

Schlumberger



Explore new horizons in heavy oil

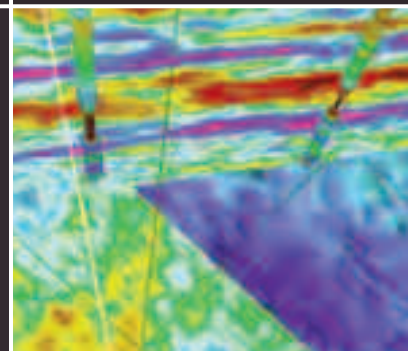
Reservoir and fluid characterization solutions for heavy oil.

How well do you know your reservoir?

If you are looking to expand your reserves portfolio, or exploit assets that promise longer-term returns, heavy oil is now an attractive proposition. Major deposits are already identified in shallow, accessible reservoirs, in basins with a long-established history of successful oil production. At the same time, favorable market conditions are making heavy oil exploitation a commercially viable enterprise.

Technology and experience are rapidly advancing in heavy oil, with many recovery methods now available. To take an informed decision it's paramount to have adequate reservoir and fluids characterization. Understanding the geology, fluids properties, issues of flow assurance, and potential sand or water production are all key to production success.

These are fundamentals when planning and costing every field development in order to lower the risk and protect your investment. Achieving the right level of reservoir and fluids characterization takes the right level of detail and the right service partner to help you see the full picture.



Make heavy oil more predictable

Every decision you take in heavy oil has to be based on close understanding of the specific fluid properties expected within each individual reservoir. Such reservoir-based planning relies upon making heavy oil behavior as predictable as possible, an activity where long-held expertise and experience make all the difference.

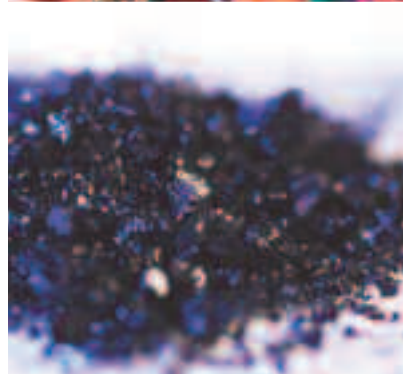
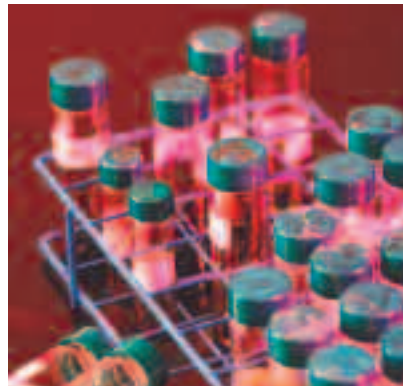
REDUCE THE RISK

Controlling costs and safeguarding production rely on obtaining the most accurate answers available from the lab. As a leading center of excellence, the Schlumberger Reservoir Fluids Center in Edmonton, formerly Oilphase-DBR* service, brings you closer to the truth by recreating in the lab the real-world conditions found in your reservoir. Fully customizable, the techniques and services proven to enhance analysis include

- sample restoration
- compositional analysis
- PVT analysis
- data management
- modeling.

To find out more about maximizing your heavy oil opportunity, please visit

www.heavyoilinfo.com



SOLVING INDUSTRY CHALLENGES

Schlumberger goes beyond reservoir and fluids characterization to provide a comprehensive offering of specialist heavy oil services and multidisciplinary expertise. Our track record of experience combined with proven technologies enables you to move from testing to payback confidently and cost-effectively.

UPFRONT ENGINEERING STUDIES

Using best-in-class models and software our experienced teams enable you to screen initial reservoir and recovery methods. Support your decisions with effective and concise heavy oil studies from basic scoping work through pilot design to full-field development planning.

► RESERVOIR AND FLUIDS CHARACTERIZATION

The multidisciplinary suite of Schlumberger services encompasses leading technologies and expertise in advanced logging, measurement, fluid sampling and laboratory analysis, and modeling for a deeper reservoir understanding.

WELL CONSTRUCTION AND COMPLETIONS

Our close experience with customers has helped us to develop a range of innovations including directional drilling, high-temperature completions, advanced cements, and artificial lift techniques—all designed to get the most from the reservoir.

MONITORING AND CONTROL

Continuous measurements in real time help you keep control of the reservoir. Monitor downhole equipment, fluid variations, and production impact to ensure that reservoirs are long-term profitable assets.



Can I improve production cost-efficiency?

How can I have continuous flow assurance?

How can I maximize recovery factor?

What are my production options?

What's the optimum well design?

