



CSPG ROCK ANALYSIS WORKSHOP

March 21-22, 2019 | University of Calgary & AER Core Research Centre

Porosity and Permeability Methodologies – What’s the Best Method for Unconventional Tight Reservoirs?

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Summary

Over the last decade and longer, North America has lead the way in the development of unconventional plays. The understanding and technological growth which has taken place has been fast and furious. Part of that technological growth has had to take place in the core analysis world, as routine/conventional core analysis methodologies are not appropriate for characterizing the ultra low permeabilities often seen in unconventional plays. Core Laboratories has developed a number of methods capable of capturing and understanding the effective pore networks in low porosity-low permeability reservoirs (Figure 1). They include:

- Pressure Decay Profile Permeameter (PDPK-400)
- CMS-300 Automated Permeameter
- Pulse Decay Permeameter (PDP-200)
- Shale Matrix Permeameter (SMP-200) – GRI 95/0496
- Nano-Permeameter (NANOK-100)

Understanding each of these methods and their limitations is paramount in choosing the correct method in order to characterize your reservoir.

The core displayed are from a number of popular Canadian unconventional plays:

1. Wilrich Member – tight sand
2. Montney Formation – tight siltstone
3. Duvernay – shale/mudstone

Walking through each core we will discuss various techniques in assessing the productive pore network and structure, the various methodologies used to characterize the permeability (matrix vs. fracture), what the core analysis data is telling you, and how to know if you are using the wrong method and why.



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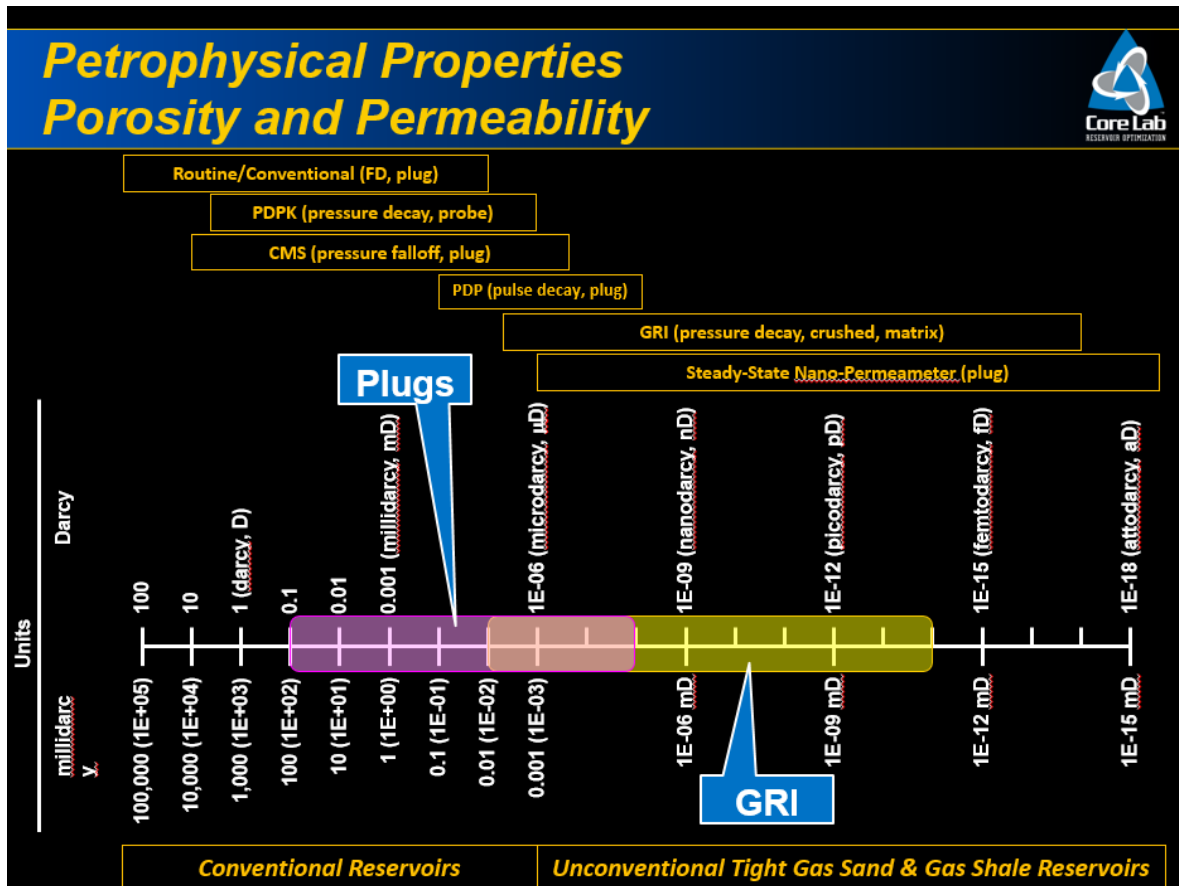


Figure 1: Various Core Laboratories methodologies for measuring permeability