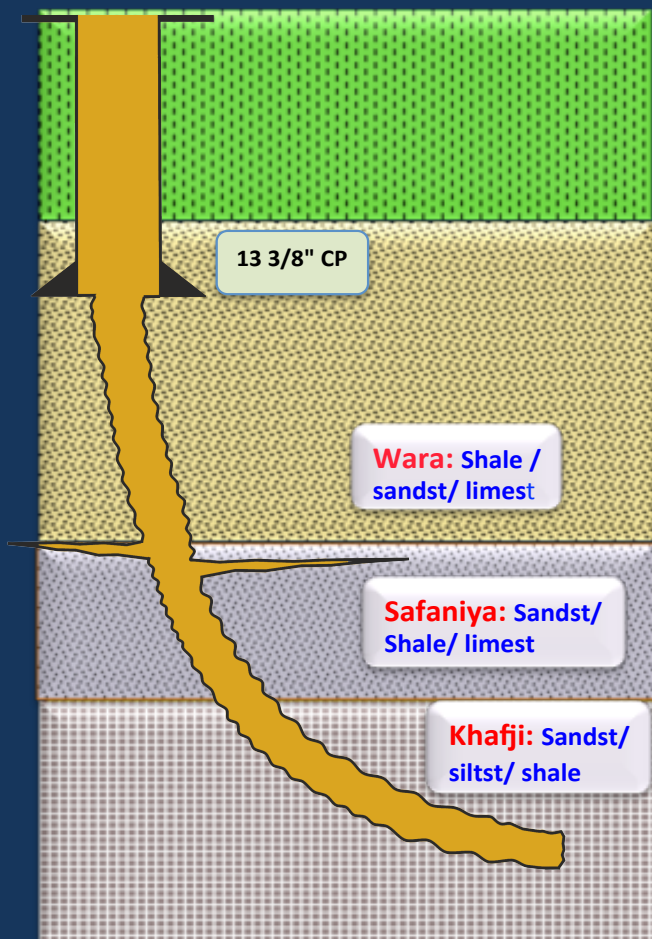


FRACSEAL ELIMINATES ALL PREDICTED HOLE PROBLEMS - Offshore Saudi Arabia



The Challenge

Hole problems anticipated in the 12¼" hole sections are **partial/severe losses and sloughing shale**. Partial/Severe loss is potential in **WARA (5374')** and **SAFANIYA (5740')** formations, while the interval of **KHAFJI** between 6,134 ft -6,670 ft is an unconsolidated sand section. Shale along the entire 12¼" hole section is fluid sensitive. **Shale sloughing and/or swelling can arise at any time** along this section. Interval for losses between 5,374 ft - 5,915 ft (541 ft footage).

The Action

The 12¼" hole was drilled using OBM of 81 PCF (10.8+ ppg). Initially **3 ppb FRACSEAL** was maintained in the active OBM. Drilling at 5100 ft (200 ft above predicted 1st loss zone to encounter) **FRACSEAL concentration was increased from 3 ppb to 10 ppb**. While drilling the expected interval for losses between 5,374 ft - 5,915 ft, **added 2 sacks per hour of FRACSEAL** to replenish portion screen out with drilled cuttings. **FRACSEAL of 9 ppb** was retained in active OBM from 6,670 ft till 8,068 ft (9⅝" csg point).

The Result

Not even one predicted hole problems encountered. It was a smooth drilling operation. The hole was slick and in good shape. **Wara, Safaniya were protected, Khafji was stabilized** from possibly partial losses and differential sticking. **Caving and sloughing shale was not observed throughout drilling.**