

Transform the well construction planning process and enhance team collaboration via a single, common system to maximize results

Applications

- Well construction planning
- Drilling program generation
- Well scenario comparison
- Operational planning and benchmarking
- Risk management
- Trajectory planning
- Master survey database
- Casing design
- Cement planning
- BHA design
- Fluids and hydraulics design
- Engineering analysis for drilling and casing operations
- Wellbore stability analysis
- Well data management
- Trajectory planning
- Offset well analysis
- Time estimation and AFE preparation
- Well barrier illustrations
- Well control simulation

Key benefits

- Creates a common digital work environment that increases your visibility into all projects and enhances collaboration among well planning teams and third-party service providers
- Improves your planning efficiency to free up more time for engineering innovation by automating repetitive tasks such as torque and drag, hydraulics, and load case analysis and reporting
- Delivers better planning consistency and efficiency with themed workflows and templates
- Facilitates integration of multidisciplinary engineering workflows with subsurface data
- Leverages your offset well data to help you perform risk evaluation and improve your well plans
- Enhances your operational forecasting with identification of best composite time and probabilistic analysis of NPT

- Ensures a coherent engineering solution by using automated validation engines
- Enables your team to work concurrently in a single document with the latest reviewed and approved engineering
- Delivers a coherent plan that is always up to date to all stakeholders via the cloud

How it improves well construction planning

DrillPlan* coherent well construction planning solution enables you to maximize the results from your well planning teams by giving them access to all the data and science they need in a single, common system. It provides the platform for a radical new way of working that gives you quicker and better-quality drilling programs by automating repetitive tasks and validation workflows to ensure your entire plan is coherent. It also includes a circular workflow, which means plans are improved as new data is added and future programs can learn from experience.

As a natively engineered software for the DELFI* cognitive E&P environment, the DrillPlan solution provides you easy access to all your well construction projects in a secure, cloud-based ecosystem.

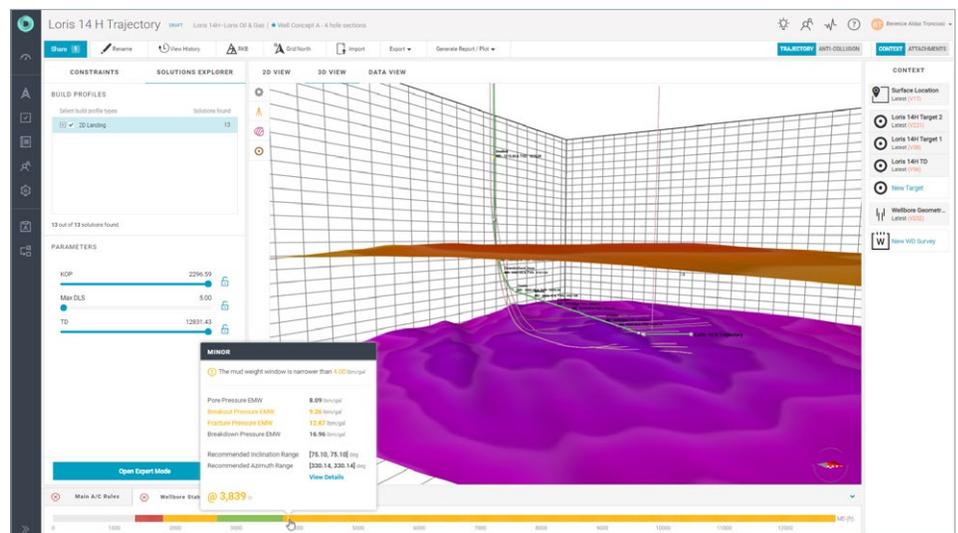
Well planning orchestration

The common digital environment of the DrillPlan solution increases your ability to see all projects and well planning workflows to ensure the completeness and quality of your drilling requirements and standards. The solution features a live activity feed that enables you to stay on top of the latest updates to active projects from all well planning stakeholders, including multidisciplinary teams and third-party service companies—increasing team productivity and driving planning procedural adherence.

