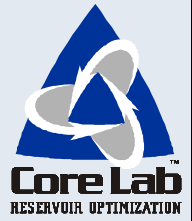


# GEOMECHANICS EXPRESS



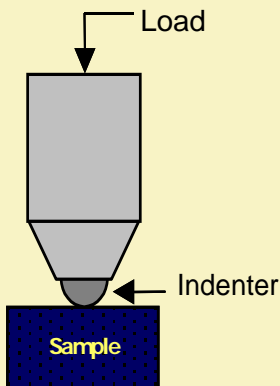
**Rapid, non-destructive**, core-based strength logs using **Brinell Hardness** or **ultrasonic velocity** can identify the weakest relative strength of cores over large depth intervals. This knowledge provides a “quick-look” at your cores Geomechanical properties.

## Brinell Hardness to Identify Unconfined Compressive Strength

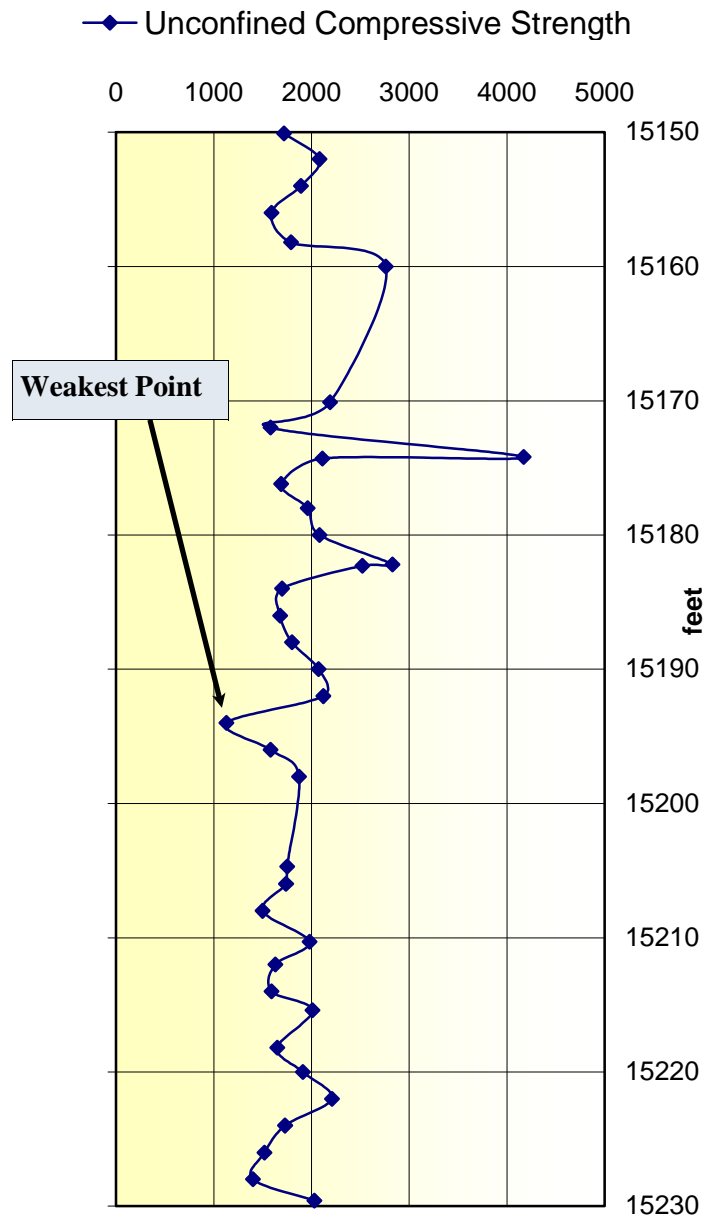
### Benefits of using Brinell Hardness in identifying Core-Based Strength (CBS) Logs:

- Provides the relative strength along the length of the core
- Identifies the weakest areas over large depth intervals
- Provides a nondestructive strength profile vs. depth
- Provides high resolution logs with multiple rock mechanical parameters (UCS, BH)
- A helpful guide in determining which areas require additional core analysis

### Brinell Hardness Test Apparatus



The Brinell hardness test is performed by applying measured load to a spherical steel-ball (indenter) that is in contact with the sample. The depth of ball penetration is recorded along with the applied load. The hardness value is determined from the ratio of applied load to the indentation area and is expressed as  $\text{kg}/\text{mm}^2$ .



