

Sliding Sleeve Completions

Williston Basin Petroleum Conference
Bismarck, ND

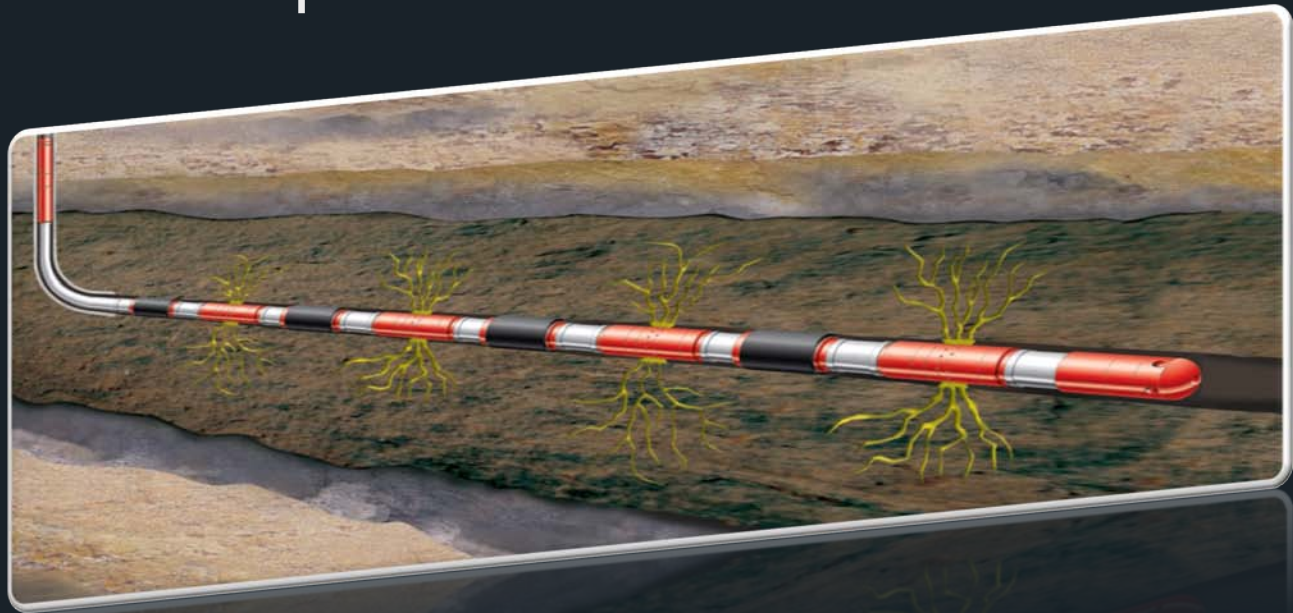
HALLIBURTON

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Delta Stim[®] Sleeve Issues

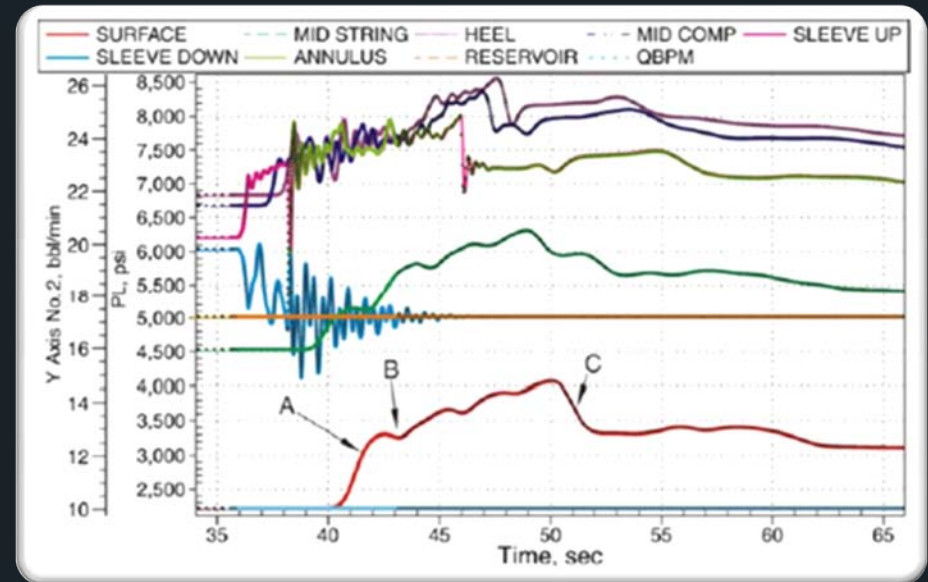
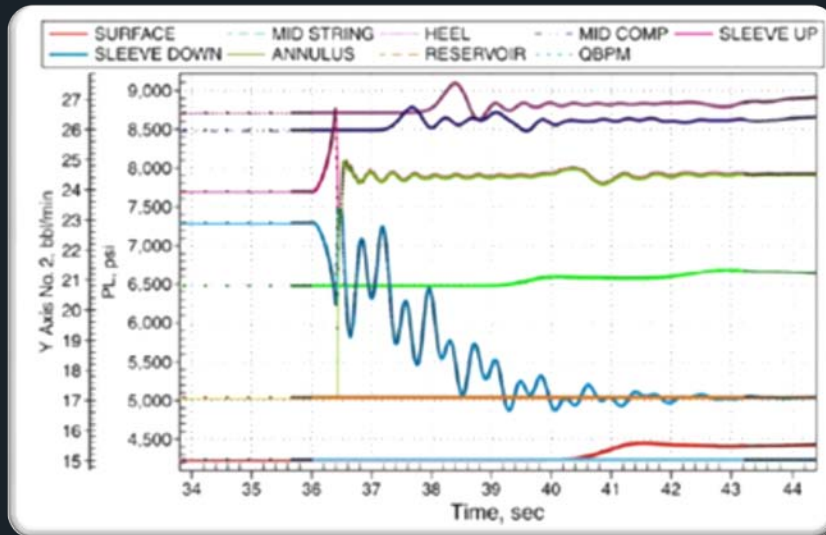
- Sleeve failure
- Screen out in early stages
- No indication of sleeve opening
- Failures are expensive



No Opening Indication

- Does not mean that sleeve did not open
 - SPE 127921

Surface indication – 10 bpm



No surface indication – 15 bpm