In the DrillPlan solution, your company's planning workflow process is mapped and customized to include all your required stage gates and standards. Themed workflows and templates can then be created to drive your planning efficiency and consistency across the organization, and a built-in digital review streamlines your technical and management approvals.

Automated engineering

With the DrillPlan solution, you access all your engineering tools and data in a common system and integrate your workflows—from trajectory and casing design to fluids and cementing through to operational activity



The automated trajectory engineering workflow in the DrillPlan solution enables you to run hundreds of simulations to find the best solution within your drilling, geological, and geomechanical constraints.

planning and AFE. Automated design enables you to run hundreds of simulations to find the best solution within your design constraints. Gain insight into your designs by performing multidimensional sensitivity analysis for hydraulics, torque, and drag. Visualize the engineering results through interactive analytics displays to easily evaluate hundreds of scenarios to optimize your operational parameters.

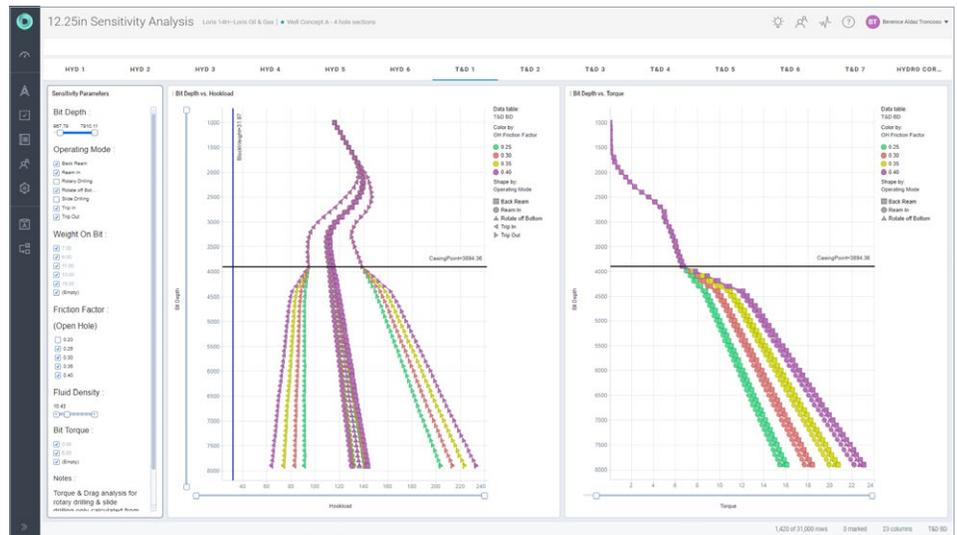
Repetitive tasks are automated, giving you more time to focus on new engineering insights, and the latest engineering outputs to your drilling program are automatically loaded. You can track design changes in the solution over the life of the project, so you can see the evolution of your plan or easily revert to a previous design. DrillPlan solution enables you to duplicate the master plan within your project to build and compare scenarios and identify the best possible well design. You can copy your basis of design in one click to easily generate similar projects and streamline your well planning process.

Features

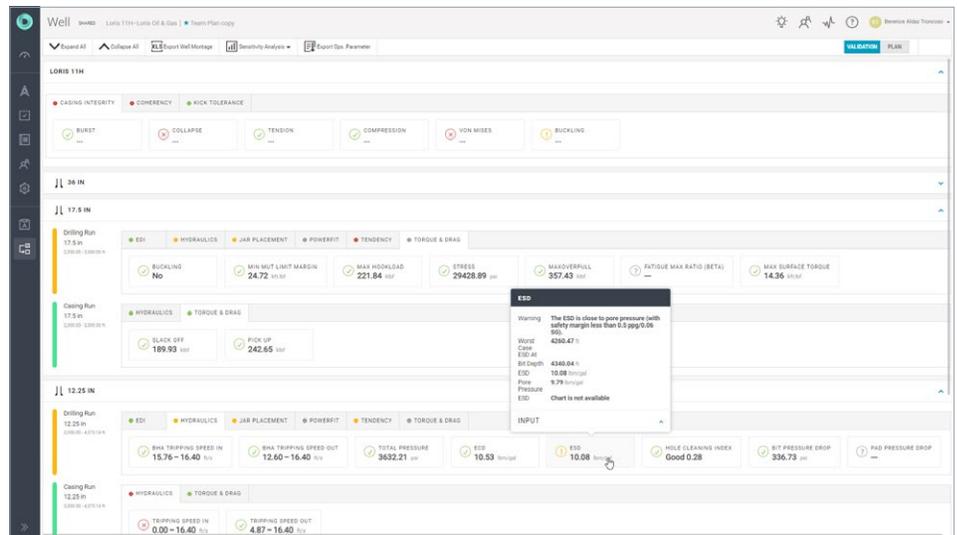
- Single, common system for well planning
- Live activity feed
- Automated engineering and task validation
- Customizable templated workflows
- Open and extensible architecture

