

INTRODUCING HNAV

Horizontal Navigation Software



Energy Frontiers Services, LLC

- A small oil and gas software design partnership with a unique set of tools to leverage drilling and prospecting projects.
- Goal – Design the best horizontal well-bore navigation system in the industry.



The HNAV Software

Our primary service is providing quality navigation services for horizontally drilled wells. We do this by:

1. Collecting measured depth gamma-ray, rate of penetration, mudlog, and survey data; then...
2. Combining it so that a true vertical thickness log is created.
3. Correlated with offset well data for accuracy.
4. Generate a precise picture of what stratigraphy the well bore has drilled and keep wells in target.

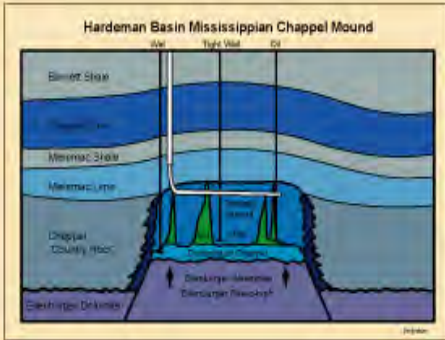


HNAV Features

- Better navigation tools - platformed upon a full database management system. Marker flags and full text annotation.
- Precise control over display option of all graphical and text data.
- Multiple log display and complete target evaluation assessment.
- Independent editing of individual data segments.
- Management-style presentation plot.
- Linux or Microsoft Windows™ platforms.
- Uniquely capable of handling multiple vertical discontinuity types, such as faults and fractures, collapse breccias, reef edges, and other abrupt facies changes.