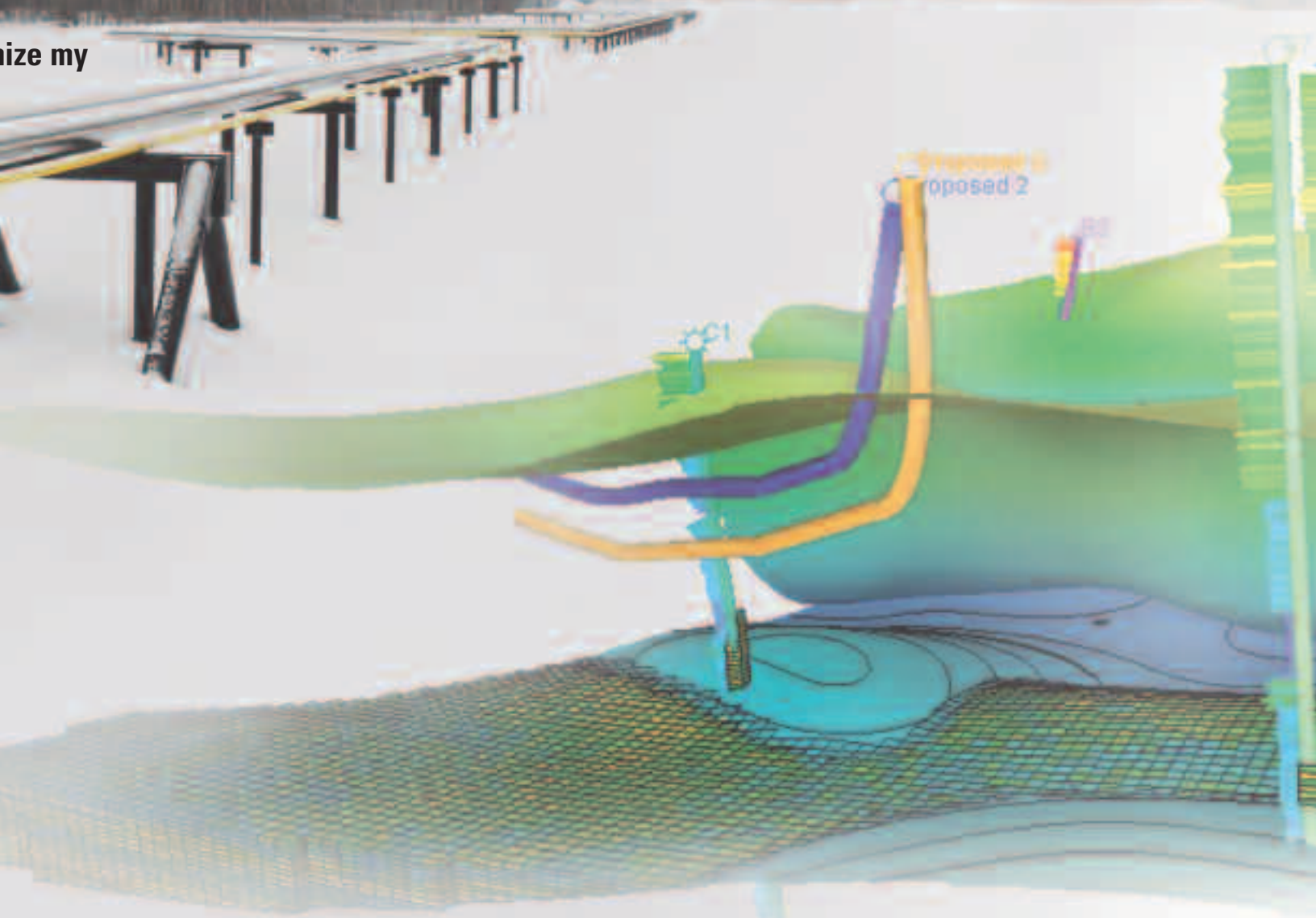
How can I improve input for my models?

Understand the full picture

When it comes to key decisions such as well placement or completion design, gaining a more complete picture of the reservoir helps you make the right choices for your wells. And it also puts you in a better position to make more informed choices for optimizing the design of surface facilities to maximize well production and maintain flow assurance.

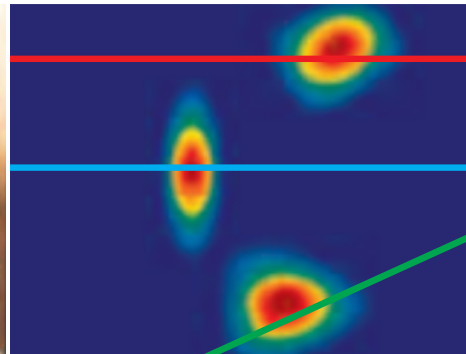
Beyond primary production, ever more accurate and detailed reservoir characterizations will continue to provide the foundation stone for your future decisions, such as selecting the optimal time and follow-up production method to enhance overall recovery. It's this improved prediction that will deliver the long-term confidence required by every decision-maker on your team, from the geologist and production engineer to the asset manager.

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With decades of potential production, securing long-term value in heavy oil relies on **delivering efficiencies** in extreme operating environments.

A measured approach for greater understanding



While your heavy oil understanding is defined by the accuracy and completeness of your reservoir model, building the best model means making the most of every input. From downhole measurements to onsite analysis, the ideal solution, based on heavy oil experience, is to take a considered, coordinated approach to everything that happens at the wellsite. Schlumberger offers a range of specialist activities to pinpoint fluid properties and behaviors more precisely to arrive at the best reservoir model.

- In situ hydrocarbon characterization
- Fluid sampling and analysis
- Static and dynamic modeling

SIMPLIFY INTERPRETATION

To provide greater insight into the various types of heavy oil reservoirs and to map oil mobility, a range of evaluation techniques has been developed.

Evaluation begins by obtaining measurements of traditional properties to confirm the existence of oil-bearing beds and their composition and ability to transmit fluids.

But heavy oil requires an extra dimension of understanding to determine the right well type and recovery method. It's here that advanced methods reveal more complex details, using technologies such as formation imaging, capture spectroscopy, and magnetic resonance to tell us more about the behaviors of the fluids and rocks beyond the borehole.

Every reservoir is different. Schlumberger gives you a broader range of options proven to help improve the inputs that lead to reservoir insight and guide decision making for well placement and design, cost-effective production, and flow assurance for heavy oil reservoirs.