Petrel Well Deliverability Module

Evaluate the productivity of your wells under given reservoir conditions—quickly and effectively

APPLICATIONS

- Streamlined VFP table generation
- Execution of nodal analysis within the Petrel* platform to plan and analyze completions and well interventions

BENEFITS

- Better collaboration between reservoir and production engineers
- Improved efficiency through automated and intelligent processes
- Enhanced understanding of wellbore deliverability with model-based sensitivity analysis
- Ability to reuse cases to identify possible problems using well performance data in context with the reservoir model
- More robust history matching with the addition of nodal analysis

FEATURES

- Easy knowledge and data sharing
- Intelligent population of data from the Petrel platform, converted into an input for VFP and nodal analysis runs
- Quick and easy VFP generation
- Ability to handle multisegmented and multilateral wells
- Operational constraints obtained from production data without having to execute a full field simulation

The Petrel Well Deliverability module enables reservoir engineers to validate and tune reservoir simulation models using hydraulic vertical flow performance (VFP) tables and nodal analysis. Reservoir engineers can then evaluate and choose optimum well completions or predict well productivity, based on the impact of mechanical changes and workovers on well inflow performance.

Generate VFP tables within the Petrel platform

VFP tables provide data on the outflow relationship between bottomhole conditions in a well and well-head pressure. Additionally, they characterize the capability of the well to lift the fluids to surface. VFP tables or curves generated in the Petrel Well Deliverability module are then used in the ECLIPSE* industry-reference reservoir simulator to model these changing operating conditions into simulation models.

The Petrel Well Deliverability module allows users to execute these tasks within a single environment. The module associates every VFP table to its corresponding wells automatically, making it particularly powerful for development-strategy planning in which simulating the performance of hundreds of wells is required.

Run nodal analysis on multiple wells

Nodal analysis gives a snapshot of the operating conditions at a point in time. This is used to determine the operating point for the well and analyze the impact of changes to outflow or inflow performance into the bottom of the well. Harnessing the powerful engine of the PIPESIM* multiphase flow simulator, the Petrel Well Deliverability module performs this analysis on multiple wells simultaneously.

The Petrel Well Deliverability module records the operational factors used in a simulation run and identifies possible problems using the data in context with the reservoir model. The module also allows engineers to see how—and why—a specific completion was initially chosen to achieve the original operating point of the well. The module enables quick inflow performance relationship (IPR) evaluation and suitability for use in the reservoir simulation model using IPR methods such as Vogel or Fetkovich, or by accounting for back pressure.
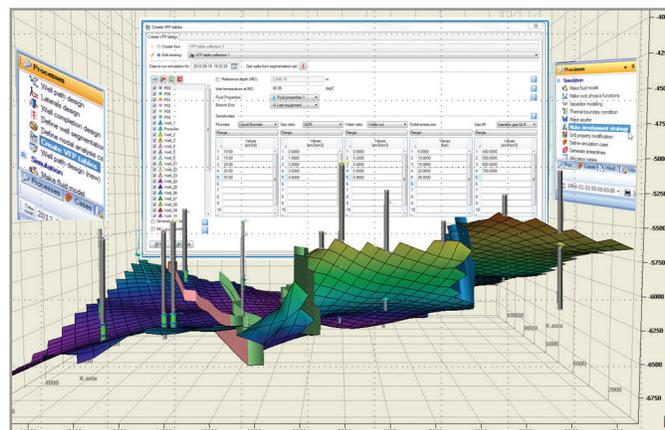
Integrated reservoir and production data are used to generate performance tables within the Petrel platform.

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Dynamic and intelligent usability

The Petrel Well Deliverability module recognizes the dynamic and static variables already within the reservoir model, which are used automatically as inputs to generate VFP tables and nodal analysis. For example, the module 'reads' the depth that the ECLIPSE simulator needs to generate each VFP table in the background, and then creates the tables accordingly.

The module also intelligently uses dynamic reservoir and fluid variables, such as GOR, water cut, temperatures, and pressures already within the reservoir simulation model. These values do not have to be entered individually. All that needs to be specified is the time at which you want to run VFP or nodal analysis—the appropriate values are taken into account.

This powerful workflow enables reservoir engineers to optimize completions and workovers in the context of their reservoir model.

E-mail sisinfo@slb.com or contact your local Schlumberger representative to learn more.
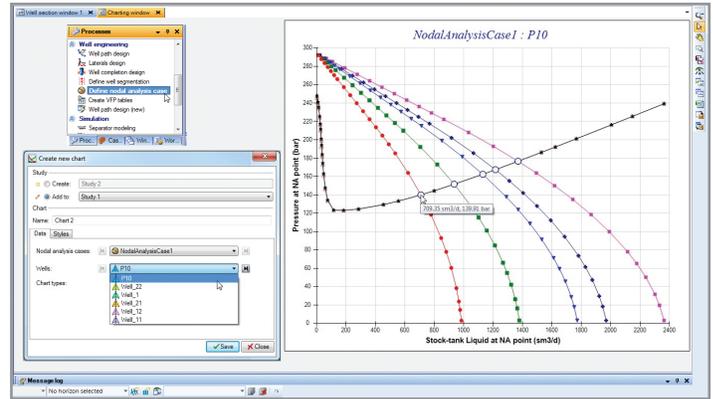
IPR intersecting the outflow performance by means of nodal analysis within the Petrel platform.

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