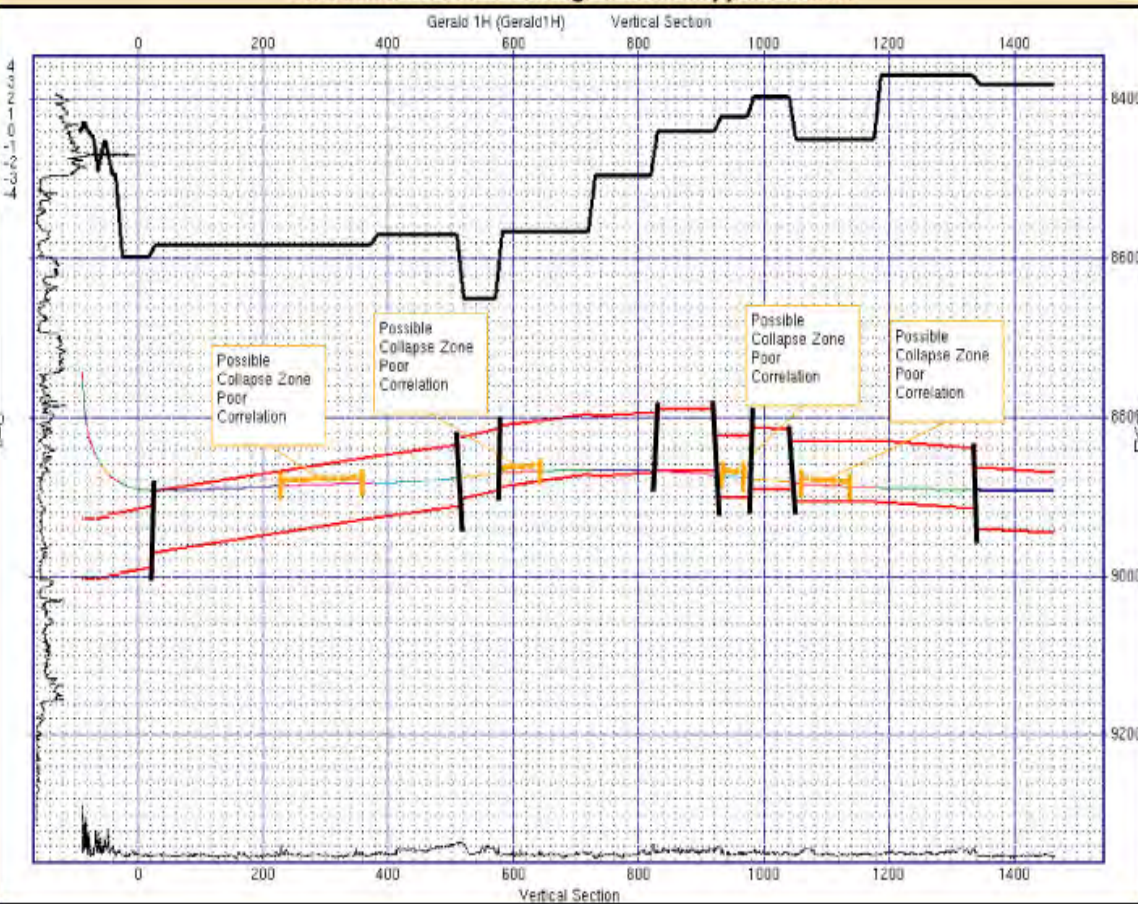


The HNAV Process and Results

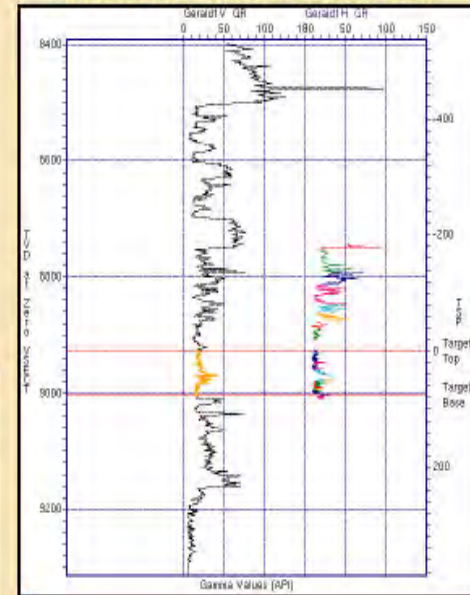


Pre-Drill Model:
Mississippi Mounds with Collapse Breccias
Mounds are 3D Defined
Oil and Gas Pay in Alteration "Cimneys"

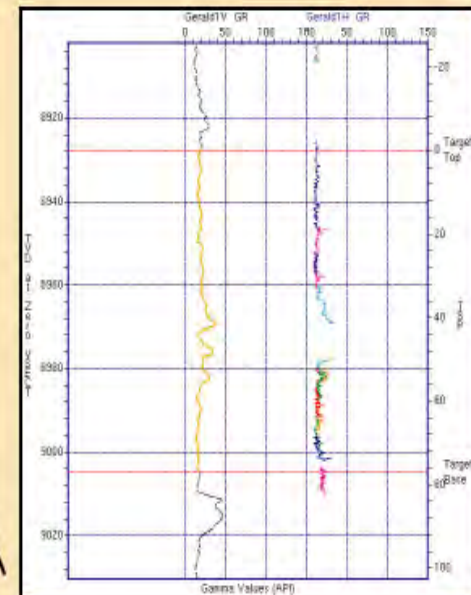
Cross Section View
Horizontal Traverse Through a Mississippi Mound



