

# Drilling Geomechanics Services

Expert services to reduce drilling risk, cost, and uncertainty

## APPLICATIONS

- Extended-reach and challenging well trajectories
- Deepwater and HPHT reservoirs
- Drilling in and around salt structures
- Drilling in depleted zones and faulted or fractured reservoirs

## BENEFITS

- Improve well placement and design
- Identify and reduce exposure to drilling hazards
- Monitor and update pore pressure predictions ahead of the bit
- Update wellbore stability forecasts while drilling
- Reduce nonproductive time (NPT) and well costs
- Increase well integrity and cementing success
- Enhance operational decision making

## FEATURES

- Predrill screening for well design and drilling engineering
- Predrill pore pressure prediction
- Safer mud-weight window planning
- Operational monitoring and interpretation of pore pressure and wellbore stability
- Geomechanics roadmap for well trajectory using DrillMAP\* drilling engineering and operations plan, updated during drilling
- 24-hour forecast of geomechanics risks for current drilling operations using DrillCAST\* drilling operations look-ahead
- Multidisciplinary expertise for well site and office support
- End-of-well review including an updated DrillMAP plan that will include a geomechanics roadmap identifying all risks and events encountered

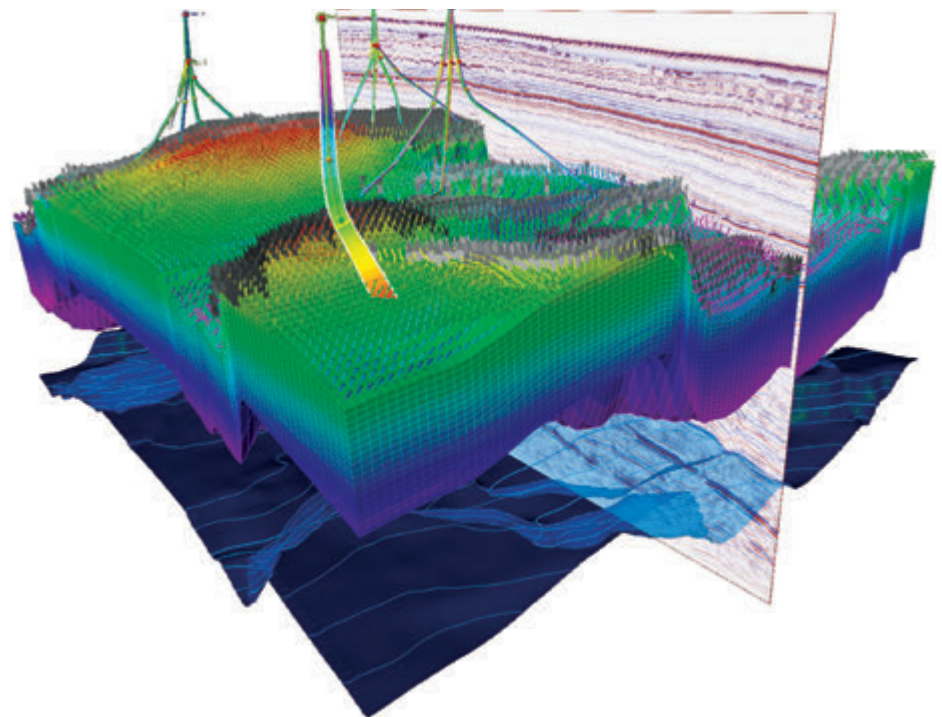
Schlumberger drilling geomechanics services help you to reduce risks, costs, and uncertainty in complex drilling environments worldwide. Conducting wellbore stability and pore pressure analyses while drilling—using the wide variety of wellsite monitoring and data measurements such as sonic, resistivity, density, pressure, and seismic in real time—ensures better anticipation of potential risks.

### Reduce NPT and risk while optimizing drilling performance

Geomechanical problems are associated with an estimated 40% of drilling-related NPT in challenging environments. Rapid changes in pore pressure and fracture gradient along a well track can lead to lost circulation, washouts, stuck pipe, loss of tools and equipment, additional casing strings, and unplanned sidetracks.

In recent years, the move to more hostile environments and complex geometries has often resulted in narrower mud-weight windows. For safe and efficient well engineering in these conditions, it is critical to know the precise wellbore stability boundaries. Offset well data does not give the accuracy that is now required to optimize casing points and adjust mud weights. Using measurements while drilling provides more accurate input to predict fracture gradient and pore pressure ahead of the bit.

At the wellsite or at the office, Schlumberger pore pressure analysts and geomechanics engineers provide continuous monitoring and interpretation of well data, keeping you informed of changes to the safe mud-weight window as you drill. This allows making operational decisions with the most accurate information available, reducing exposure to drilling risk and mitigating the impact of geomechanical problems for optimal drilling performance.



