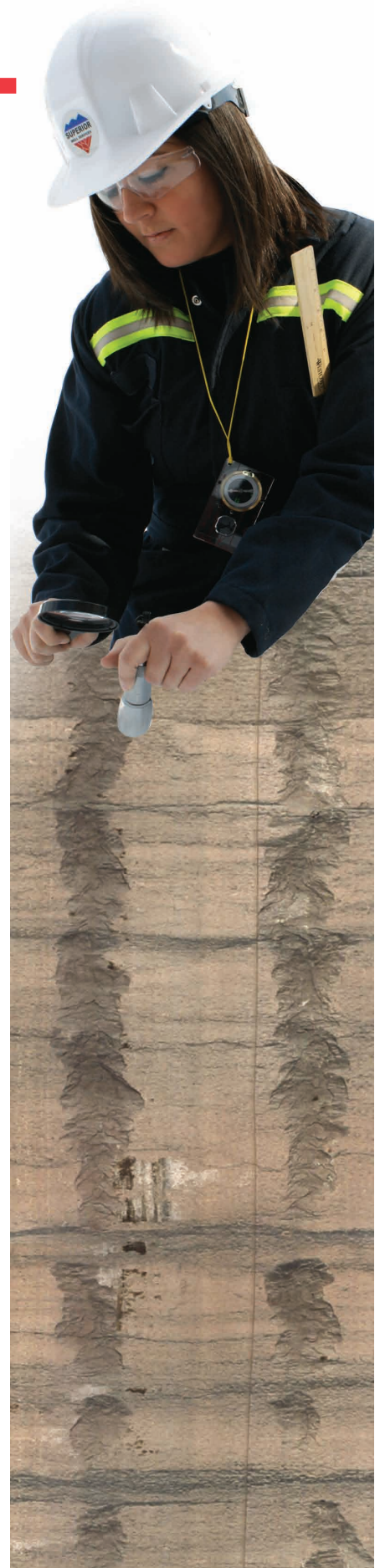


OPTV TOOL

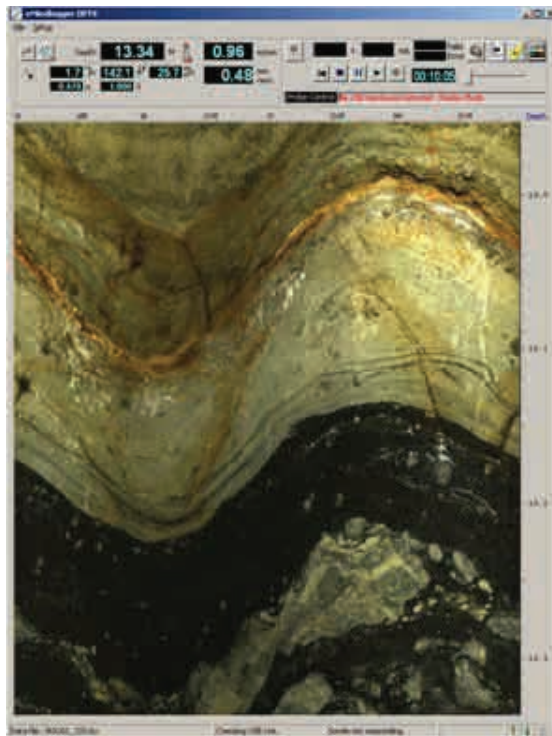
Optical Televiewer



*2010 E&P
Special
Meritorious
Award for
Engineering
Innovation*

- Continuous High-Res. Image
- 360° Borehole Image
- Oriented to True North
- Borehole Inclination and Azimuth
- Core Views
- Fracture and Bedding ID with Strike and Dip
- AIRHOLE Environment
- Horizontal Log with Tractor

Real Time Acquisition



*As if you were
downhole with a
Flashlight,
Ruler,
Compass,
Magnifying Glass,
Ultraviolet Light*



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Services Inc.

