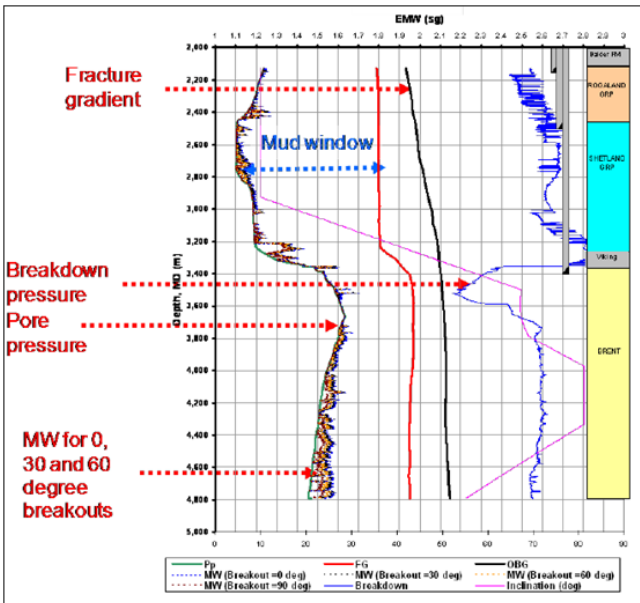
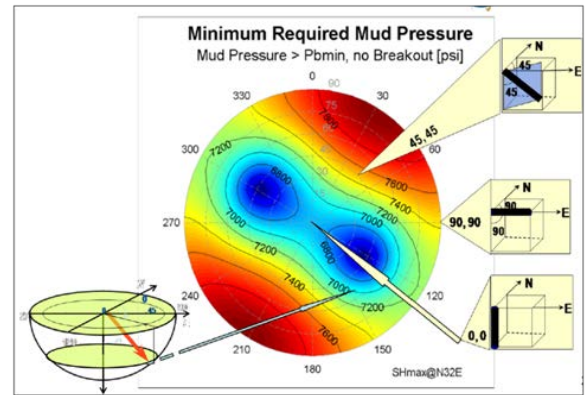


# Borehole Stability

Our thorough approach towards building a geomechanical model guarantees a reliable foundation for the prediction of wellbore drilling parameters to optimize stability. We will analyze the integrity of the planned trajectory as a function of the mud weight and casing program, recommend the combination of operational parameters that offer the most stable wellbore conditions, or evaluate alternative designs that may assist the final decision.

Considering that almost half of drilling stoppage events can be attributed to preventable mechanical issues, it follows that a stability-optimized borehole represents substantial savings in well construction cost.

- Stereographic projection charts of safe mud weight as a function of wellbore trajectory at selected depths (upon request).
- Stability analyses to optimize wellbore parameters (upon request): trajectory, mud weight, and casing program.

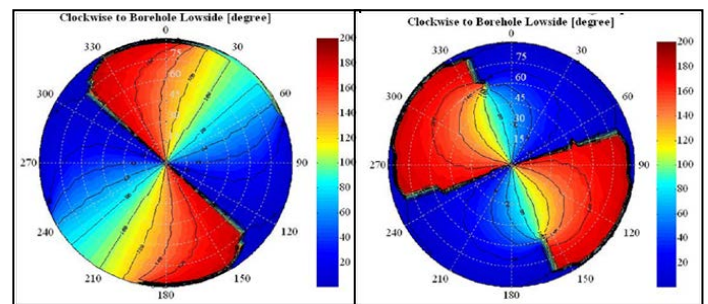


The benefits of our wellbore stability analysis are:

- Reduction of a mechanical drilling event thanks to the optimization of the mud weight window, which will result in important savings in drilling time and, hence, costs.
- Alternative trajectories stability analysis provides insight into additional possibilities for current well designs.
- Optimization of wellbore parameters assists decisions about future wellbore placement and design.
- Aggressive mud windows provide alternatives in those zones where a conservative approach would dictate impractical mud weights.

The wellbore stability analysis includes:

- Building a near wellbore geomechanical model in 2-3 offset wells, history matched with drilling reports, and constrained by all the information provided.
- Mud window of the projected well trajectory and the proposed casing program and alternatives. In addition, curves for the most conservative and most aggressive scenarios to prevent or mitigate mechanical drilling events are provided.



The data required for wellbore stability analysis are:

- Input data to complete the geomechanical model of offset wells (see Geomechanical Modeling/Stress Analysis flyer).
  - Location, trajectory, mud weight, and casing program of the projected wellbore.
  - Requested alternative trajectories to be evaluated.
- Requested depths for evaluation of safe mud weight as a function of wellbore deviation and azimuth.
  - Wellbore parameter constraints, if a comprehensive wellbore stability optimization analysis is required.

*Task Fronterra Geoscience is a global independent provider of industry leading, integrated geoscience solutions, from single well analysis to complete reservoir studies.*