

Exploitation of Tight & the Unconventional - (Fee Scedule)

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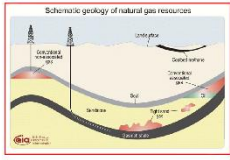
Exploitation of Tight and Unconventional Reservoirs

By: Saad Ibrahim, P. Eng.

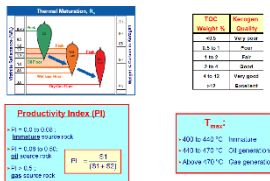
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Conventional vs. Tight/unconventional



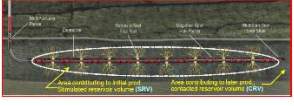
Characterization of the Unconventional



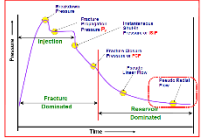
Rock Weight %	Porosity Quality
> 25	Very good
15 to 25	Good
5 to 15	Fair
1 to 5	Poor
< 1	Very poor
0	Extinct

Full course: fee \$1000.0 (14 hrs 34 min) Section 1: Fees \$80.0 (1 hr) Section 2: Fee \$300.0 (4 hrs)

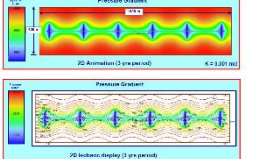
Stimulated Reservoir Volume (SRV) vs Contacted Reservoir Volume (CRV)



Mini Frac Analysis & Applications



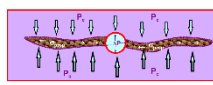
Multi Stage Frac of Horizontal Wells MFHW's



Section 3: \$220.0 (2 hrs 14 min) Section 4: Fee \$85.0 (1 hr 12 min) Section 5: Fees \$180.0 (2 hrs 25min)

Tips on Hydraulic Fracturing

Proppants keep the frac aperture wide open:



$\sigma_{prop} \gg P_c + \Delta P_{drawdown}$

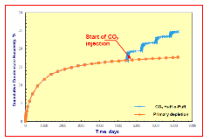
Where:

- σ_{prop} : Proppant mechanical strength
- P_c : Closure pressure
- $\Delta P_{drawdown}$: Draw-down pressure

Reserves Estimate

Technique	Required Data	Technical content	Merits/deficiency
- DCA - Well Typing	- Prod. Data - Compl. data	- Low	- Fast - Simplistic
- Type curves - FMB	- Prod. & Press. Data	- Good - Single phase	- More time - Good
- History matching	- Prod. & Press. Reservoir Data	- Excellent - Multi-phase possible	- Time consuming - Can deal with complexity

CO₂ Huff-n-Puff in Unconventional Reservoir



• Primary was conducted at pressure of 1500 psi, condensate recovery of 17%
• During CO₂ Huff-n-Puff (4 cycles), injection pressure was at 4000 psi and production at 1500 psi, condensate recovery of 24.7%

Section 6: \$180.0 (2 hrs 19 min) Section 7: \$120.0 (1 hr 32 min) Section 8: \$160.0 (1 hr 52 min)

Included in the fee:

1. Receive videos of the requested section (s)
2. Receive PDF file of the course notes of the selected section (s)
3. Receive had-outs of related technical papers
4. Receive PDF of the class problems & solutions
5. Communicate by e-mail with the instructor for questions/discussions

