Analytics platform used for analyzing value of asset sales package with properties in four areas of Canada

Marketed Canadian properties were in Bow River, Castle Mountain, Lake Louise and Prince areas

Ryder Scott's approach to identifying value using an analytics platform was presented by **Jean Liu Halfe**, vice president – project coordinator, at the company's Calgary reserves conference earlier this year.

Spreadsheet applications have always been effective tools for petroleum engineers. However, increasingly, the oil and gas industry is turning to other more sophisticated analytics programs.

Ryder Scott has integrated data science and analytics technologies into its work flow through the use of Tibco Spotfire. It is one of several data analytics tools on the market that include Tableau, Qlikview, Cognos and Microsoft Power BI.

Liu Halfe showed the power of using Spotfire. "Using this tool, I was able to quickly, efficiently and cost effectively analyze the value of an asset block for sale and identify which areas held the key to future growth," she said.

Traditionally, to value an asset sales package, for example, a reserves evaluator uses the seller's database, several public data sources and aggregated project data. "Handling multiple data sets in multiple formats to synthesize useful information is often a struggle," said Liu Halfe. "Indeed, just the information volume in the seller's database can be challenging to assess."

She demonstrated how a reserves evaluation engineer using Spotfire's visualization and analytics abilities can tease out key technical-performance outcomes on new plays from public databases.

"Production history from public data sources is important, because a seller's reserves database may not capture all production and injection data," she said. "Using publicly available information in concert with detailed information in a proprietary reserves database can reveal materially new knowledge for a client."

Ryder Scott constructed a Spotfire template that assists in workflow creation and has built-in ability and flexibility for project customization and quicker turnarounds. Liu Halfe showed production histories and projections in those templates. Her presentation is at ryderscott.com/presentations.

"These templates were constructed to exclude misleading production and injection information for a given reservoir," said Liu Halfe.

Output included graphs that married relevant historical production and injection information to forecast information for data streams, such as total well counts, daily oil and gas rates and average daily BOEs per well. Liu Halfe grouped wells into Bow River, Castle Mountain, Lake Louise and Prince asset packages in Canada.

"Another strength of the application is the ease in controlling the wells used in constructing a type curve. When you build a type curve you don't include everything," said Liu Halfe.

> *"Using this tool, I was able to quickly, efficiently and cost effectively analyze the value of an asset block for sale and identify which areas held the key to future growth,"*

She built the type curves taking into account downtime, and reduced the data to a group of horizontal oil producers only – no injectors were included. Liu Halfe then parsed it out to the production curves.

"I was able to see my horizontal well time to boundary-dominated flow and terminal decline rate in a quick look," Liu Halfe said.

Compared to a more traditional, time-intensive spreadsheet analysis, the analytics program reduced the work time to six hours — from receipt of the reserves database and well list to the program's output comprising a high-level overview of the asset package and an analysis of material assets, the latter a key focus area, she said.

Liu Halfe also discussed quick audits of proved developed producing and undeveloped locations. She pointed out that data analytics applications do not replace geologists and engineers.

"The application is not a be-all, end-all. It's just a tool to help us," she said.

Jean Liu Halfe

Five engineers, two geoscientists join RS

Five engineers and two geoscientists joined Ryder Scott in the third and fourth quarters of this year. **Mark A. Nieberding** joined Ryder Scott as a senior petroleum engineer. He has more than 33 years of international experience in reservoir engineering and economic evaluations, which includes estimating petroleum reserves under U.S. SEC rules and SPE-PRMS guidelines.


Mark A. Nieberding

Most recently, Nieberding was a reserves planning engineer at BP Plc in the Lower 48 (U.S. states) for six years. He conducted onshore field development planning and optimization, evaluated risk categories, estimated reserves and resources volumes, analyzed capital-expenditure metrics and audited financial analysis of assets.

Before that, Nieberding was a reserves manager at Exco Resources Inc. during 2009–2012. He estimated reserves and resources and coordinated third-party auditors and reserves consultants. Nieberding ensured Sarbanes-Oxley compliance and conducted evaluations for bank loans and internal reviews.

During 2001–2009, Nieberding was a vice president at DeGolyer and MacNaughton consulting firm. He categorized, forecasted and estimated reserves and resources volumes and evaluated acquisition opportunities throughout Europe, Russia and Asia. Nieberding also taught classes on SPE-PRMS guidelines and SEC rules on reserves and resources.

He was a senior petroleum engineer at Gaffney, Cline and Associates during 1997–2001. Nieberding has BS and MS degrees in petroleum engineering from the University of Tulsa and an MBA degree from the University of Texas at Dallas.

He is a registered professional engineer in Colorado and Texas, and is a member of SPE and SPEE.

Inty Cerezo joined Ryder Scott as a senior petroleum geoscientist. He is an expert in geo-modeling, geophysics, quantitative interpretation, workflow development and project management. Before that, Cerezo was a software technologies analyst at Schlumberger Ltd. for two years with expertise in the company's geology and modeling software platform. He was a decision-maker for implementing seismic well-tie technologies and was involved with the new quantitative rock physics and inversion interpretation capabilities.


Inty Cerezo

In 2012, Cerezo was a G&G team lead at Schlumberger Information Solutions. He managed techniques, tools, processes and practices within geology and geophysics. He also conducted planning, scheduling and designing of projects and assigned work to team members.

During 2009–2012, Cerezo was a senior geo-modeler at Schlumberger, analyzing workflows in seismic interpretation and geo-modeling. He optimized and implemented new procedures and processes for information management and trained and supported field engineers and a data management team.

Cerezo also was a senior geoscientist and workflow consultant at Schlumberger in Trinidad and Tobago starting in 2005. He was involved with seismic interpretation, petrophysics, geo-modeling, log interpetation and software implementation.

Cerezo started his career with PDVSA-Intevep in 2000 as a petrophysicist and became an operations geologist in 2001. He has a geological engineering degree from the Universidad de Oriente in Venezuela.


Cecilia P. Flores

Cecilia P. Flores joined Ryder Scott as a senior petroleum engineer. She has more than 16 years of experience in multidisciplinary projects to support and help optimize exploitation plans. Previously, Flores was a consultant at the Halliburton Consulting & Project Management Division in the mature fields group supporting global operations.

During 2011–2014, she was a senior reservoir engineer for PB Energy Storage Services Inc. responsible for developing strategies for storage operations in depleted reservoirs through numerical modeling. Before that, Flores evaluated fractured, horizontal gas wells in the Haynesville shale play as a reservoir simulation engineer at Object Reservoir Inc.

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