

20,780 FT LATERAL HCU COMPLETION



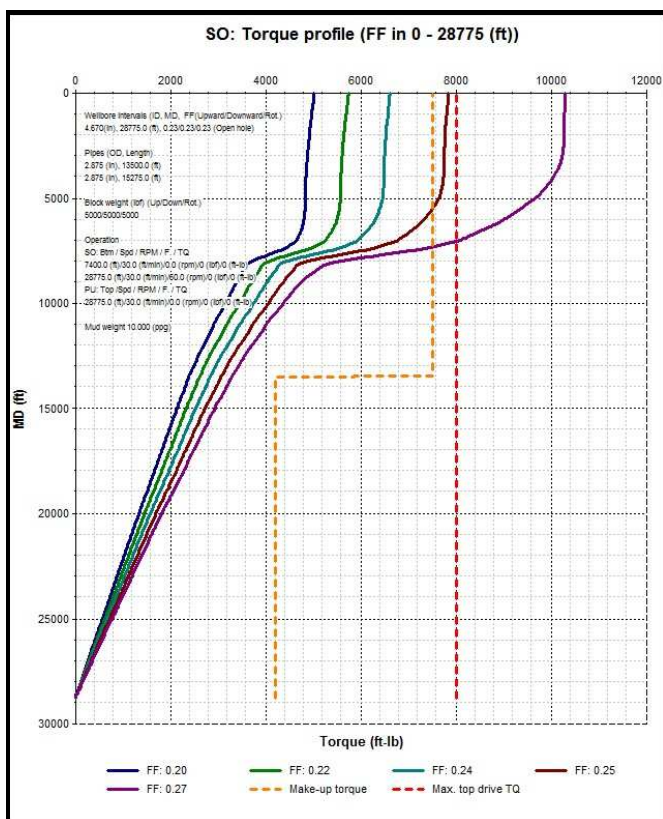
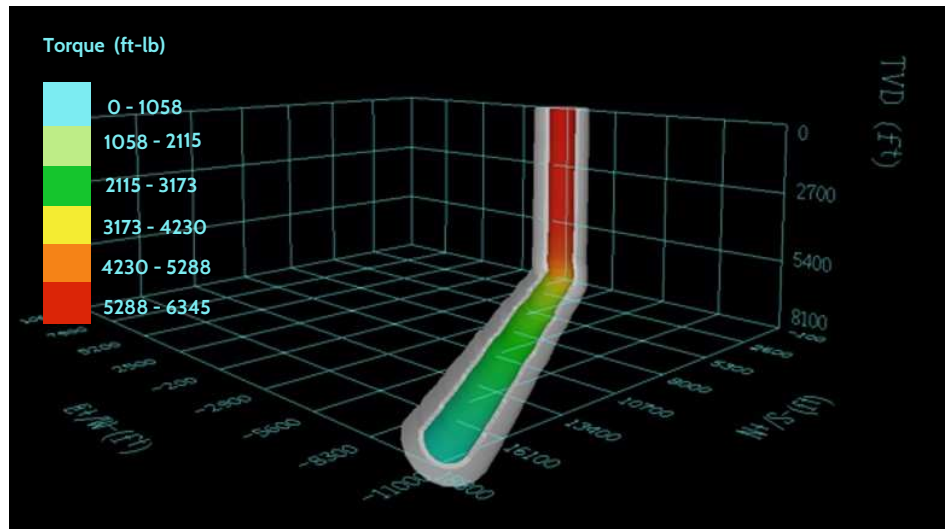
CASE STUDY

OBJECTIVE

DWS primary objective was to assist a customer in safely and efficiently completing their first ever super lateral using our HCU technology. The pad consisted of 4-wells that had lateral lengths ranging from 14k to over 20k and held a total of 410 frac plugs. The customer's main objective was to complete these extended laterals in one run (single bit) resulting in substantial cost savings.

PRE-JOB PLANNING

Our engineering team utilized predictive software to simulate the operating conditions in order to design the proper work string and equipment requirements. This critical step provided insight into where issues could arise in the wellbore allowing us to develop specific SOP's in advance. Having this intelligence beforehand enabled us to design the correct drill string and BHA for the torque and hook load we expected during the drill out.



WELLBORE DATA

WELL #1

Total Depth: 22,000 ft
Lateral Length: 14,400 ft
Plug Count: 84

Avg. Plug per Hr: 1.18
Total Drill Time: 71 hrs
(incl circulations)
Total Time On Well: 96.25 hrs
(incl rig-up/down and production)

WELL #2

Total Depth: 21,800 ft
Lateral Length: 14,200 ft
Plug Count: 82

Avg. Plug per Hr: 1.39
Total Drill Time: 59 hrs
(incl circulations)
Total Time On Well: 84.75 hrs
(incl rig-up/down and production)

WELL #3

Total Depth: 28,800 ft
Lateral Length: 20,780 ft
Plug Count: 126

Avg. Plug per Hr: 1.34
Total Drill Time: 94 hrs
(incl circulations)
Total Time On Well: 130.25 hrs
(incl rig-up/down and production)

WELL #4

Total Depth: 28,600 ft
Lateral Length: 19,400 ft
Plug Count: 118

Avg. Plug per Hr: 1.03
Total Drill Time: 114 hrs
(incl circulations)
Total Time On Well: 150 hrs
(incl rig-up/down and production)

RESULTS



ZERO DWS DOWNTIME or HSQE INCIDENTS

no NPT resulting in 100% up-time



DWS LONGEST LATERAL RECORD

20,780' of perforated lateral



\$750K

customer realized savings



ZERO BIT TRIPS

no short-trips required

CONCLUSION

Providing our customers with HCU technology saves time and money.

Pre-Planning: Having predictive analytic software and a highly experienced operations/engineering team allowed us to identify and solve potential issues in the wellbore.

- Achieved our customer's goal of completing their first extended lateral with one trip
- DWS customized HCU work window allowed us to run and band the capillary (gauge/injection lines) production string

HCU Technology: Our 4-post jack and DWS/CRW engineered rotary table enabled us to avoid BHA failures and positive ROP's throughout the intervention.

- These extended lateral wells were completed in one trip via one single drill bit
- No short trips or vibration downhole tools were required during this intervention

Measurable Cost Savings: Our on-site performance resulted in the customer coming in significantly below their allocated AFE for this pad.

- The efficiency of our HCU allowed this producer to turn in line (TIL) wells 12 days ahead of schedule and \$750K under budget
- Traditionally, customers had to bring in a secondary service to run production after the drill out. Utilizing DWS, this additional step is not necessary and production tubing can be ran immediately with our HCU's

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