*Using formation evaluation logs and seismic, core, and drilling data, Schlumberger geomechanics experts build a 1D or 3D mechanical earth model (MEM) for your planned drilling program.*

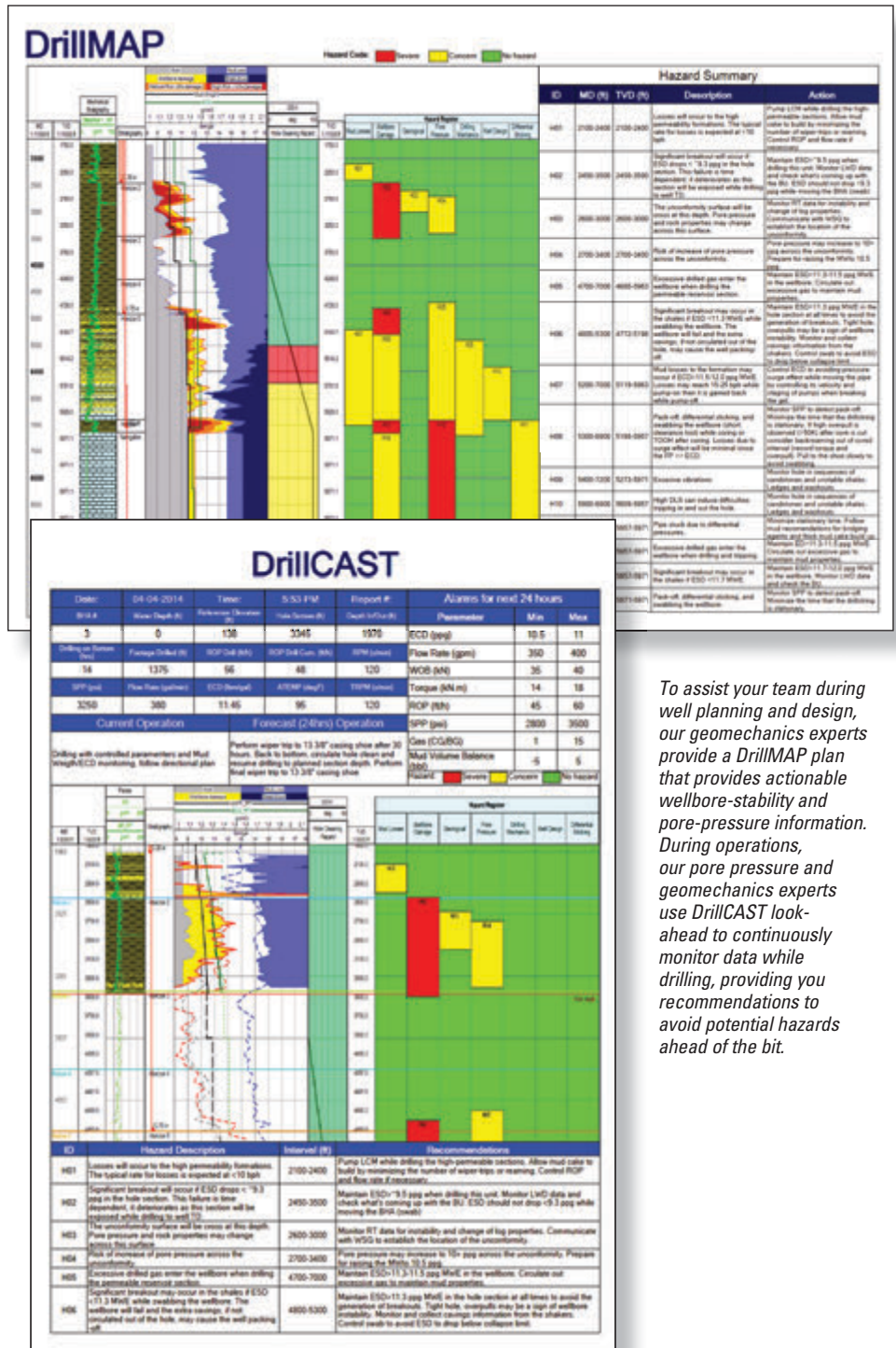
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## Mitigate risk with operational monitoring and interpretation

Schlumberger has the industry's largest pool of pore pressure and wellbore stability experts. For every drilling geomechanics operation, we provide experienced engineers to meet your specific needs—at the wellsite, in your office, or through a worldwide network of petrotechnical engineering centers. This dedicated team combines advanced processes, workflows, and technologies to offer continuous support and minimize the risk of costly wellbore hazards during drilling.

Based on available field and offset-well information, our geomechanics experts collaborate with your drilling and well-design team to build a predrill mechanical earth model (MEM). This provides a safe mud-weight window, including the wellbore stability, pore pressure, and fracture gradients, with uncertainty determination for optimal well planning. The information is consolidated to generate a wellbore-stability and pore-pressure road map.

During drilling operations, pore pressure and geomechanics experts analyze all available drilling, log, mud, seismic, and geological data to visualize current downhole conditions. In close collaboration with your team, our experts validate the safe mud weight window and deliver actionable recommendations to avoid potential hazards using the DrillCAST drilling operations look-ahead.



To assist your team during well planning and design, our geomechanics experts provide a DrillMAP plan that provides actionable wellbore-stability and pore-pressure information. During operations, our pore pressure and geomechanics experts use DrillCAST look-ahead to continuously monitor data while drilling, providing you recommendations to avoid potential hazards ahead of the bit.

[www.slb.com/geomechanics](http://www.slb.com/geomechanics)

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