

Fracture ID Overview

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1 Keywords

These keywords appear in [1] and other documents on FractureID's Resource page (<http://fractureid.com>).

- Upstream component (exploration and production)
- Mechanical properties of rock
- Mechanical rock properties
- Poisson's Ratio (p)
- Young's Modulus (ν)
- Well completions
- Stimulation response prediction
- Dipole sonic logs method (old)
- Stiffness Coefficients (C_{33}, C_{44}, C_{66})
- Isotropic stiffness coefficients (C_{11}, C_{12})
- C_{13} tensor
- Vertically traverse isotropic (VTI) formation
- Static to dynamic Young's Modulus
- Static to dynamic Poisson's Modulus
- Positive ID of rock mechanical properties
- Horizontal drilling
- Vertical drilling
- Lateral heterogeneity
- Reservoir rock properties
- Formation lithologies and properties
- Lateral variation in rock properties
- Hydraulic fracture permeability
- Rock formation drilling characterization
- Perforation efficiency
- Lithological classification
- Drilling noise
- Acoustical energy
- Correlation of acoustical energy and mechanical rock properties
- Spectral character of drilling induced vibrations
- Geophysical signal processing
- Earthquake seismology
- Band-limited Gaussian noise
- Brune parametric spectral representation
- Drilling induced vibrations
- Data processing
- Tri-axial accelerometer
- Frequency domain and displacement spectra ?
- Stress and strain
- Fracture induced anisotropy
- Traverse isotropic (TI) stiffness coefficients
- Isotropic stiffness coefficients
- Fracture identification ($\nu_h < \nu_v$)
- Laminated or strongly bedded rock identification ($\nu_h > \nu_v$)
- Studies in the Bakken formation, Birdbear formation, Three Forks formation
- Studies in the Williston Basin, Anadarko Basin
- Current business in the following basins:
 - Delaware
 - Midland
 - Anadarko
 - San Juan
 - Eagle Ford
 - Williston
 - DJ
 - Powder River
 - Appalachian
 - Arkoma

Next, separate into keywords by searcher-industry (drilling, completion, geophysics, etc) ...

2 Value Proposition

sec:value

This information appeared in [2]. This presentation has many color graphics.

- Accurate, high resolution reservoir characterization
- Completions optimization
- Understanding the impact of natural fracture systems
- Optimized well spacing
- Reduced drilling dysfunction
- Reservoir Characterization
 - Depletion
 - Lithology and Bedding
- Efficiency (through adjusting stage and perforation locations)
- High resolution, entire well completion modeling in Gohfer.

Fracture ID can acquire this data while 1) costing zero rig time, and 2) Reducing open hole risk.

3 Services

sec:services

These are some the “services” FractureID provides. Summarized from the documents on the website’s *Resources* page. These services are new, creative, cutting-edge, advanced—created from nothing. This is what they want to highlight. In summary Fracture ID’s technology/services results in

- Improved completion efficiency
- Perforation efficiency modeling
- Better understanding of reservoir-to-well connectivity

3.1 Unconventional Resource Development

The slides from the SPE workshop in [3] explain the work flow of unconventional resource development using a geomechanically calibrated, seismically constrained reservoir model.

The process is explained in seven steps in the document.

3.2 Modeling Simulation and Completion Operations

The article [4] discusses modeling simulation and completion operations. It also discusses processes and analysis methods.

- Reservoir-to-well connectivity? What's this?
- Application of elastic moduli to improve completion efficiency
- Modeling perforation efficiency
- Case study...

3.3 Detecting Depletion

The article [5] discusses depletion detection in the Middle Bakken.

- Identify both natural and induced mechanical variability within individual rock units.
- Effect of pressure and hydrocarbon depletion on mechanical rock properties
- Wellbore mechanical signatures

4 Audience

The source of this is the notes in HubSpot from 11 October kickoff meeting with Josh Ulla.

4.1 Who Needs to Find FractureID?

- Anyone who drills
- Reservoir engineers
- Completion engineers
- Petrophysicists
- Geologists (for earth models)
- Geophysicists (images and data allow them to test assumptions)
- Operation companies

4.2 Who Calls FractureID on the Phone?

- Operating companies (Exxon, Shell, Chevron, etc.)
- Surface contractors
- Anyone interested in “Formation characterization.”

4.3 Customers: Current and Potential

- Geophysicists
- Drilling teams
- Completion teams
- Big operating companies (e.g., Exxon)
- Independent operating companies
- Mom-and-pop operating companies

References

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- [3] C. Neidz, A. Fisher, A. Makowitz, B. Wehner, J. Ulla, J. Gumble, and P. Heuermann, "From micro to macro: Application of a geomechanically calibrated, seismically constrained reservoir model to unconventional resource development," Society of Petroleum Engineers, Workshop, June 2017. [Online]. Available: <http://www.fractureid.com/resources/>
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