Real-Time Monitoring
Core’s PROFRAC™ system uses permanent downhole sensors to accurately measure temperature and pressure. Precise bottomhole pressure data are needed for calculation of the major variables used to evaluate performance, such as closure pressure, net pressure, and history model matching. Real-time monitoring improves the accuracy of initial-pressure, fall-off, and build-up data; and it significantly reduces the risk of sanding the well off.

- Optimize frac design
- Improve fracture efficiency
- Improve pressure matching on mini-fractures
- Increase ultimate well recovery

The PROFRAC™ monitoring system was used to gain a better understanding of when to flush this well, enabling an additional 34% of proppant to be pumped into the formation. Sand cleanout operations were reduced, and increased proppant injection is leading to better ultimate recovery.

Post-Frac Evaluation
Proper fluid and proppant placement is paramount to a successful fracture stimulation treatment. Core’s ZeroWash® and chemical frac tracers technologies help engineers make informed decisions regarding stimulation procedures.

- Proppant distribution at the wellbore
- Identification of non-stimulated or understimulated zones
- Comparison of design versus actual frac height and width
- Evaluation of frac fluid performance and load recovery efficiency
- Zonal contribution from flushed production

ZeroWash tracers and SpectraScan® imaging were used in a refracturing operation that more than doubled production from this well.

We can help maximize your production performance
For more information, please contact us.
Integrated Reservoir Solutions Division
6316 Windfern • Houston, Texas 77040
713-328-2673 • irs@corelab.com

© 2003 Core Laboratories. All rights reserved.
GOHFER, Predict-K, PROFRAC, ZeroWash, and SpectraScan are trademarks of Core Laboratories.

FRACTURE STIMULATION OPTIMIZATION
Core’s Integrated Reservoir Solutions Division can help maximize your production performance through the power of this exclusive service combination:

- Reservoir Characterization
- Rock-Log Calibration and Petrophysics
- 3-D Fracture Design
- Fracture Production Forecasting
- Real-Time Monitoring
- Post-Frac Evaluation

A fracture stimulation optimization program can minimize the risk in – and increase the return on – expensive frac operations.
Maximize your production performance

Core’s Fracture Stimulation Optimization (FSO) program provides a complete evaluation of the reservoir and its performance – from the pore system scale, through 3-D frac design, real-time monitoring, and post-frac appraisal. Core Laboratories is the only service company that can apply such a wide range of geological, petrophysical, and engineering services to the specific objective of fracture stimulation optimization.

Reservoir Characterization

Comprehensive evaluation of formation rock properties provides the most significant data for log interpretation and prediction of reservoir performance. Rock physical properties control all petrophysical behavior and strongly influence geomechanical properties in fracture-stimulated reservoirs.

• Geological characterization by facies and depositional environment
• Detailed petrographic analysis and identification of rock types
• Key petrophysical, engineering, and geomechanical properties
• Rock-fluid compatibility for completion and stimulation
• Fracture conductivity

Rock-Log Calibration and Petrophysics

Laboratory rock properties measurements are fundamental to log evaluation. They are necessary for extrapolation of actual physical properties over an entire logged zone of interest.

• Reservoir quality evaluation
• Pay recognition criteria
• Permeability prediction
• Capillary pressure and saturation modeling
• Calibration of geomechanical logs

Fracture Production Forecasting

The Predict-K® program describes the properties of a well and evaluates various treatments. Treatment specifications include fracture geometry, proppant, and fracturing fluid. Net present value can be determined using realistic costs for stimulation materials, treatment, and well costs; and it can be combined with a production forecast to select the optimum treatment, proppant, and fluid.

• Effective producing permeability and fracture characteristics are understood.
• Production practices can be modified to achieve improved hydrocarbon recovery.
• Completion and stimulation histories are used to optimize the total well completion process for increased hydrocarbon recovery.

3-D Fracture Design

Key to production success in tight reservoirs are economic placement of a productive fracture; selection of the most suitable proppant, fluids, and pumping schedule; and accurate estimation of fracture geometry. The GOHFER™ Grid-Oriented Hydraulic Fracture Extension Replicator is the premier tool for optimizing fracture design.

GOHFER simulator predictions for a frac treatment

Fracture Production Forecasting

The Predict-K® production forecast is plotted together with the actual observed production history.

The Predict-K model is used to optimize treatment using laboratory and field data.