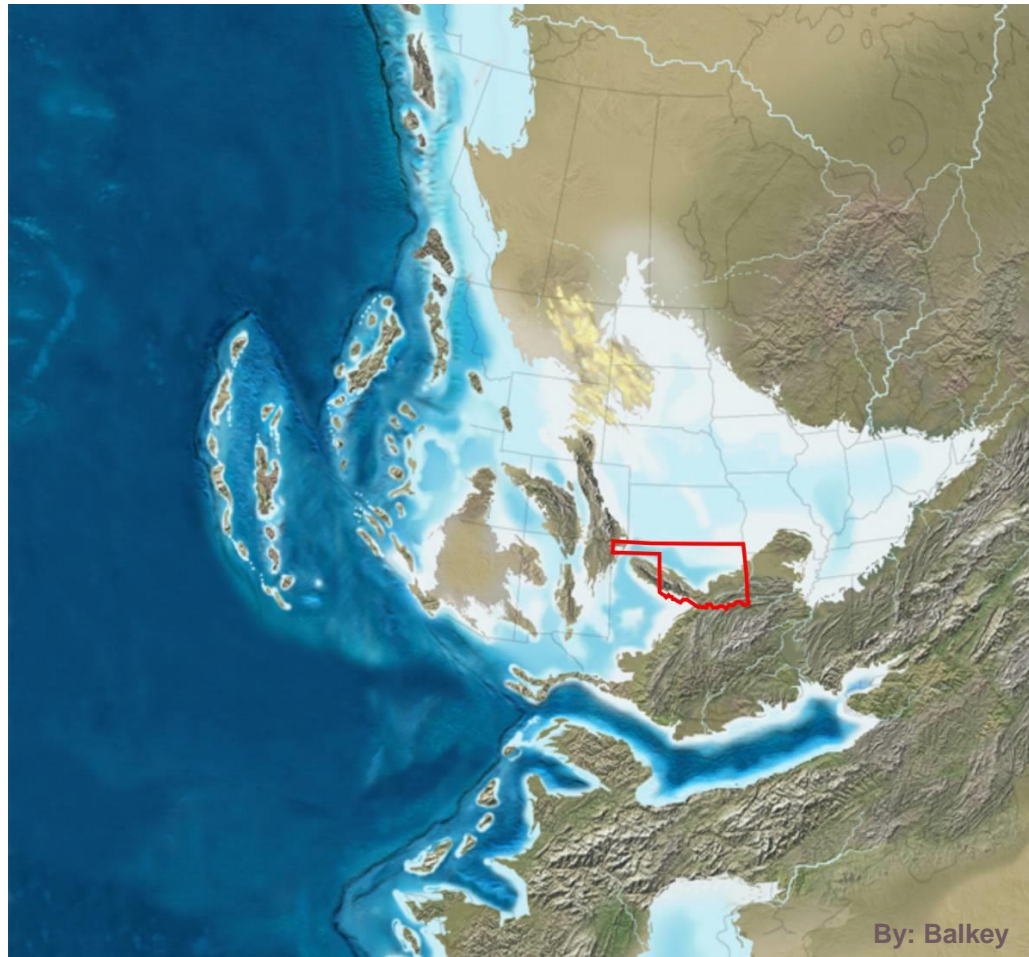
k.) Fractures

# Woodford Exploration

## Major Structural Features of Oklahoma

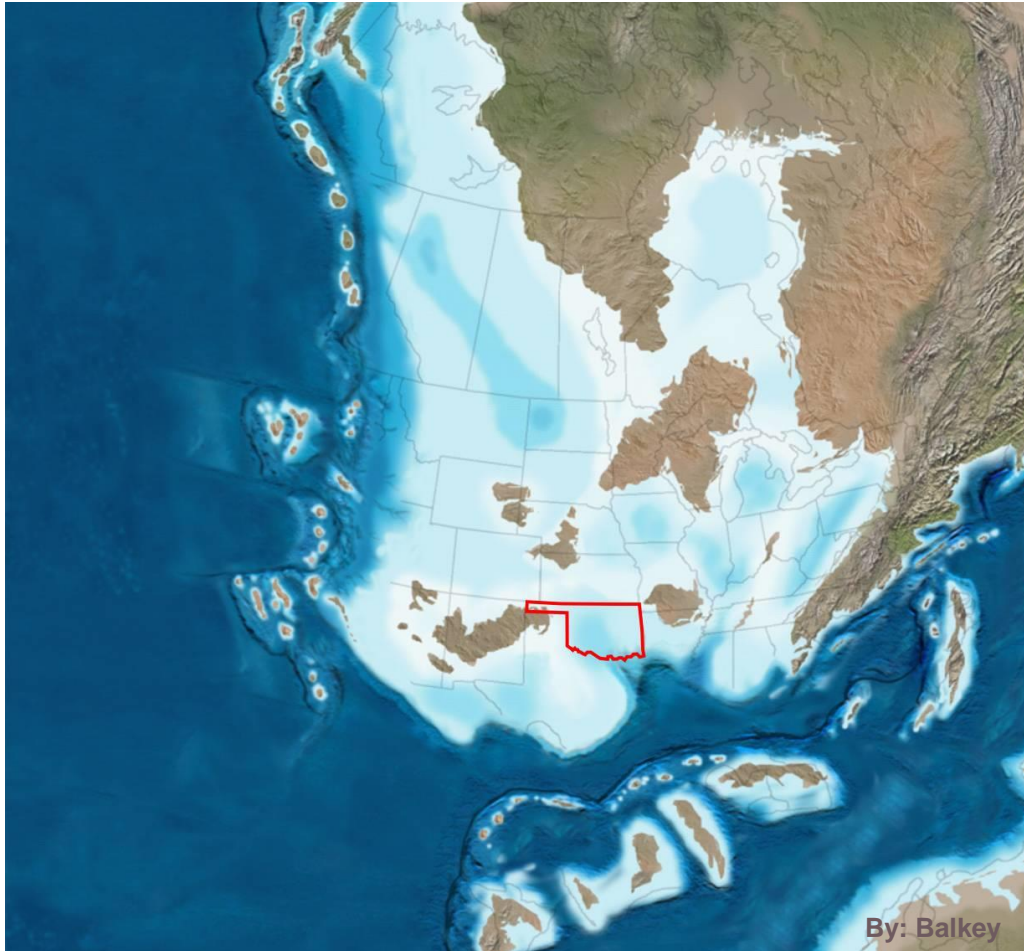


# Woodford Exploration Paleogeographic Map



- Late Pennsylvanian

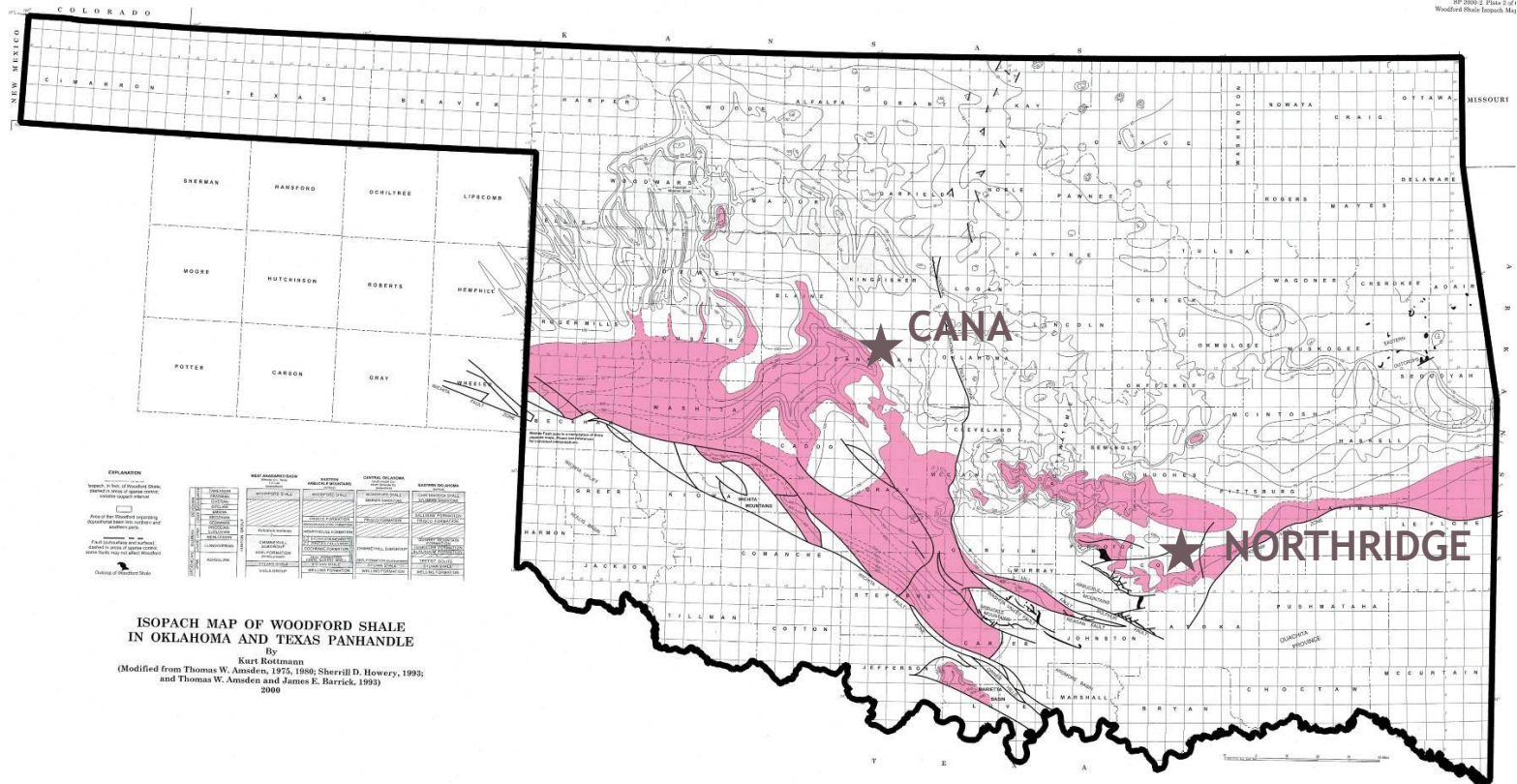
# Woodford Exploration Paleogeographic Map



- Late Devonian



