Case study: Gulf of Mexico

Certia & MPC deliver flawless pipe recovery solution in high temperature, high pressure well

Our customer in the Gulf of Mexico was drilling the 12.25 in. section of an exploration well when they encountered a stuck drill-string when the bit was in excess of 23,000 ft MD (measured depth), bottom hole temperature was in-excess of 300°F and bottom hole pressure was in-excess of 21,000 psi.

The drilling bottom hole assembly (BHA) included 8.25 in. drill-collars, 5.875 in. heavy-weight (HWDP), and 5-7/8 in. regular drill-pipe (DP). The requirement was to detect the deepest point the pipe could be cut for efficient retrieval to surface to allow a side-track to commence.

The rig was not able to circulate, leading to a greater challenge to reach the bottom due to 18 lbs/gallon mud weight and the drilling jars were confirmed not to be firing. Prior to selecting the technologies for the data acquisition, tension simulation modelling was performed and confirmed gravity alone would enable the tools to reach the required interval with additional weight bars being run to overcome the viscous dense mud especially travelling through the surface sections where mud is cooler.

Solution

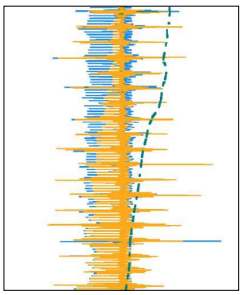
The **Certia™ pipe recovery log** from Baker Hughes was proposed to carry out a continuous logging pass over the zone of interest – the BHA that was in the open-hole.

Baker Hughes' **Mechanical pipe cutter** (MPC) was also mobilized to make an electro-mechanical cut in the 5-7/8 in. drill-pipe.

Once rigged up, Certia was successfully deployed to >23,000 ft MD and acquired high quality data across the 5-7/8 in. HWDP and regular DP confirming the interval logged was stuck. A second shallower interval was logged confirming the free pipe depth was ~17,500 ft. The Certia data acquisition was monitored remotely in real-time by the subject matter expert (SME) onshore.

Results

With the BHA free-pipe depth being shallower than initially expected from drill-pipe stretch tests, our customer decided to set a plug and make an electro-mechanical cut using the 3.25 in. MPC at ~17,480 ft mf. When at cut depth, the MPC took 15 mins to cut the 5-7/8 in. drill pipe. The customer was appreciative of the clarity and reliability provided by Certia enabling a 1st time clean mechanical cut to be made and allowed an efficient side track to commence.



Extract from the Certia log

Cut drill pipe

Challenges

- Stuck BHA made of 8.25 in. drill-collars and 5-7/8 in. heavy weight and regular drill pipe
- BHT in-excess of 300°F & BHP in-excess of 21,000 psi
- 18 lbs/gallon mud creating challenging hole entry

Results

- Free-pipe depth identified by Certia in the 5-7/8 in. drill pipe
- Successful mechanical cut made in 5-7/8 in. drill pipe using 3.25 in. MPC
- Improved operational efficiency due to high speed logging time and quality data