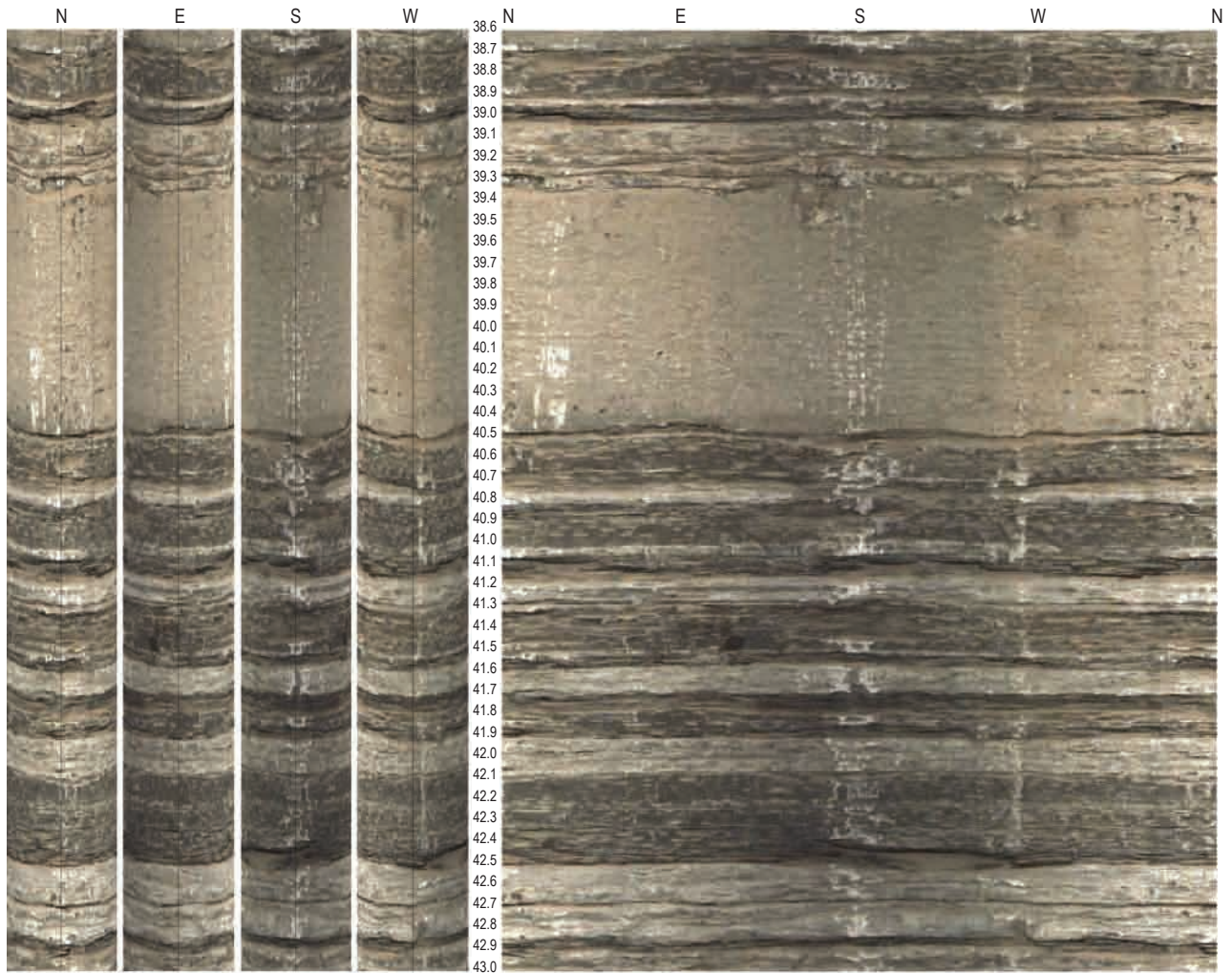
In real time acquisition the view includes: Orientated Image (Vertical or Horizontal), Depth, Logging Speed, Resolution (.025 - .1 inch depending on speed), Accelerometer Readings, Magnetometer Readings, Borehole Deviation and Azimuth.

Post Acquisition

Devonian Sand/Shale Bedding Sequence



Entire Interval
Devonian Sequence



4 Core View

Flat View

The OPTV products are JPG, BMP, or PDF that can be viewed, printed, or imported into graphic software programs. The entire logged interval or smaller specific intervals can be chosen giving different geologic perspective.

Differentiating from acoustic or micro-resistivity imaging, with the OPTV all inferences made are geologic, you "see" exactly what is there.

The orientated image can be viewed in 3 ways:

Flat View...NESWN for Vertical, URDLU for Horizontal.

4 Core View...Image is made into cores and presented in 90 deg offset views with initial angle user chosen.

Single Core View...The image is presented as a single core which can be "rotated" in 5 deg or 45 deg increments.