Design validation

At every stage of the well planning process, you maintain coherency across all workflows and tasks with a single data source, shared models, and the validation engine. The DrillPlan solution enables you to view shared contextual information between applications to ensure you use the latest engineering outputs. Whenever changes to the plan are made, over 30 engines are automatically activated—including casing design, well integrity simulations, torque and drag, and hydraulics for drilling and casing operations—to cross-check that your plan is still coherent. Engineering flags highlight where you need to review detailed engineering outputs via user-friendly dashboards. All of this enables you to instantly see how your design changes affect your entire plan and review and validate the results. The corporate settings in the DrillPlan solution also define standard operating criteria across all projects, ensuring consistency from well to well.



Multidimension sensitivity analysis enables you to perform multidepth engineering analysis throughout the entire hole section. It uses interactive analytics displays with detailed engineering results for hydraulics and torque and drag in the context of your formation pressures and equipment constraints.



Instantly validate your entire well design every time you make a design change. DrillPlan solution combines more than 30 engineering calculations running automatically for hydraulics, torque and drag, casing design, well integrity, and more for drilling and casing running operations.

Risk management

With the DrillPlan solution, you use your offset knowledge and experience to identify risk and previous NPT, so you can reduce them through engineering or mitigate it through operational recommendations. The solution uses an open architecture to connect to your relevant databases and cross-domain information. The result is lessons learned captured from your offset wells and relevant data for replanning and implementing your management of change process are always available. Once completed, your risk map is easily transferred into your operational instructions and delivered to your operations teams.

You can enable a safer execution with fully integrated well integrity workflows with the automated well barrier illustration tool and well control simulation with multiphased engines optimized for drilling operations.



Activity and cost planning

Offset information is used to run a historical analysis to help you better understand your prior operational performance, conduct probabilistic analysis of NPT incurred on offset wells, identify the best composite time, and improve operational forecasting. This automatically generates the best sequence of operational activities from your most effective offset wells and builds an optimal operational sequence and constraints from your offset experience and engineering specifications. With the ability to include your standard operating procedures and work instructions for the operations team, you gain improved compliance and HSE performance.

Time and cost management is also improved by using your offset well information in the DrillPlan solution. For example, baseline estimations of your time-depth curve from relevant offset wells can be determined, and you can instantly see the effects of your engineering updates to performance and cost calculations. Service contracts connected

to the system enable you to instantly see how design iterations affect project cost. Furthermore, the DrillPlan solution displays cost per activity and distribution across the well life cycle.

Coherent drilling plan delivery

The DrillPlan solution enables the creation of customized templates for your drilling reports.

Smart document management preloads all the latest reviewed and approved engineering and gives your team the ability to work concurrently in a single document, saving hours of administrative work. The latest drilling program is instantly available to you in the cloud, so whether you need to pull up the program during a design review, team briefing, or on the drilling manager's tablet on location, the plan is kept coherent with everyone.

A digital drilling program is then generated for ingestion in the DrillOps* on-target well delivery solution for safe and efficient execution.

What is the DELFI cognitive E&P environment?

The secure, scalable, and open cloud-based DELFI environment provides seamless access to software across exploration, development, drilling, production, and midstream applications—all delivered via a flexible and personalized SaaS subscription model. Combined with domain expertise, digital technologies in the DELFI environment help solve challenges across the E&P life cycle.



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