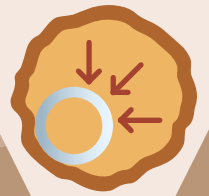
Common Drilling Mud Problems

Causes and Solutions

Stuck Pipe

Causes: Annular P. exceeds pore P. Pipe is embedded in the filter cake.

Solutions: Manage the mud properties including lubricity. Use OBM/SBM.



Corrosion

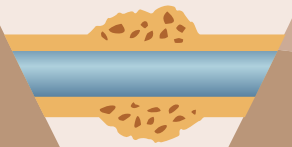
Causes: Oxygen. $C0_2$ or H_2S. Bacteria.

Solutions: Use corrosion Inhibitor. Run Corrosion Rings. Keep pH within 9 to 9.5.

Shale Instability

Causes: Mud weight too low. Swelling of clays.

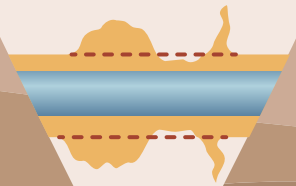
Solutions: Increase mud weight. Keep good flow rate. Use OBM.



Borehole Instability

Causes: Earth stresses. Pore P. Rock properties. Drilling mud chemistry.

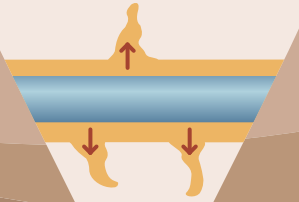
Solutions: Maintain proper mud weight and ECD. Keep mud compatible with the formation.



Lost Circulation

Causes: Fractured or highly permeable formations and high downhole P.

Solutions: Maintain proper downhole P. Perform LOT and FIT. Prepare LCM and run LCM sweeps.



Contamination

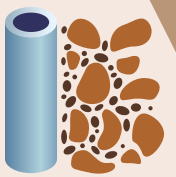
Causes: Overtreatment. Solid additives or drilled materials.

Solutions: Monitor mud properties. Schedule pretreatment and treatment.

Formation Damage

Causes: Solids plugging. Clay swelling. Emulsion and aqueous-filtrate blockage.

Solutions: Use drill-in/workover/ completion fluids. Underbalance drilling.



Hole Cleaning

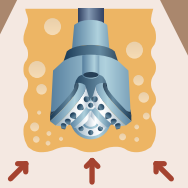
Causes: Low annular velocity. Hole inclination (45 – 50°). High ROP.

Solutions: Maintain annular velocity and viscosity. Rotate drill pipe. Use hi-vis sweeps.

Kick

Causes: High pore P. Mud weight too low. Tripping out.

Solutions: Use offset information. Maintain mud weight. Recognize the kick.



Bit Balling

Causes: Water sensitive clays. High WOB. Low flow rates.

Solutions: Run drilling detergent. Run hi-vis sweeps with nut plug. Add SAPP and soap sticks.