Fluid and/or Ball Issue

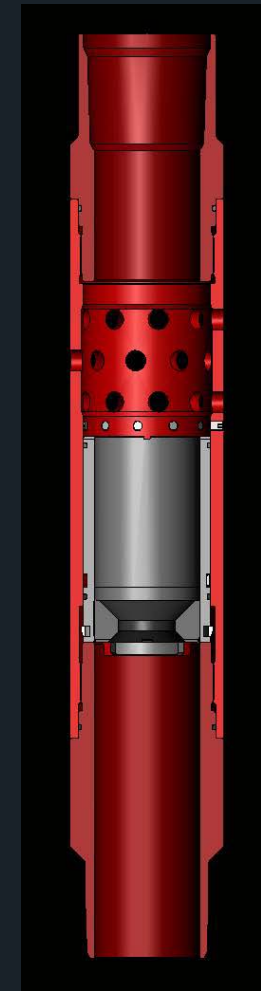
- 1.75" – 2.25" ball not getting to sleeve
 - Shut down pumps wait 30 sec
- More issues with borate fluid system



Opening Ball

Lessons Learned

- Long shut-in times
 - Oxygen scavenger and scale inhibitor
- To see ball action
 - Pin tool higher
 - Slowdown pump rate



Delta Stim Sleeve Benefits

- Reduced time spent on location
 - Non Pumping Time
- More wells completed with frac crews
- Reduce risk of plug sticking or wire-line issue
- High efficiency



Bakken Program Crew Requirements

