Chalk Bluff Development Optimization: The Geophysical Perspective

RCP RESERVOIR CHARACTERIZATION PROJECT
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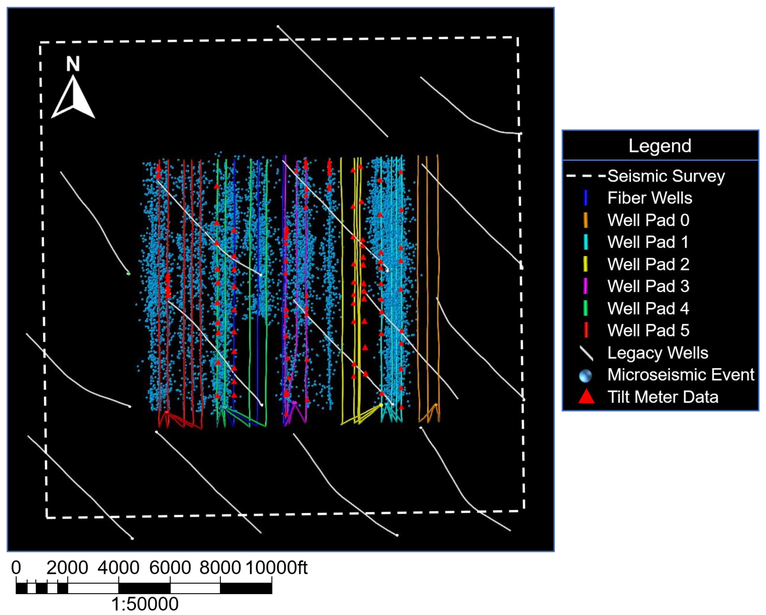
Objectives

Integrate geophysical, geological, and engineering data in order to:

- Characterize the initial stress and subsurface anisotropy before field development
- Evaluate how the initial conditions changed from legacy development
- Understand the impact of legacy development, initial subsurface conditions, and current subsurface conditions on production and how to optimize future operations

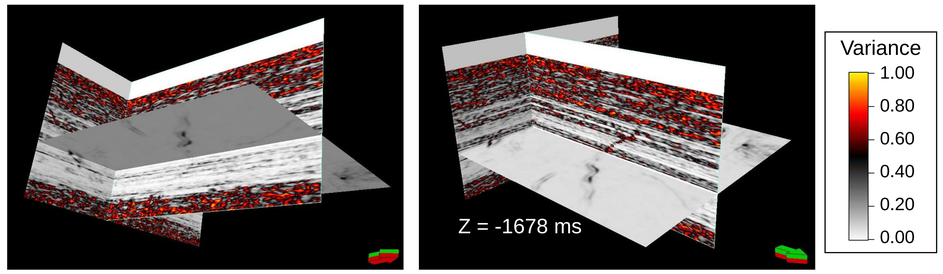
Available Data

Primary Geophysical Data

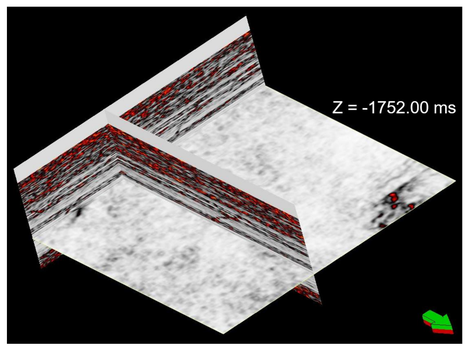


Seismic Interpretation

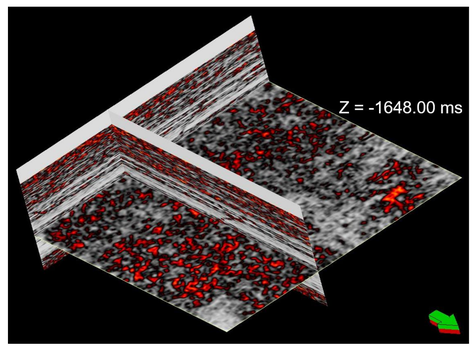
Variance Analysis to Identify Fault Structures In the Niobrara



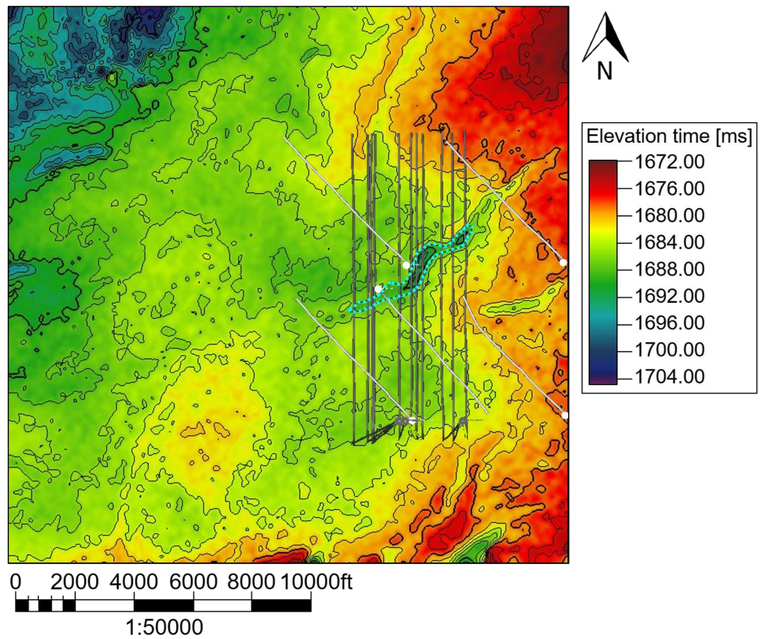
Below the Niobrara



Above the Niobrara



Time Surface of the Niobrara



Initial Conclusions

- Significant fault running through the Niobrara surface
- Faulting can be identified in the structures above the Niobrara
- Very little faulting in the layers beneath the Niobrara
- Implications for production losses and subsurface anisotropy

Next Steps

Seismic	• Depth Conversion • Interpretation • Inversion • Anisotropy analysis • Understand initial subsurface conditions
Well Logs	• Evaluate differences in legacy wells and HighPoint Resources wells • Geologic characterization • Characterize subsurface heterogeneity
Microseismic Fiber, & Tiltmeter	• Anisotropy (magnitude and orientation) • Understand variability in production through fracture height, orientation, and connectivity • Data integration with engineers

Data shown provided by HighPoint Resources. Seismic courtesy of Seitel.