Unconfined compressive strength (UCS) calculated from Brinell hardness measurements

For more information please contact: **Paul Martin, Advanced Rock Properties Manager**  
[Paul.Martin@corelab.com](mailto:Paul.Martin@corelab.com) (713) 328-2409

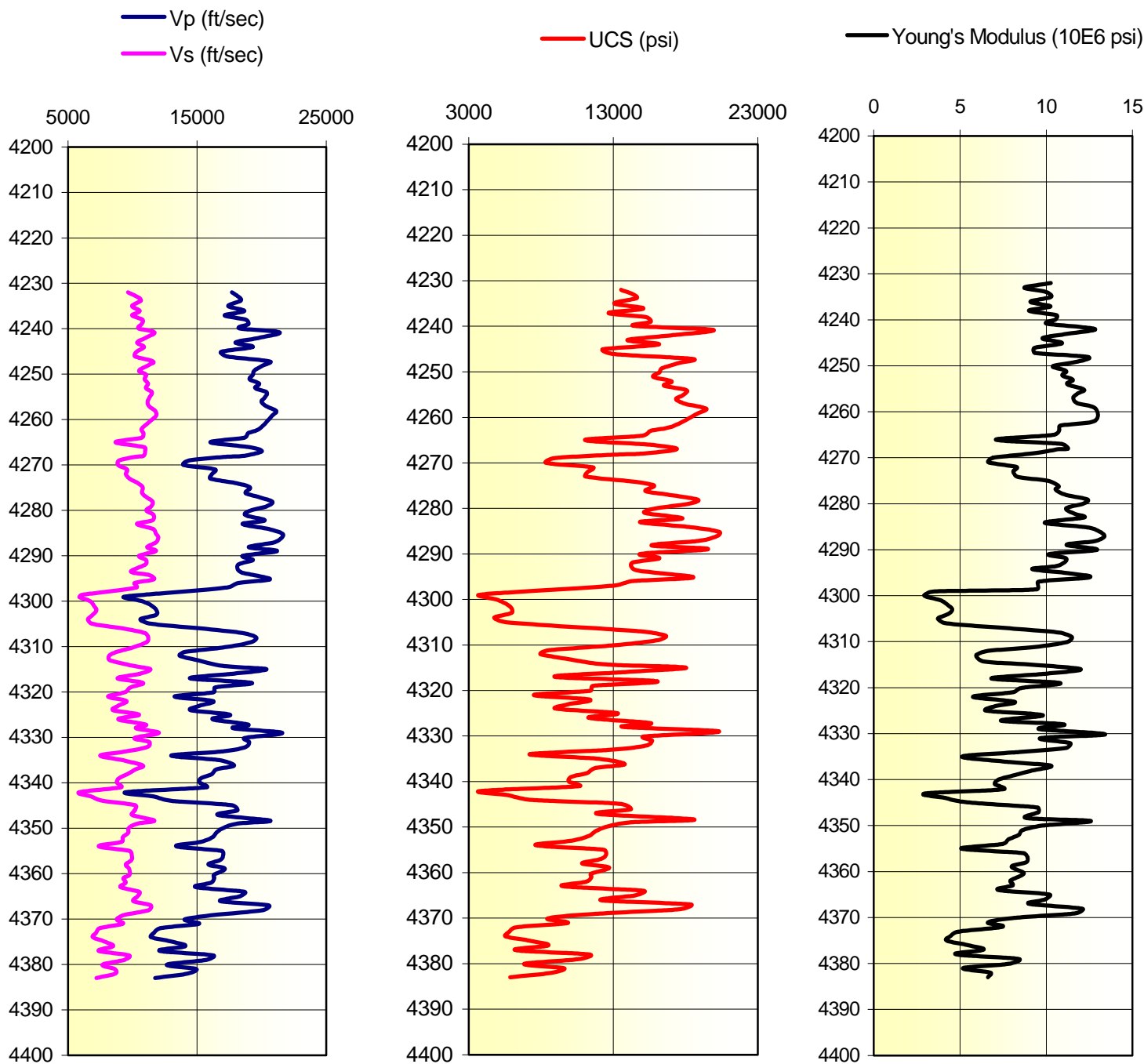
# Acoustic Velocity to Identify Unconfined Compressive Strength

## Benefits of using Acoustic Velocity in identifying Core-Based Strength (CBS) Logs:

- Provides a nondestructive strength profile vs. depth
- Provides high resolution logs with multiple parameters (Vp, Ed, UCS)
- Probes full diameter of core rather than just the top surface
- Sonic velocities are an industry standard for indirect determination of strength

## Acoustic Velocity measurements provide:

- Unconfined compressive strength (UCS) versus depth
- Dynamic Young's modulus (Ed) versus depth
- Dynamic Poisson's ratio versus depth
- Compressional (Vp) and Shear (Vs) wave velocities



Acoustic velocity measurements on core can provide high resolution logs of wave velocities, unconfined compressive strength, and dynamic Young's modulus versus depth.