# Woodford Exploration Isopach



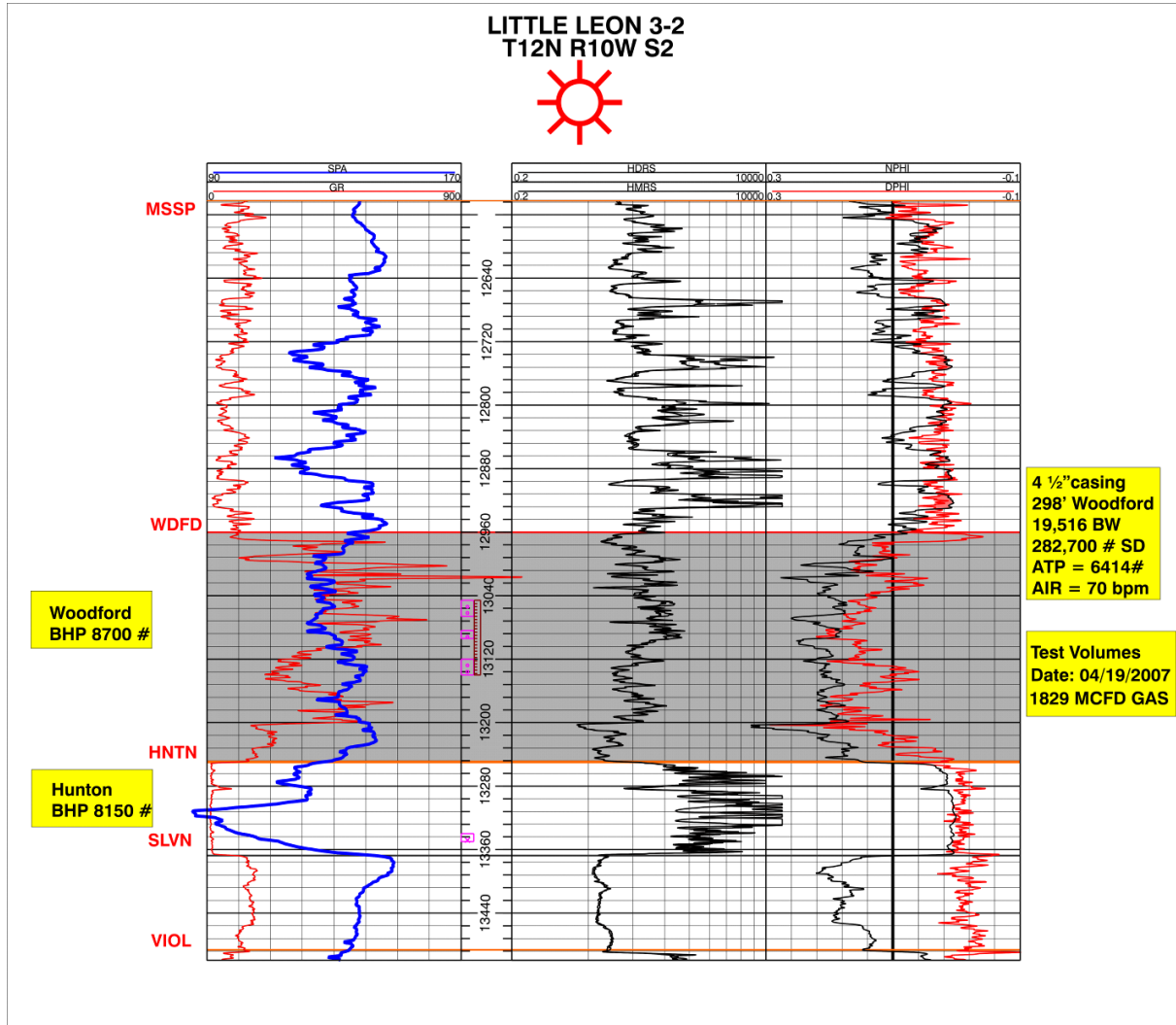
**ISOPACH MAP OF WOODFORD SHALE  
IN OKLAHOMA AND TEXAS PANHANDLE**

By  
Kurt Rottmann  
(Modified from Thomas W. Amstutz, 1975, 1980; Sherrill D. Howery, 1993;  
and Thomas W. Amstutz and James E. Barrick, 1993)  
2008

