Petrel Guru Standardizes and Automates Quality Check and Reporting Procedures for 3D Models

Gazprom Neft reduces 3D model review time by 88%–96% and improves data integrity by using Petrel Guru

**CHALLENGE**
Support review of 3D geological models by
- reducing time required to investigate how they were built
- improving integrity of input data
- standardizing quality check and reporting procedures.

**SOLUTION**
Use the Quality Reporting tool of Petrel® Guru to automate and standardize completion of the corporate Geological Model Passport template used for quality assurance of 3D geological models.

**RESULTS**
Reduced reporting time to 1–2 hours from the previous 2–3 days by standardizing data entry and automating quality control procedures, which also decreased the likelihood of human error and improved data integrity.

Time consumed by manual data entry
In 2015, Gazprom Neft PJSC created the Geological Model Passport corporate template for investigating how 3D geological models were built. Used to simplify expert review and monitoring of the work sequence, this reporting document is required to be completed for every 3D model with the following data:
- well data statistics and geological model outputs in spreadsheet and graphical formats (e.g., bar charts, correlation plots)
- maps used for modeling or plotted as a model output
- cross sections with 3D properties
- hydrocarbon reserves.

However, filling out a Geological Model Passport by hand was taking 2 to 3 working days. Considering the number of models submitted for expert review at Gazprom Neft, a considerable amount of time was being spent on manual data entry tasks.

To improve data entry efficiency, Gazprom Neft chose Petrel Guru as an automatic data entry tool for the Geological Model Passports conducted for every geological model created in the Petrel platform.

“The geological 3D model is an important tool for reservoir monitoring and management. The quality of decision-making based on the geological model relies on the quality of the model itself. The Petrel Guru workflow helps minimize time to complete reports, find any flaws in the geological model as early as at the checking stage, and take corrective actions to improve model quality. Testing emphasized the flexibility of Petrel Guru tools, as it is capable of adapting the workflow to 3D models of any level of complexity. To summarize, testing the tool on geological 3D models of West Siberia, with typical clinoform and multireservoir structure and different fluid types, including reservoirs with oil rims, proved to be a success.”

Rustam Faizov, Lead Specialist
Geological Expert Review and Methodology Development
Gazpromneft-NTC LLC

**CASE STUDY**
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**Reports automated using Petrel Guru**

Petrel Guru is a Schlumberger enabling technology that provides customers with complete quality support and guidance at every step of their workflows in the Petrel E&P software platform. As an embedded quality reporting tool, Petrel Guru integrates in-context guidance with knowledge and best practices capture.

Petrel Guru’s Quality Reporting capability was used in this context to enable users to run tests on their data objects and automatically create reports detailing the quality of the results. Together with the Petrel platform’s workflow functions, Petrel Guru supports users in:

- creating an interface for setting up input data
- running calculations, including plotting maps and calculating statistical parameters of objects
- producing screenshots with print previews for maps, sections, cross plots, and histograms
- generating reports by entering text and numeric values or graphical elements in the preset fields.

**Report time cut 88%–96% and data integrity improved**

A dedicated Petrel Guru Quality Reporting workflow was created to automatically enter data for interrogation into the appropriate fields of the 16-page Geological Model Passport template. The fields include more than 20 graphical elements, 100 numerical and text values, and reserve estimates.

To initiate the workflow, a user specifies the geological 3D model with relevant properties (such as lithology, porosity, and fluid type) and the data used to build the model. If certain data are missing, a warning message is displayed in the report.

Testing of the Petrel Guru Quality Reporting capability at Gazprom Neft’s research and development center documented the many advantages resulting from automation and standardization:

- Users need only basic skills for the Petrel platform to generate a report because most of calculations are run automatically. Concurrently, the likelihood of human error is minimized.
- Automatic report generation saves significant time: down from 2–3 days to only 1–2 hours for the initial execution.
- Linking input data to the 3D geological model.
- Standardization of the procedure for the Geological Model Passport means that it can be completed regardless of personnel availability and project complexity.

Gazprom Neft’s Geological Model Passport is used to evaluate 3D geological models.

Petrel Guru automates and standardizes the input of graphical and statistical data with respect to the corporate template to streamline the expert review of 3D models.