Gamma-Ray Correlation
Vertical Pilot Hole to Horizontal Data

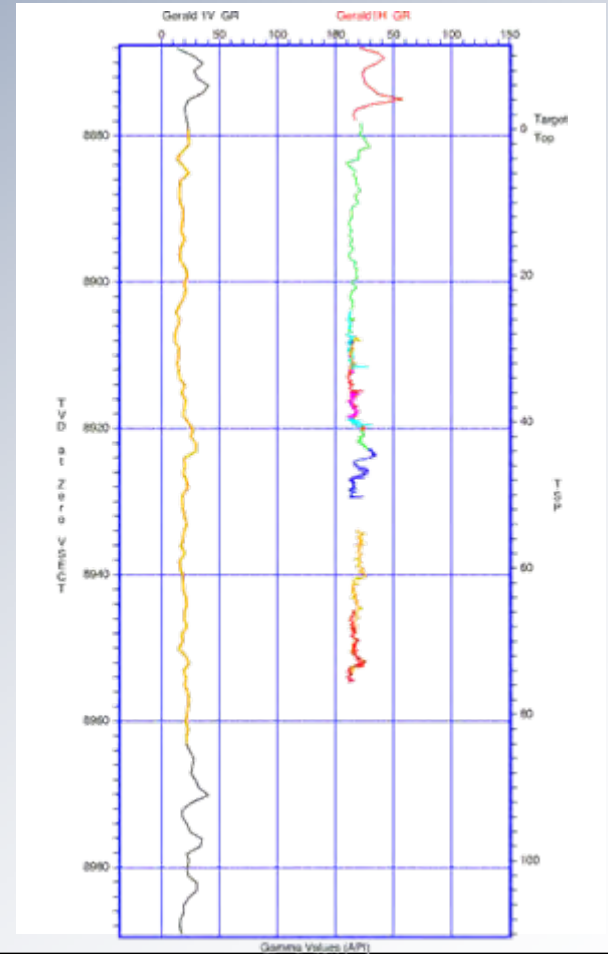
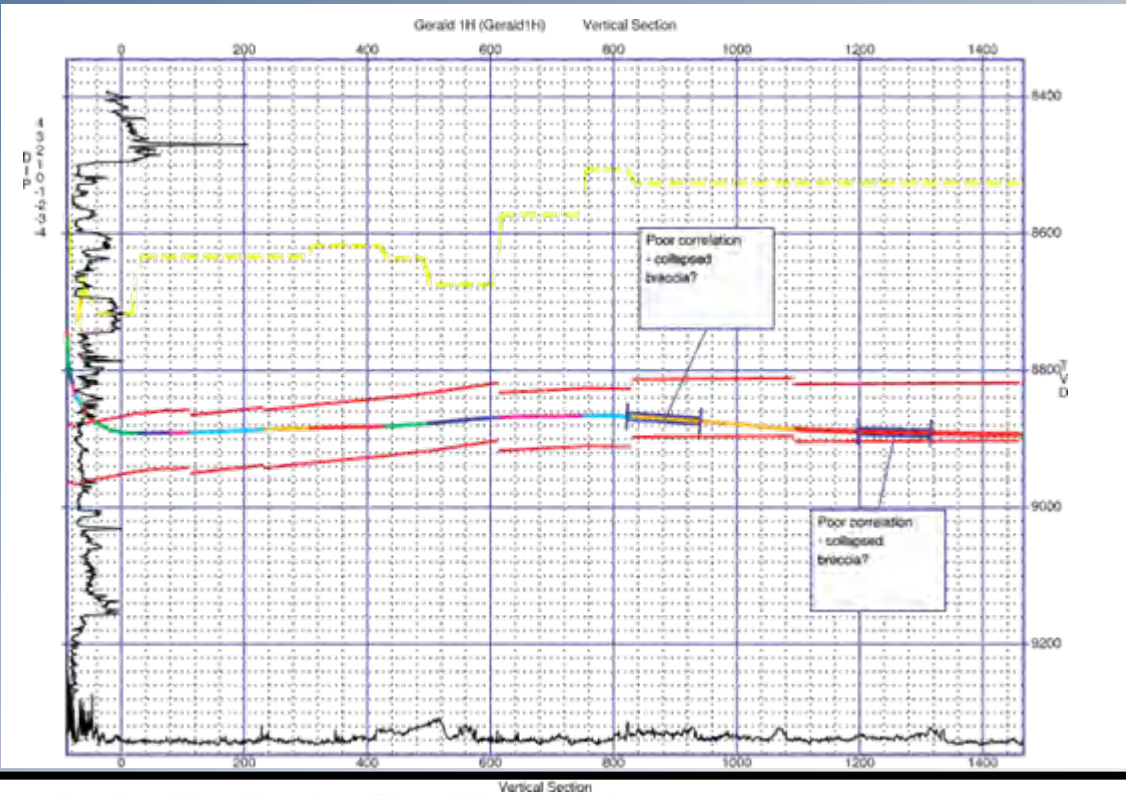