■ ≥ 200' Thickness

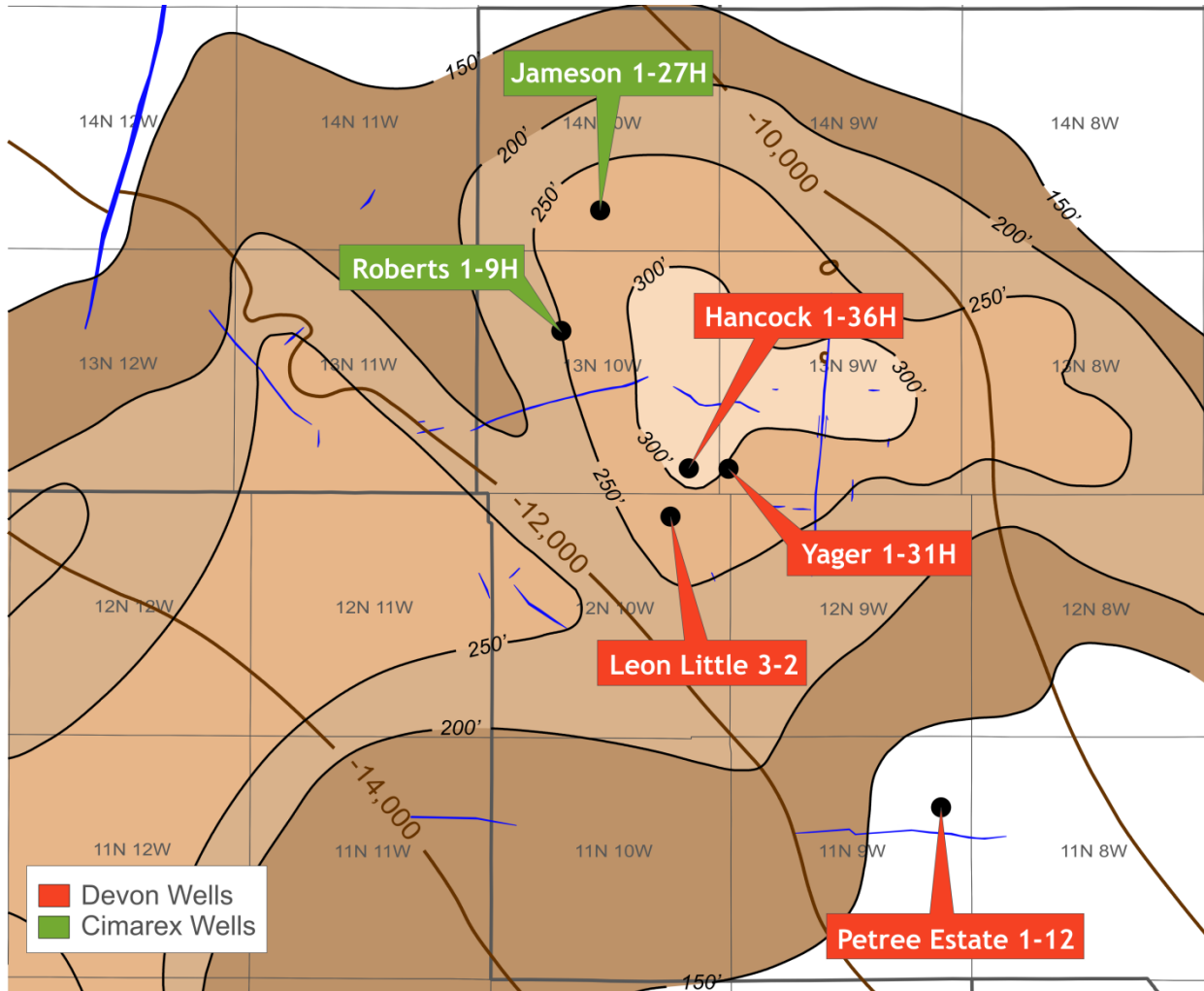
# Woodford Exploration

## Vertical Woodford Test



# Cana Prospect

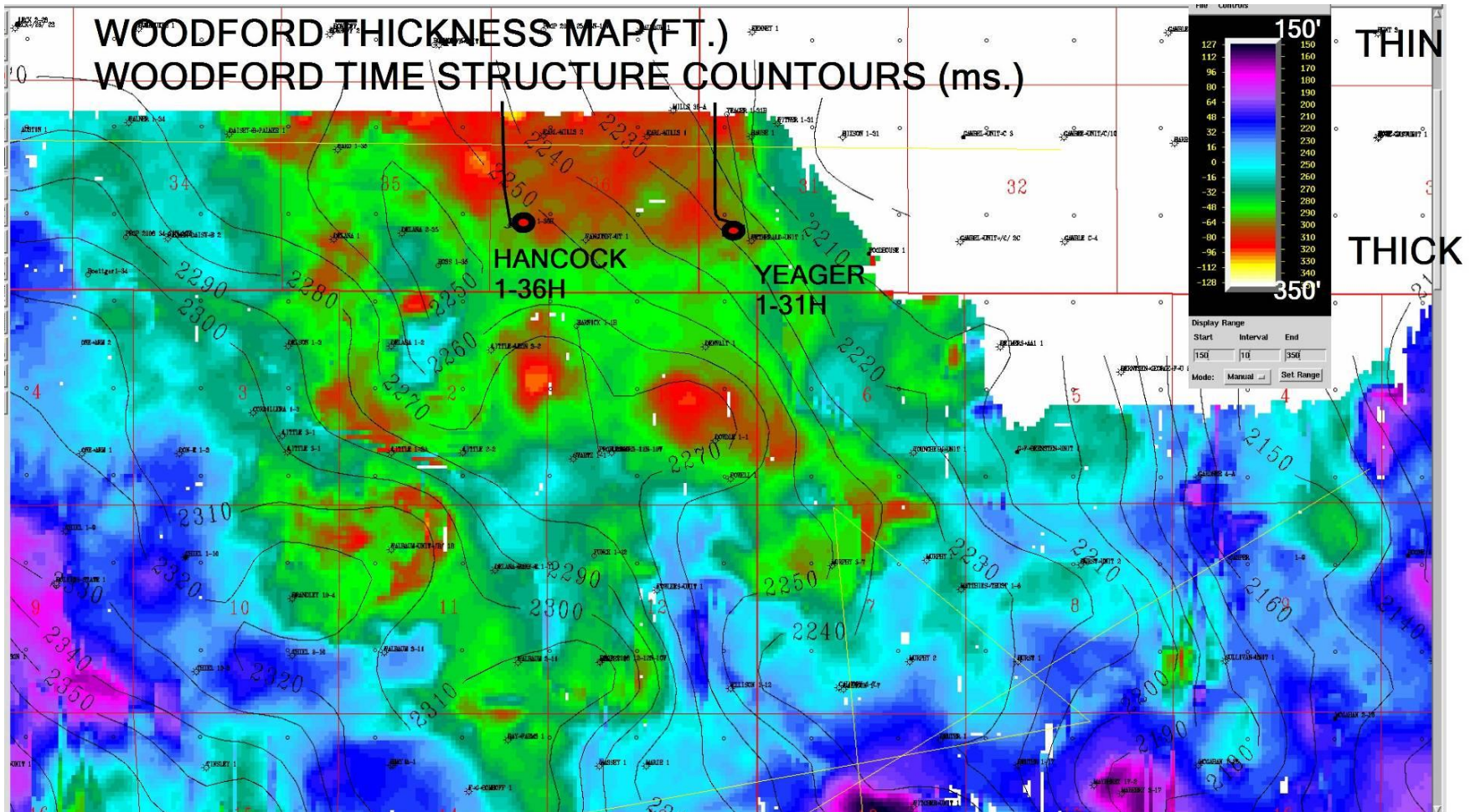
## Woodford Isopach (CI= 50')





