

Data and Neural AnalysisSM process

Discover cause-and-effect relationships through expert data mining

FEATURES

- Determine best practices from your well files
- Find reservoir quality indicators from basic data
- Create the best stimulation practices weighed against reservoir capability or quality
- Uses inexpensive data to optimize completion design
- Provides accurate well performance forecasting
- Enables the operator to be more selective in acquiring stimulation services

StrataGen[®] Engineering's innovative Data and Neural AnalysisSM process quantifies reservoir quality and determines the most cost-effective method of completing wells. By analyzing well data, our expert analysts can fully understand the quality and character of your reservoir and identify opportunities to exploit your assets and boost your bottom line. This can be true especially in older reservoirs where we can pinpoint key elements that yield higher completion efficiencies.

In Data and Neural Analysis, we first examine the data, which are usually in a format that requires quality control. For best results we use tools that search for information that is outlying, represents a median response or is incorrect and does not fully represent actual trends. This task must be completed in linear data examination by a StrataGen expert who knows the impact of reservoir issues on well performance.

Next we seek information that reflects reservoir character. In some cases, it is a well log. Using variations of Coates equations, we can replicate permeability, stress and possibly lithology factors. In the case of shales, we have found that digital mud logs offer data that are sometimes missed and often unappreciated. However, this can lead to true factors that represent reservoir quality.



Finally we seek completion practices that impact reservoir performance. These offer relevant tools toward discovering best practices and lead to understanding the completion treatment that is most effective in specific ranges of reservoir quality.

The end result is that operators can discover opportunities to improve well performance or lower their finding costs on a project.

StrataGen has performed data mining projects that have:

- Discovered best completion and stimulation practices
- Created holistic completion models
- Identified specific aspects of stimulation treatments to determine their impact on production
- Selected horizontal well placement
- Discovered vertical well re-stimulation opportunities.

These documented studies bring value by addressing these issues:

- Need for either a clay stabilizer or high-temperature breaker
- Finding the correct frac fluid:
 - High viscosity or water fracs
 - N₂ or CO₂ or both
 - Low pH or high pH
- Proper and most efficient proppant, volume and concentrations
- Stimulation volumes, rates and flowback procedures
- Reservoir data, which are less expensive to collect yet yield information to determine reservoir quality
- Open-hole "ball drop" or cased-hole horizontal well completions.

At work in the Bakken

StrataGen's Data and Neural Analysis process has a successful track record of maximizing the performance of wells in the oil-rich Bakken shale.

Analyzing data from inexpensive sources, we are able to deploy a completion model that creates a stimulation plan with a production forecast. By adding other data, StrataGen can determine optimal fracture spacing for your well that can be cross-checked against economic models.

The completion model is offered in three design levels:

- Basic completion – combines well production with your existing program.
- Comparative – combines the basic design with recommended numbers of compartments, frac fluid and proppant volumes, cluster or injection point spacing, proppant add schedules, frac fluid specifics and comparisons between controllable factors that affect production outcomes.
- Economic impact package – combines basic completion and comparative design. It also enables the operator to examine cost-benefit issues and includes economic impacts (job sizing and variable cost analysis as well as NPV/return on investment scenarios).

Our work in the Bakken continues to demonstrate that sophisticated, high-end completion design can come at a reasonable cost.

Data and Neural Analysis process advances data mining, manipulating and interpreting vast volumes of information to discover new pathways to enhanced production and higher profits.

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