PROCESS

Acquire the Data Accurately
Collect relevant reservoir data through seismic, coring, logging and multiple mud logging specialty mineralogy technologies to account for the variability and complexity of shale reservoirs.

Build Comprehensive Earth Model
All data is built into a comprehensive earth model enabling the identification of “sweet spots”. This understanding is used to plan field development.

Effectively Plan and Drill Wells
Pads, well numbers, and well architecture are designed to maximize contact with the sweet spots. Efficient wells are produced through detailed well planning, geomechanics, petrophysics, geosteering, drilling fluids, and specialized drilling optimization modeling within a real-time monitoring framework.

Design, Execute, and Optimize Completions
Tailored completion designs optimize fracture length, fracture spacing, fracture conductivity, and fracture complexity for a well. Complex fracture modeling is used to maximize stimulated reservoir volume and connected fracture area. Real-time monitoring validates fractures propagate as designed.

Optimize and Calibrate Model through History Matching
Using production history matching and data gathered from each drilling, completion, and production operation, a “look back” is performed to validate the accuracy of the earth model. An accurate model improves each subsequent well plan and completion design.

CONTACT INFORMATION
Find out more about the CYPHERSM Seismic-to-Stimulation Service at: www.halliburton.com/CYPHERservice
Send your questions to: Solutions@Halliburton.com
CYPHER℠
Seismic-to-Stimulation Service

The CYPHER℠ Seismic-to-Stimulation Service effectively integrates geoscience and reservoir, drilling, and completion engineering in a collaborative workflow, enabling operators to better predict and produce reserves in shale and tight reservoirs.

Know:
- Where to drill
- How to drill
- Where to frac
- How to frac

Halliburton’s Answer for Unconventional Resource Development
- Enhances asset profitability
- Accelerates the learning curve to de-risk
- Leverages advanced modeling and simulation tools
- Eliminates trial-and-error methods
- Maximizes production while minimizing costs

TEAMWORK
The service is built on collaboration between the customer and Halliburton through a multi-disciplinary team.

A CYPHER service team typically consists of:
- Earth modelers/geologists
- Geophysicists
- Petrophysicists
- Reservoir engineers
- Drilling engineers
- Completion engineers
- Production engineers
- Data managers

The collaboration and information sharing between the customer and Halliburton teams is critical to the success of the service.

Local Expertise
Local subject matter experts provide the expertise for a service engagement. They bring detailed knowledge of the challenges and solutions their area.

TECHNOLOGY
The CYPHER℠ Seismic-to-Stimulation Service leverages a proprietary suite of software enablers supported by an integrated platform that streamlines processes and enables efficient decision-making.

Petrophysical Analysis
ShaleXpert™ is used for petrophysical interpretation on a single well. The software combines geochemistry, formation evaluation, and geomechanics for advanced source rock reservoir analysis.

Geoscience Analysis
DecisionSpace® delivers commercial geoscience applications addressing the unique challenges of shale and tight gas reservoirs. This platform includes tools for basin modeling, seismic interpretation, petrophysical interpretation, geologic modeling, earth modeling, and reservoir simulation incorporating a multi-user and common data structure.

Drilling Optimization
DrillingXpert™ software is used to rapidly optimize the design an entire drilling system in one advanced software package. This software helps deliver maximum performance and reduces overall drilling days and well AFE. DrillingXpert consolidates the drilling modeling applications in DecisionSpace Well Engineering with those from Sperry, Baroid, and HDBS into a single platform.

Completion Design and Production Analysis
CYPHER™ Software Suite is used to perform fracture matching, build complex fracture models, and simulate unconventional reservoirs. The suite is specifically designed to address unconventional reservoir challenges.

www.halliburton.com/CYPHERservice