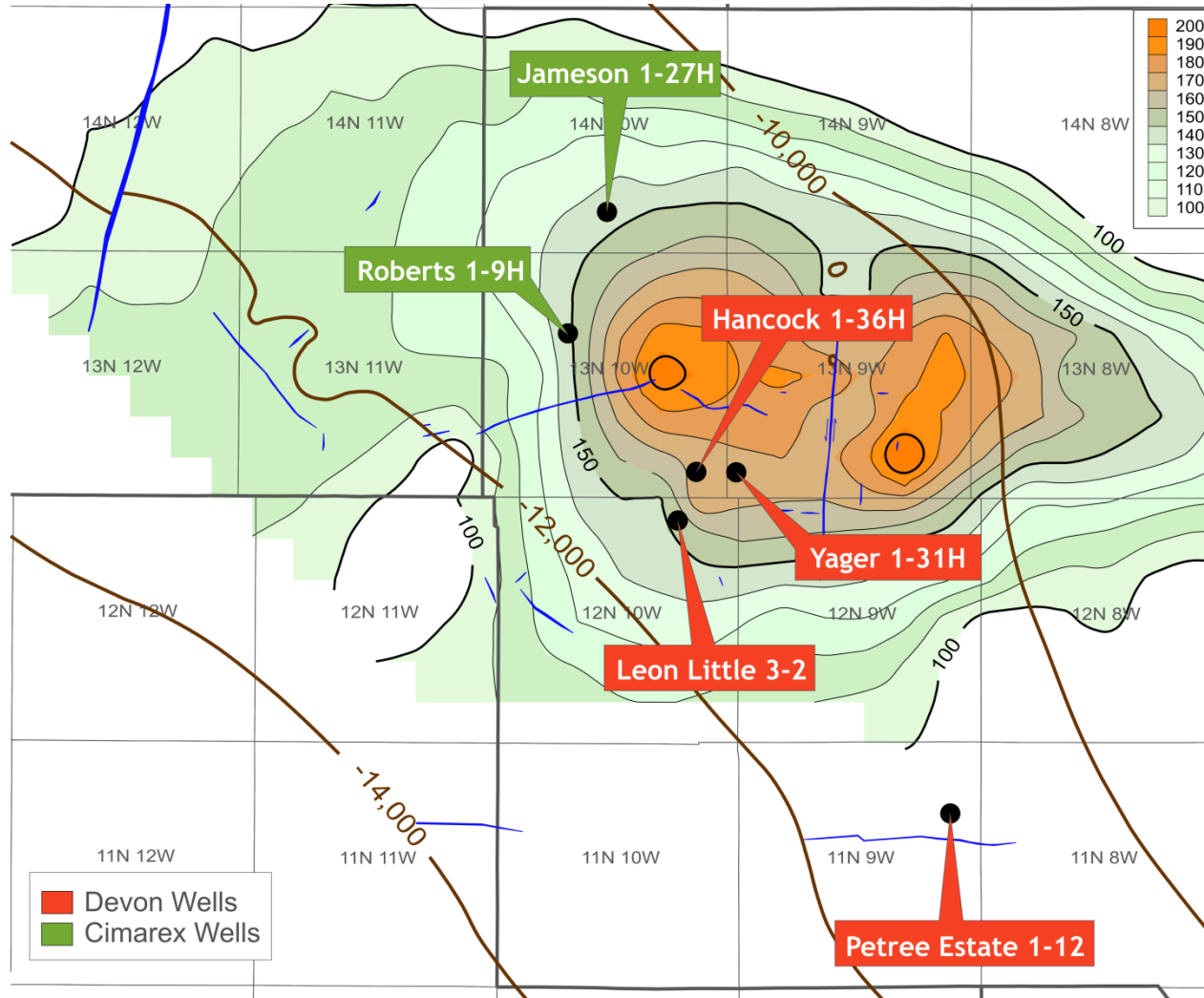
# Cana Prospect

## 3D Seismic



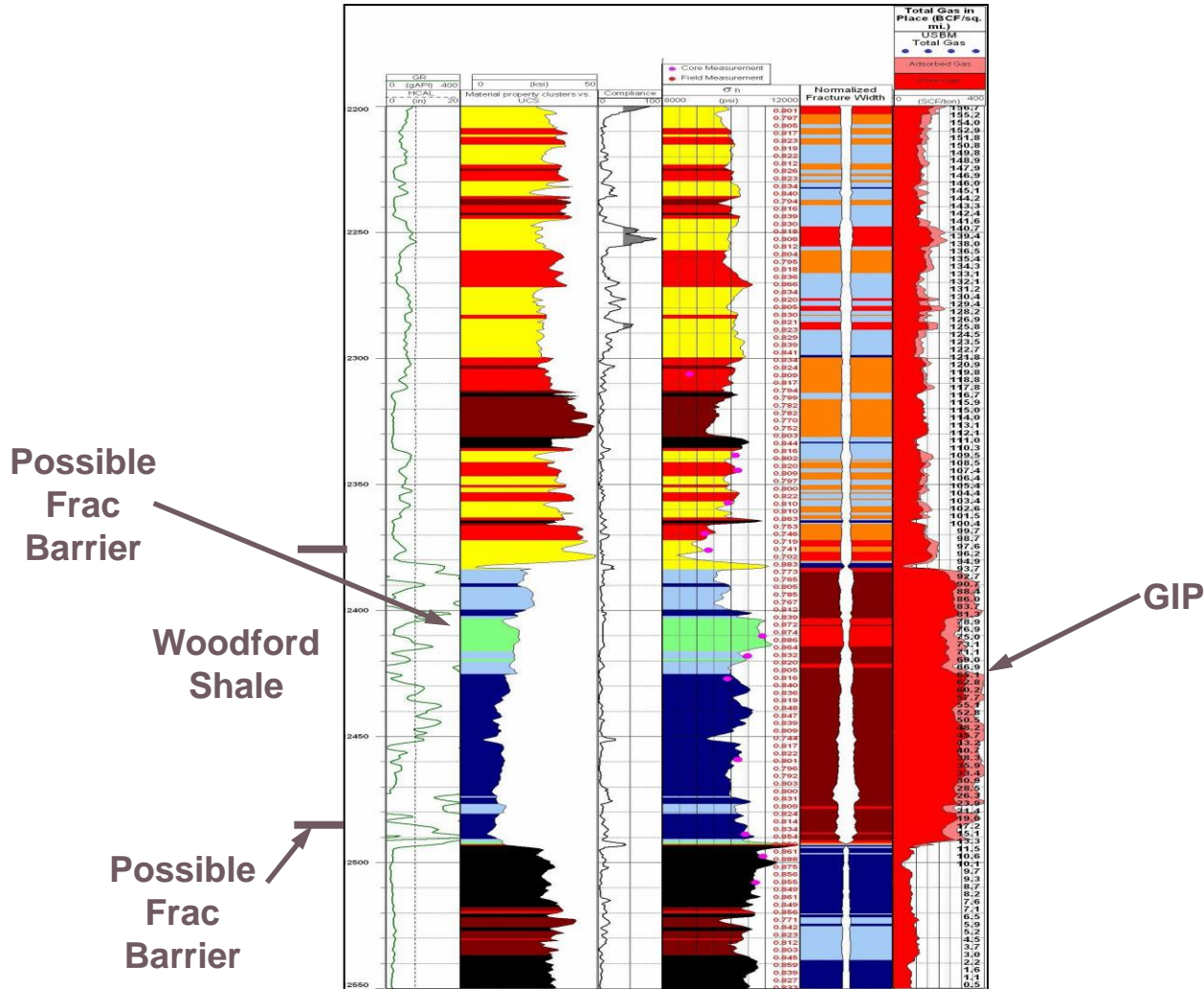
# Cana Prospect

## GIP Map



# Mechanical & Reservoir Properties

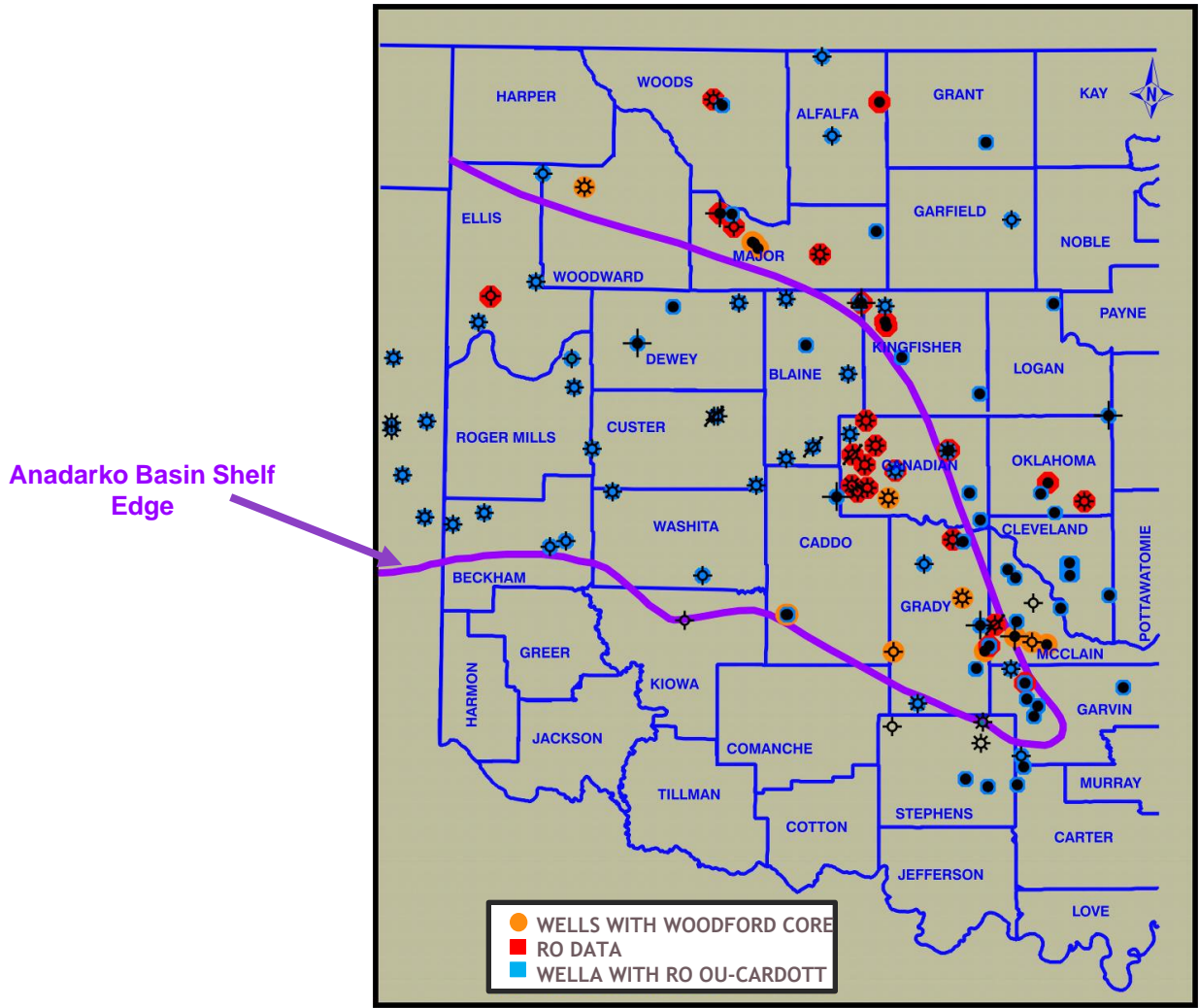
## Petree 1-12 Log





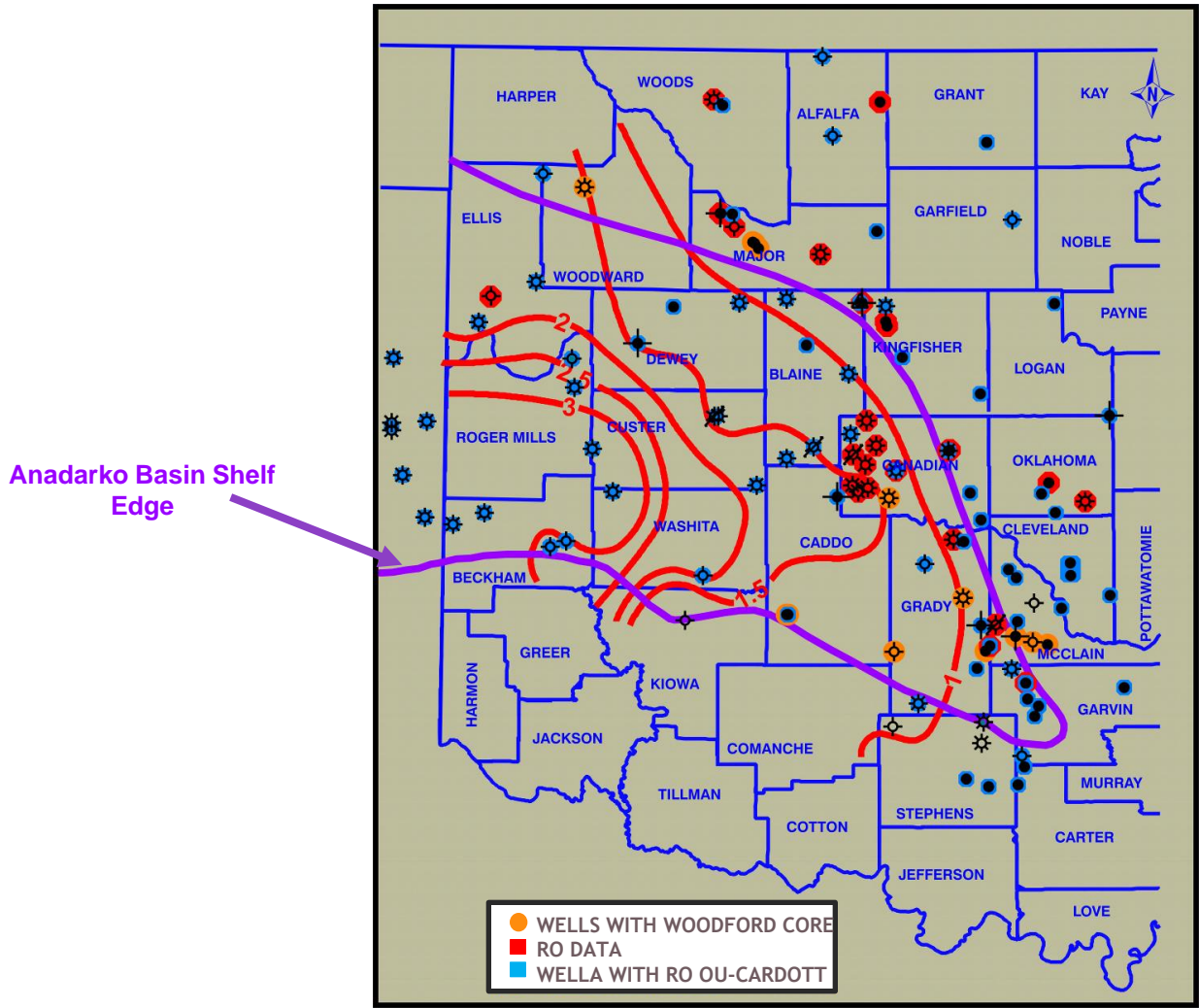
# Anadarko Basin

## Maturity Data



# Anadarko Basin

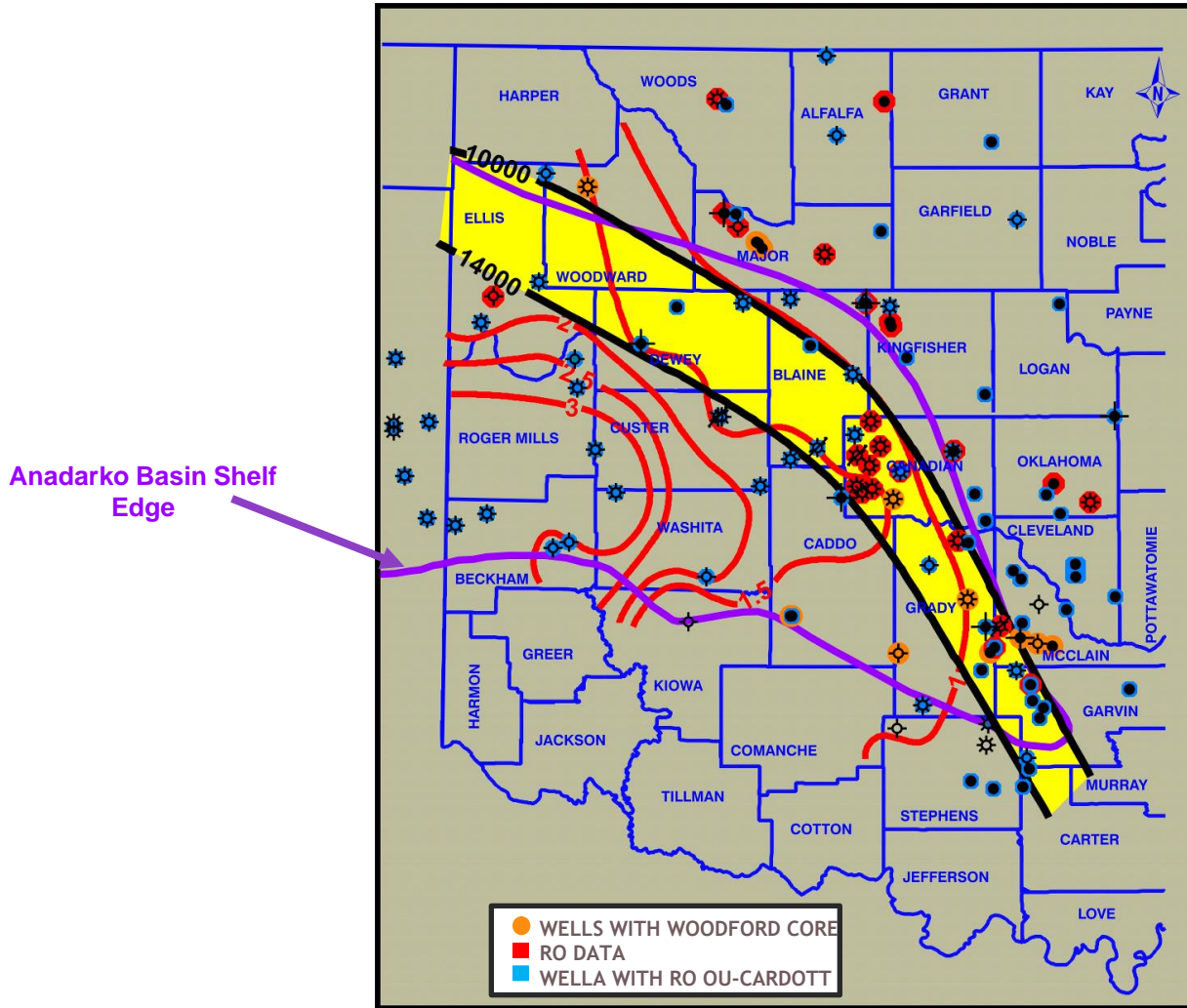
## Maturity Data





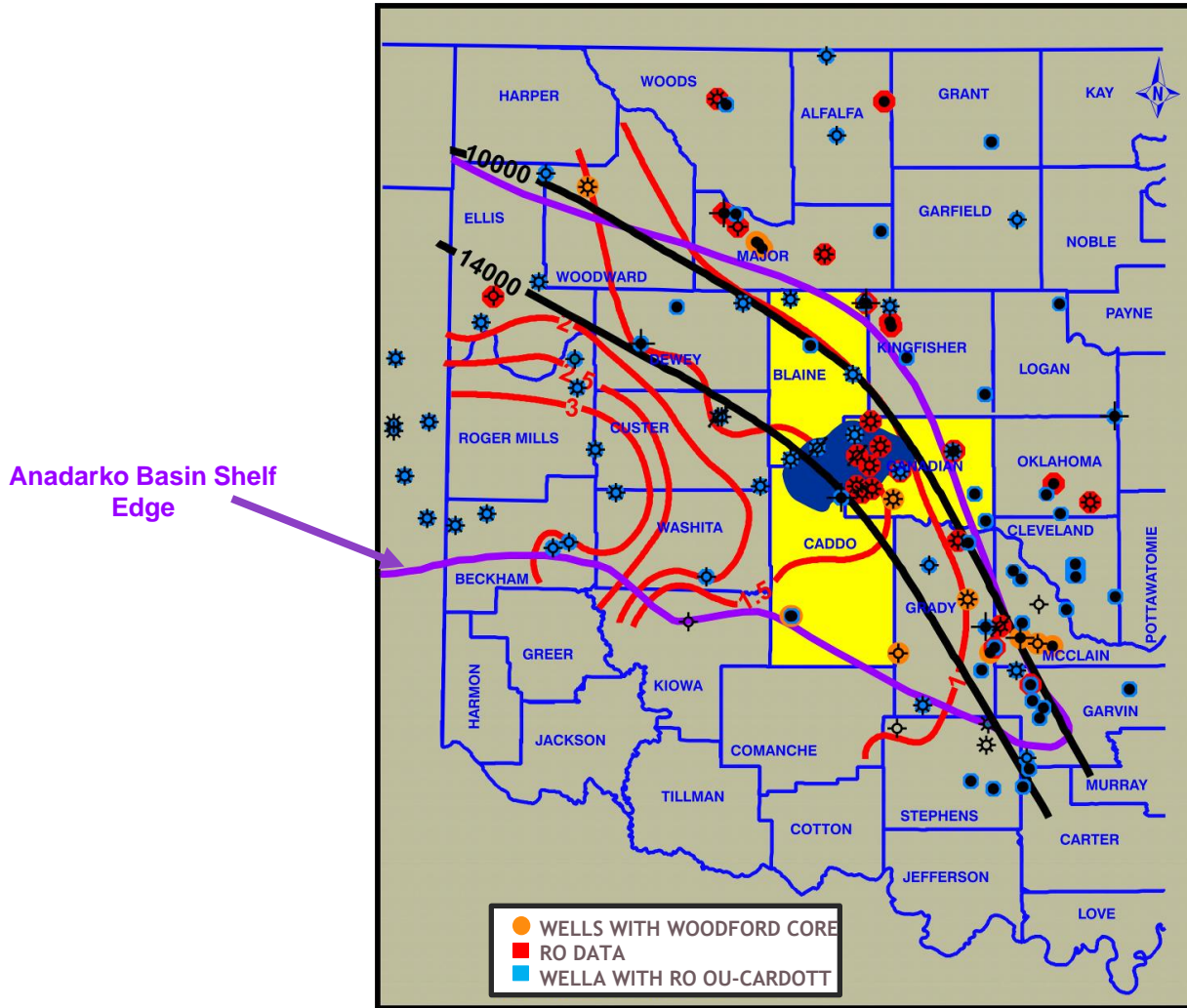