Zoomed In



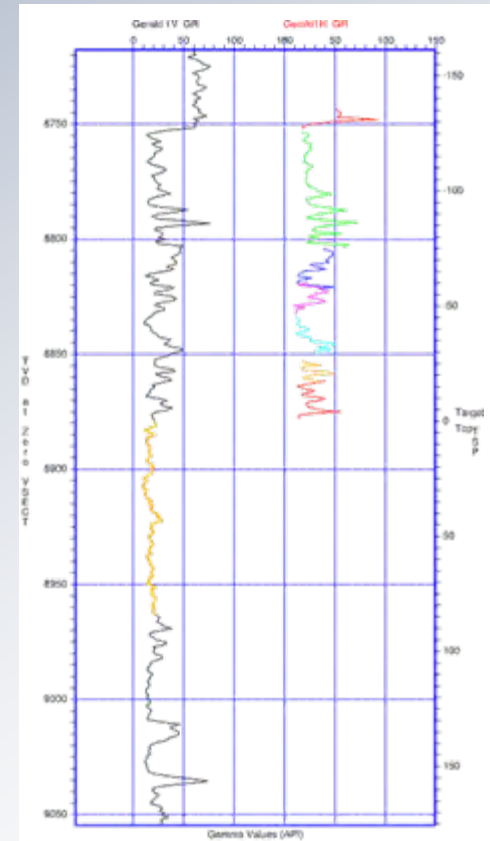
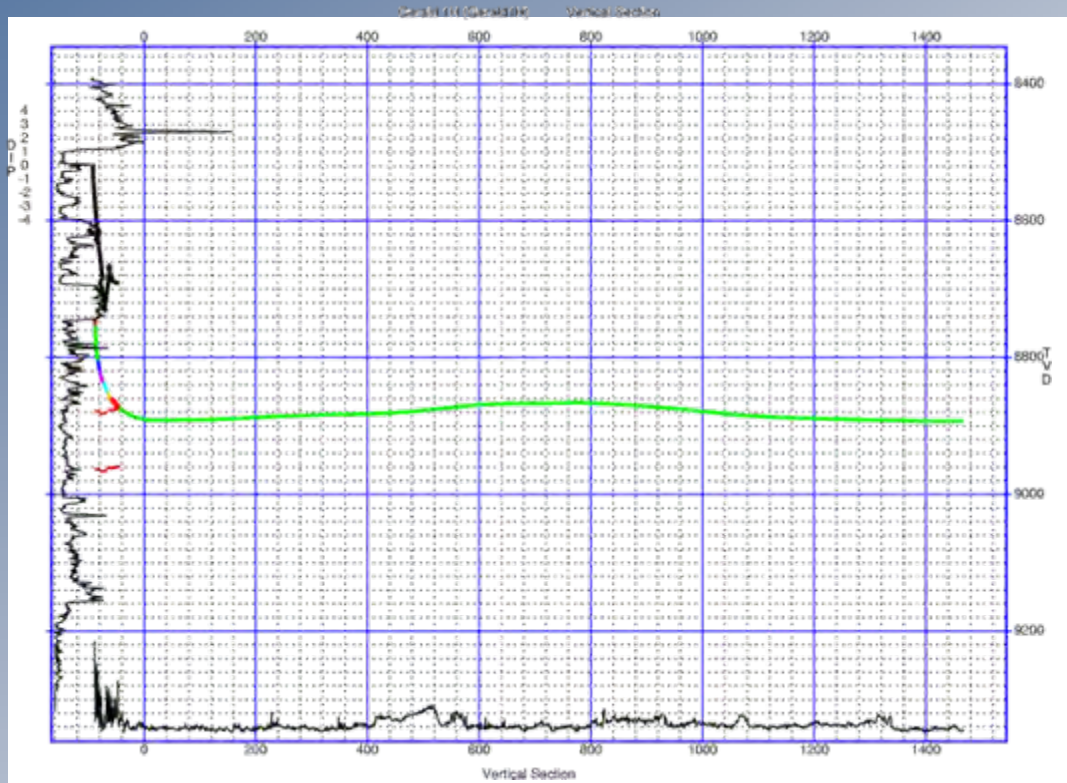
Two Windows into the Subsurface World