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OPTV Image Examples



Horizontal Fracture Lower Huron Shale



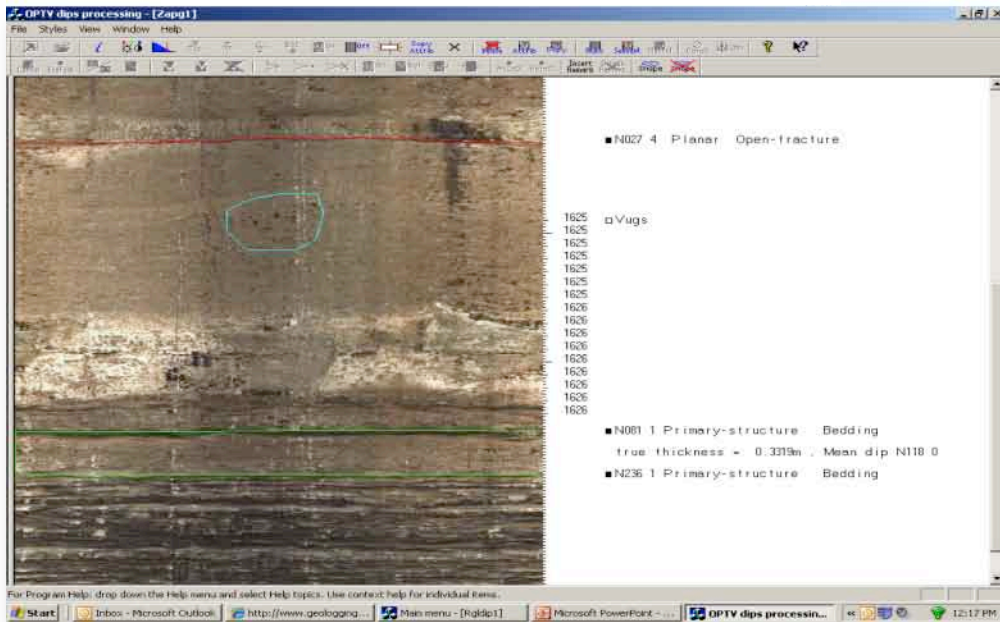
Vertical Fracture
Cherry Valley – Marcellus Shale



Borehole Breakout



Oil Entry



Basic Processing

Dip Processing is done via a user friendly interface. Features are identified with customizable user controlled labeling. Strike and Dip of the feature is calculated and presented in standard or custom formats.

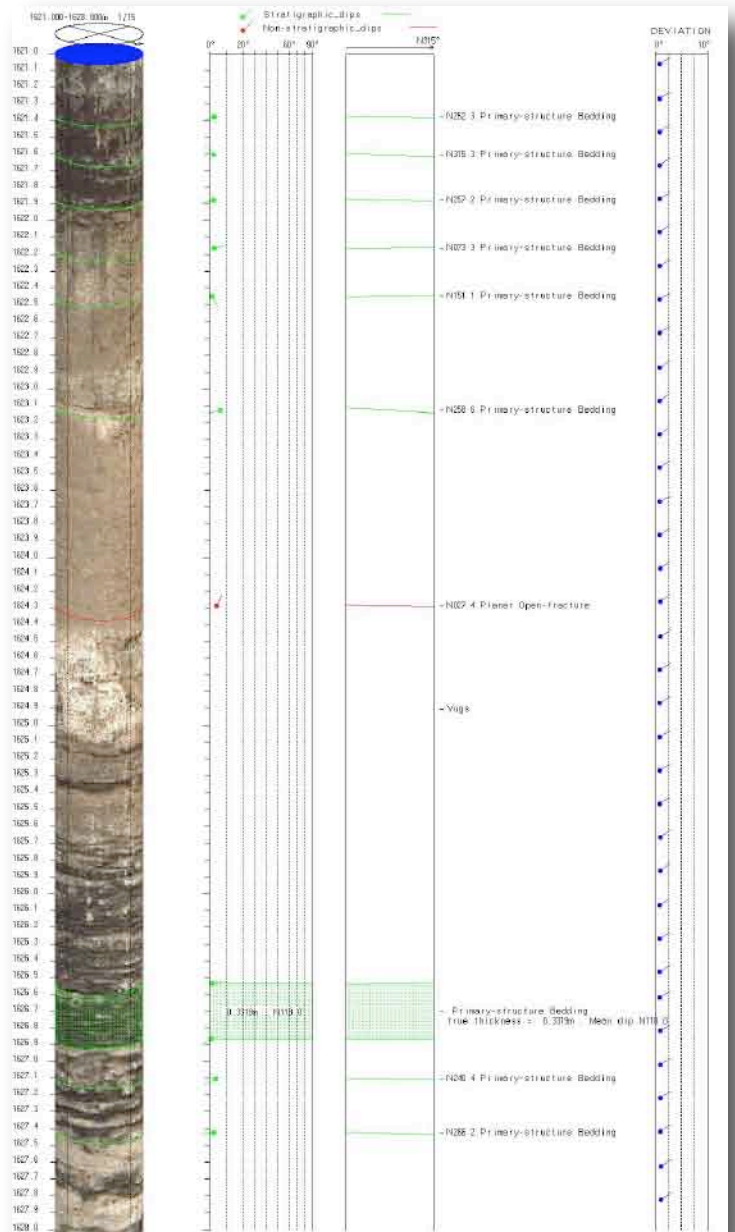
Any geologic feature such as bedding, vugs, fractures, clasts, etc... may be chosen for processing. Feature thickness can be calculated. Picks can be edited, added, or deleted at anytime. Processing is saved and can be revisited and revised at your convenience.