# Anadarko Basin

## Depth to top of the Woodford



# Anadarko Basin

## Woodford Thickness





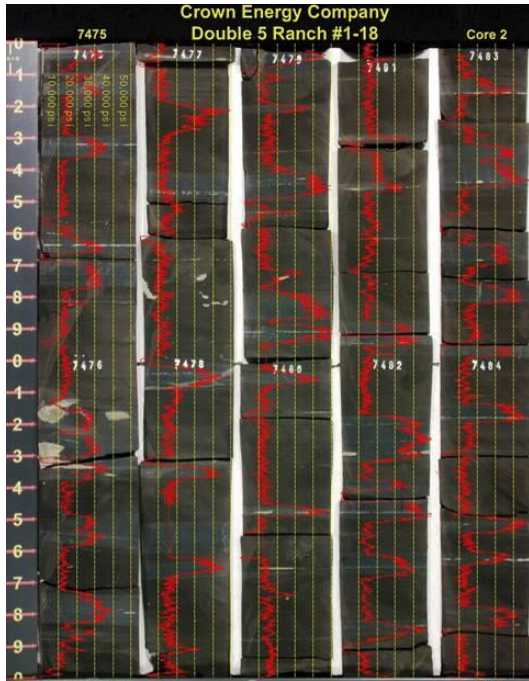
# Woodford Comparisons



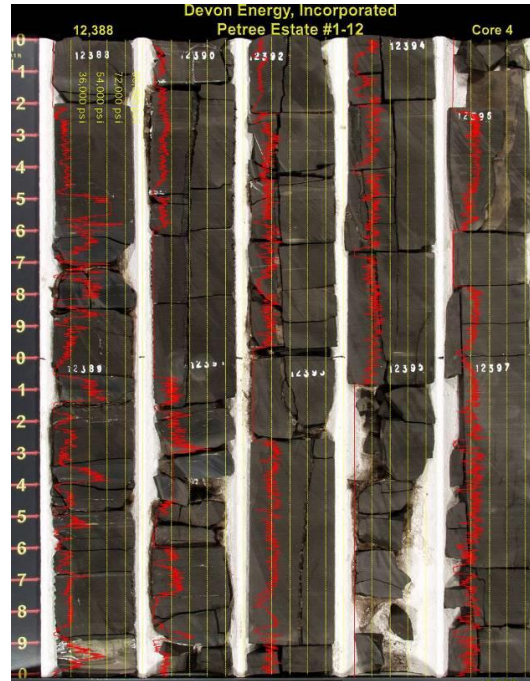
# Woodford Comparisons

## Scratch Test

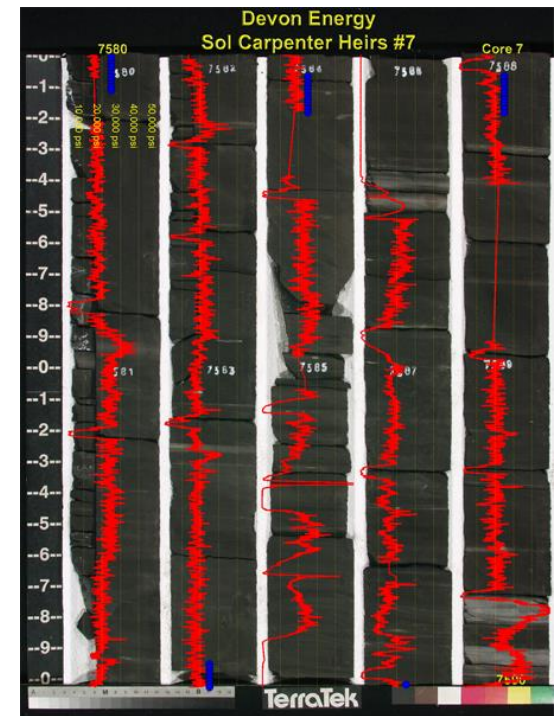
### Arkoma



### Anadarko



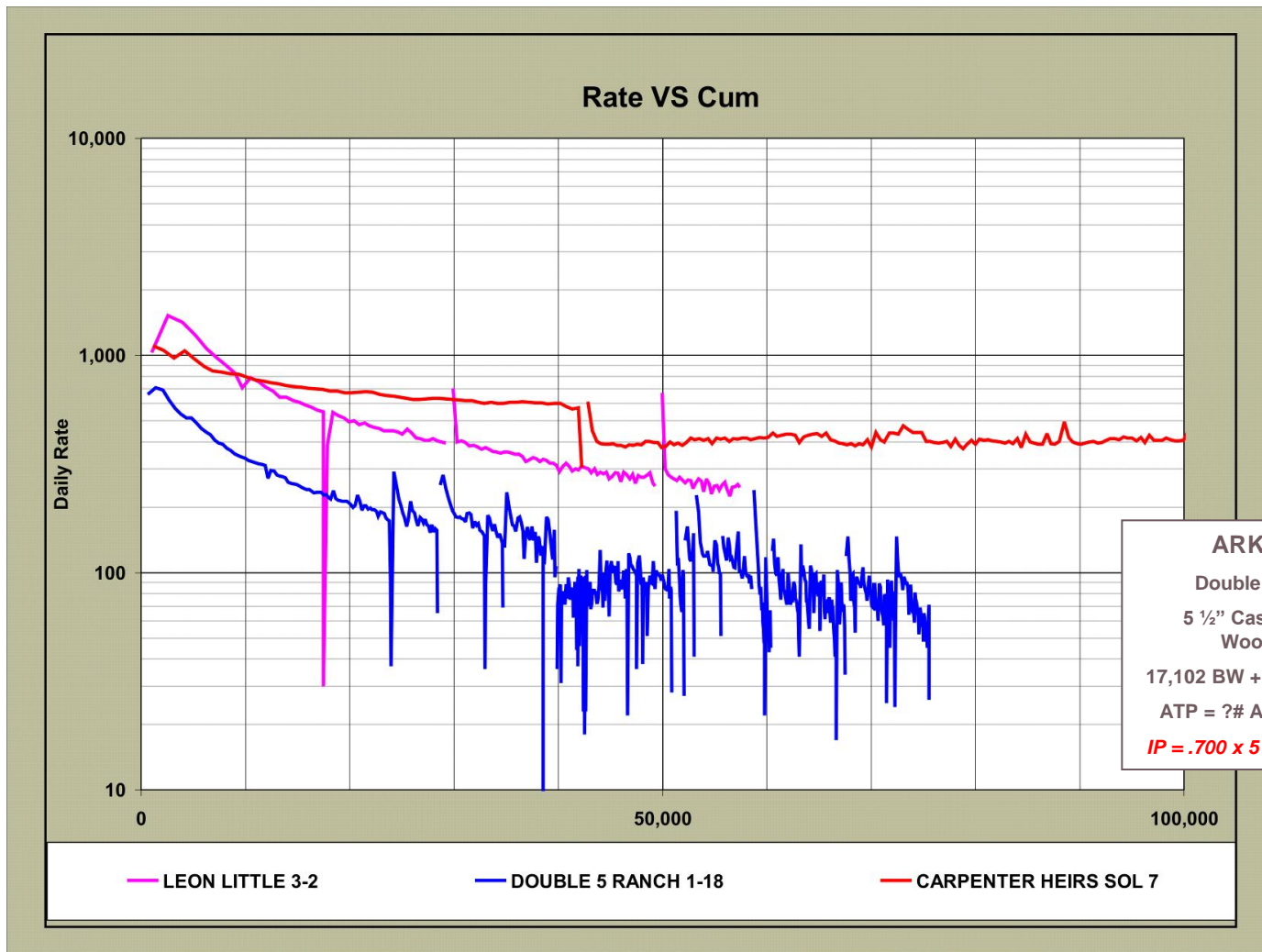
### Barnett



→  
Increasing Strength

# Woodford Comparisons

## Ratio of Vertical to Horizontal Production