A Cross Section View and Log Correlation View

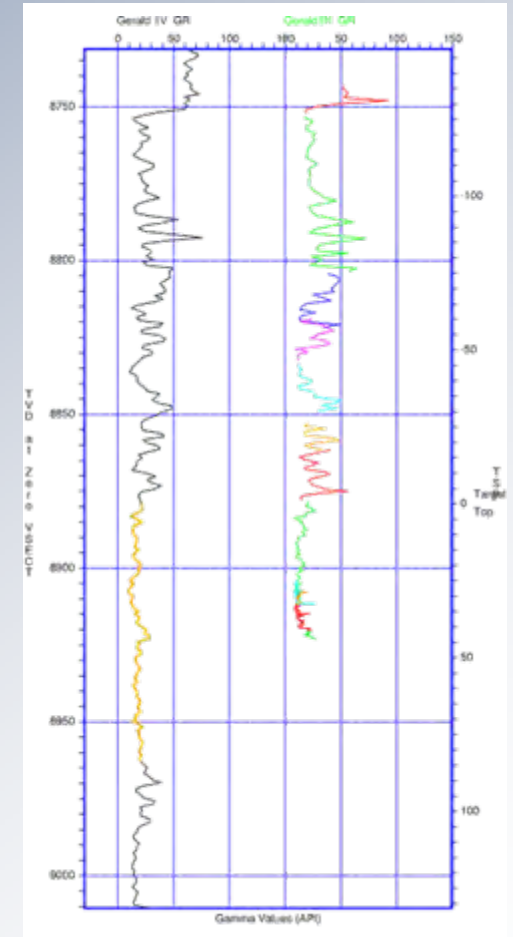
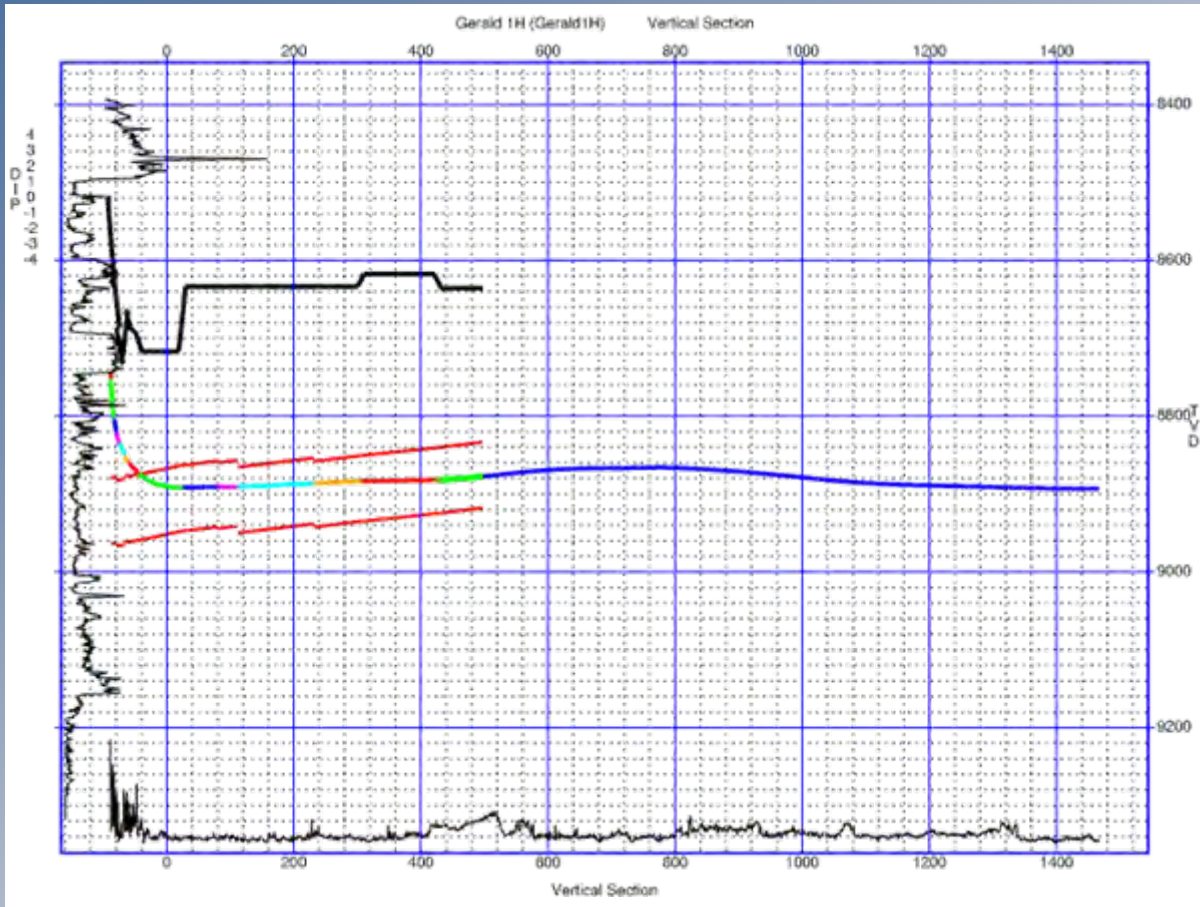


