Schlumberger Data & Consulting Services (DCS) provides a range of services to help identify and mitigate risk and improve production and economics in tight sand and unconventional resource plays. Majors, independents, and NOCs, as well as new players and companies with limited resources or expertise in unconventional plays, can leverage state-of-the-art technology, extensive experience, and best practices to identify more risks quickly, which benefits decisions for completing the lateral and field development plans.

Process for horizontal well completion optimization
The horizontal well real-time analysis solution is the only vehicle in the market today that fully integrates multiple scientific disciplines and tools to comprehensively analyze and utilize data, allowing clients to minimize risk and maximize asset value for horizontal plays. Data from cores, logs, production, and other sources are fully integrated and analyzed for advanced scenario planning.

This integration allows better understanding of the wells’ potential, completion design, and ultimate recovery, accelerating the horizontal drilling learning curve.

The process comprises three field-tested offerings: 1) the Integrated Perforation Advisor, 2) production forecasting and hydrocarbon recovery estimation, and 3) completion optimization.
Horizontal Well Analysis

Integrated Perforation Advisor
(4–6 days from processed log to completion design)
The Integrated Perforation Advisor ensures optimal perforation placement and spacing to help identify the maximum fracture surface area within the best pay sections along the lateral.

- Incorporates all LWD log interpretations
- Optimizes perforation cluster spacing
- Displays and arranges required parameters
- Modifies perforation locations
- Groups perforation clusters to design final staging
- Summarizes methodology, evaluation, results, and recommendations
- Honors current client practices

Results include a summary of unusual rock properties, parameter differences and similarities to offset wells, stage identification, difficult-to-treat zones, and correlations and postproduction log evaluation. Recommendations are provided for perforation locations, staging, and general stimulation treatment.

Production forecasting and hydrocarbon recovery estimation
(4–6 weeks from receipt of full dataset)
This reliable and robust reservoir modeling tool provides an estimate of the economic ultimate recovery from producing wells for field planning and completion optimization. The tool matches well production and evaluates parameters such as compaction, free and adsorbed gas, dual porosity and dual permeability, and stimulated volume. The workflow integrates data from surrounding wells with microseismic and production data to provide a history-matched reservoir model. If seismic data are available, a static geological model can be built to provide deeper insight into the local formation heterogeneity for field development and key economic decisions concerning well locations and completion optimization.

Completion optimization
By evaluating offset wells or recompletions, this process optimizes new wells and upcoming completions based on reservoir characterization (petrophysical and permeability model); results from the Integrated Perforation Advisor; completion design and evaluation including stimulation evaluation; production analysis, modeling and prediction; and modeling updates from production data.

Deliverables
Horizontal well analysis provides recommendations and risk mitigation at each step of execution, allowing data analysis stage by stage. Customized to your team’s needs, the solution delivers well feasibility determination, wellbore placement, optimized completion design, execution, and results evaluation. The process finalizes wellbore placement within the field and formation based on petrophysical, production, and core analysis, along with geologic considerations and fracture growth behavior. The lateral length, number of hydraulic fracture stages, perforation placement, stage spacing, and treatment size are calculated and optimized based on economics and forecast production results.

The analysis leverages the full spectrum of Schlumberger knowledge and experience that has been applied successfully in tight sand and shale formations including Cotton Valley, Escondido, Wilcox, Haynesville (Bossier), Eagle Ford, Bakken, Marcellus, Woodford, Fayetteville, and Barnett. Our experts and services provide proven experience, knowledge, and expertise in tight sand and unconventional arenas, while proven economics to measure investment ensure maximum value from your plays.

Reservoir quality (RQ) technology routine:
Triple-combo spectroscopy (Platform Express®, ECS*, and EcoScope* services), Dielectric Scanner* service, and nuclear magnetic resonance technology

Completion quality (CQ) technology routine:
Borehole images (FMI*, RAB*, and LWD-density), and Sonic Scanner* services

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