# Woodford Comparisons

## Rock Parameters

	<b>Northridge Woodford Double 5 Ranch 1-18</b>	<b>Cana Woodford Prospect</b>	<b>Core Area Barnett Sol Carpenter No. 7</b>
<b>Depth, Ft</b>	<b>7,550</b>	<b>11,000 - 14,000</b>	<b>7,550</b>
Temp, Deg F	168	240	190
<b>SIBHP, psig</b>	<b>3,526</b>	<b>8,600</b>	<b>3,750</b>
Thickness			
<b>Gross</b>	<b>175</b>	<b>200 - 300</b>	<b>433</b>
Net	175	110	389
Porosity	6.0%	6.2%	6.4%
<b>Water Saturation</b>	<b>28% - 34%</b>	<b>10.0%</b>	<b>25.2%</b>
<b>Gas Saturation</b>	<b>66% - 72%</b>	<b>86.0%</b>	<b>74.8%</b>
Oil Saturation	5.2%	4.0%	
<b>% TOC</b>	<b>5.7%</b>	<b>8.0%</b>	<b>4.4%</b>
Gas Content, scf/ton	70 - 200		40.6
Z Factor	0.93	1.26	0.94
Shale Density, g/cc	2.50	2.50	2.50
<b>Permeability (nd)</b>	<b>153</b>	<b>290</b>	<b>260</b>
<b>Total</b>	<b>55 BCF/SEC</b>	<b>200 BCF/SEC</b>	<b>147 BCF/SEC</b>

# Woodford Comparisons

## Cana Prospect Executive Summary

### Play Comparisons

	<b>Cana</b>	<b>Core Wise</b>	<b>Johnson</b>	<b>Northridge</b>
<b>H - feet</b>	<b>200-290</b>	<b>300-450</b>	<b>250-350</b>	<b>130-200</b>
<b>Depth</b>	<b>13,000</b>	<b>7,500</b>	<b>7,000</b>	<b>7,600</b>
<b>GIP-bcf/mi</b>	<b>172</b>	<b>147</b>	<b>90</b>	<b>55</b>
<b>K - nd</b>	<b>300</b>	<b>260</b>	<b>270</b>	<b>204</b>
<b>Porosity</b>	<b>6.2%</b>	<b>6.8%</b>	<b>6.9%</b>	<b>4.9%</b>
<b>TOC</b>	<b>7.3%</b>	<b>4.4%</b>	<b>5.5%</b>	<b>6.6%</b>

Thank You