Basic Interpretation

Once features have been chosen and processed, a printable log is made. The interval processed can be of any length desired. Any or all of the views and plots can be chosen:

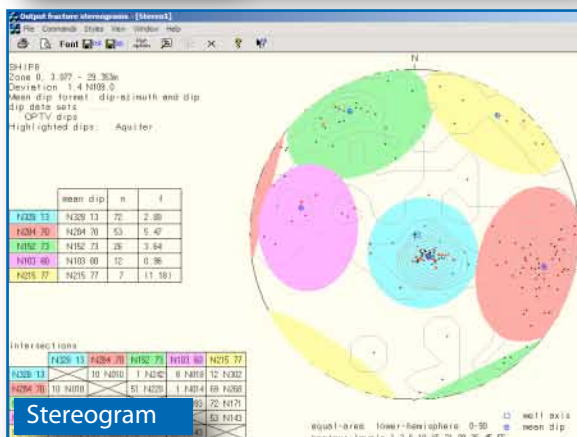
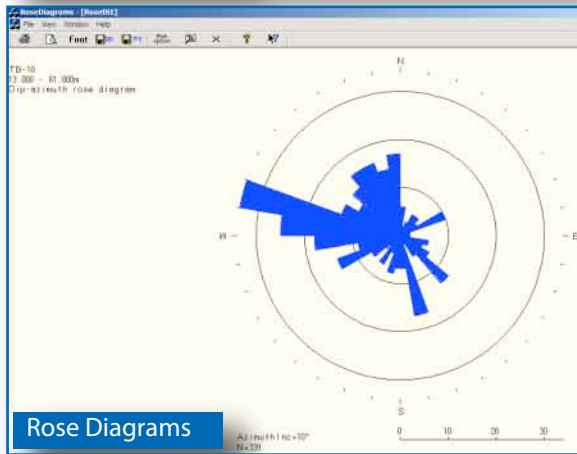
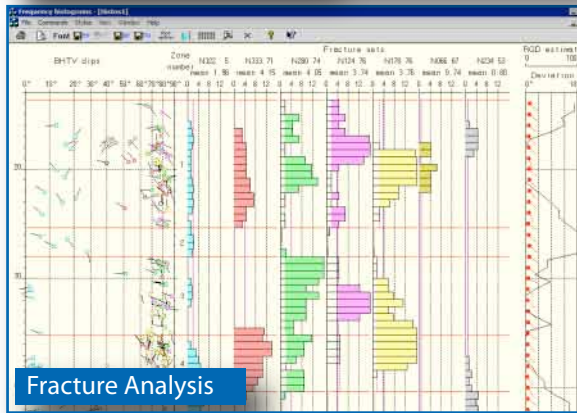
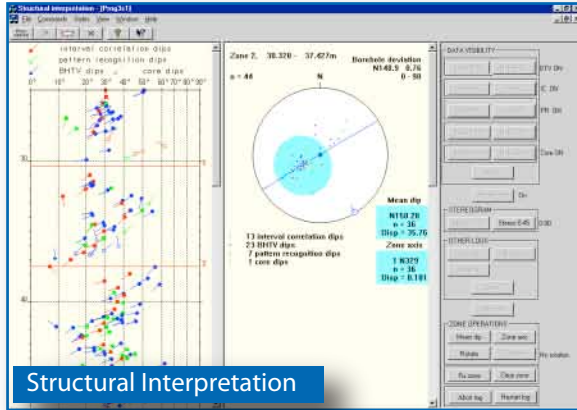
- Core View
- Flat Image View
- Arrow Plot
- 2 Stick Plots (different angles)
- Labeling and Comments Chosen in Processing
- Borehole Deviation Plot

Log is made and can be printed in JPG, BMP, or PDF format.



Advanced Interpretation

Several enhanced geologic interpretation tools can be utilized



Borehole Directional Plots and LAS