It Begins with Correlation

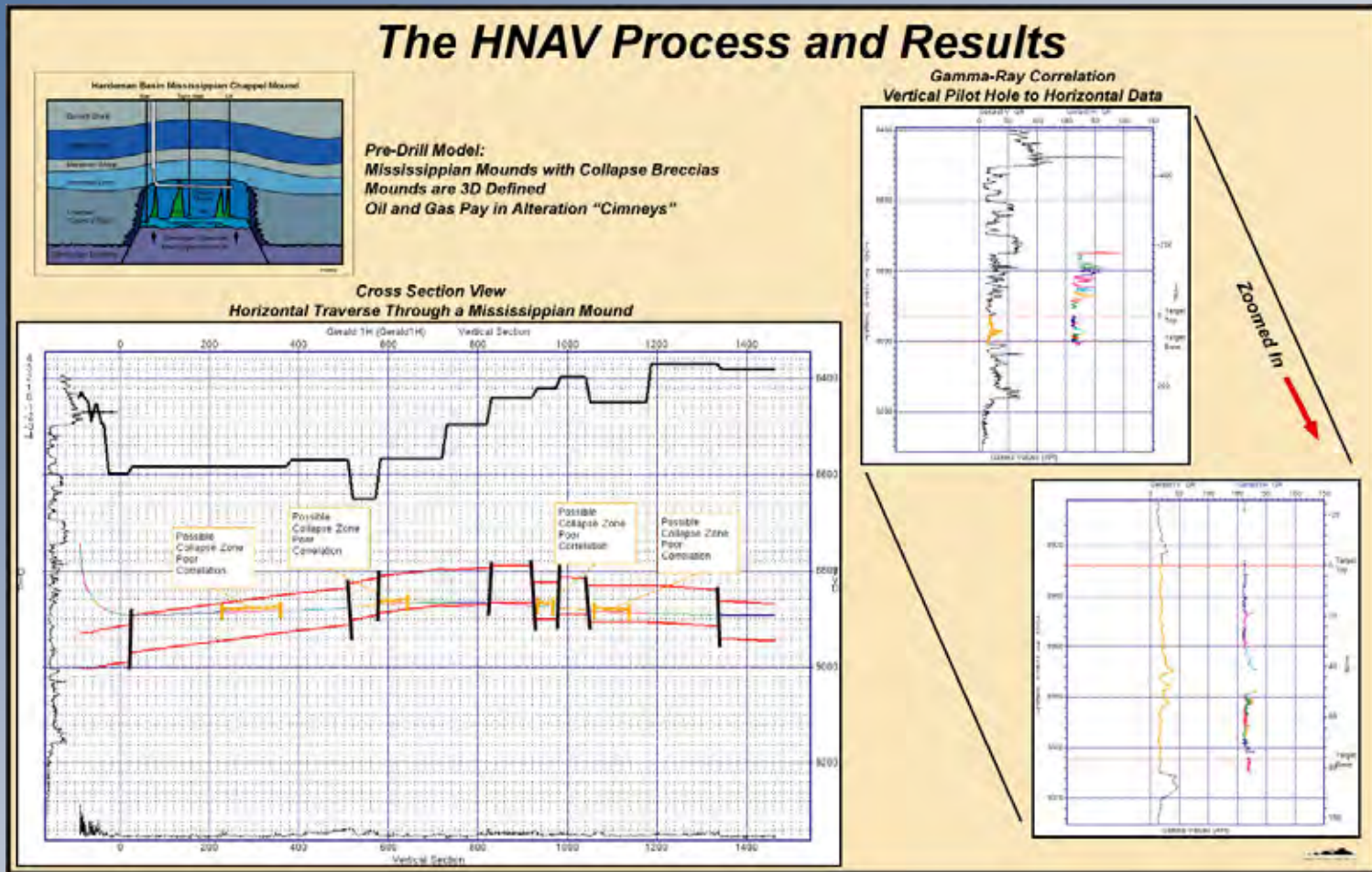
After measured depth and survey data is loaded, the interpreter uses the software to correct it to true stratigraphic thicknesses, piece by piece.



Later in the Process - Restoration



The Final Drafted Product at TD



Exploring Energy Frontiers

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