

REMEDIAL CEMENT PROCEDURE

LAWSON LS 1

FEB. 10, 1992 (ORIGINAL VERSION)

Note: Because the intermediate pressure immediately dropped when the bradenhead was opened on 5/7/91, a packoff leak between the 9 5/8" and 7" casings is suspected.

1. Record TP, SICP, Intermediate Casing, and BH pressures.
2. MIRUSU.
3. Install BOP.
4. TOH hot with 2 3/8" tubing if possible.
5. TIH with RBP. Set at 4250'. Cap with 5 sacks of sand, and load hole.
6. Blow down intermediate annulus and bradenhead pressures.
7. Determine free point of 4 1/2" casing.
8. TIH with string shot and back off of 4 1/2" casing at the nearest joint above the free point. Be prepared to kill well.
9. TOH with 4 1/2" casing. Inspect and note any worthy findings of pipe condition.
10. Clean out hole to 4 1/2" casing top. Use casing scraper for 7", 20 lb/ft casing.
11. TIH with packer and set in the 7" casing just above the 4 1/2" casing top.
12. Pressure test casing top to 500 psi. Do not squeeze if test fails.
13. TOH with packer.
14. TIH with RBP, set just above the casing top and cap with 5 sacks of sand.
15. Pressure test casing to 1000 psi. Locate leak if test fails, and establish an injection rate and pressure.
16. Run a GR/CBL from RBP to surface and determine top of cement for 7" casing. Make additional passes at higher pressures if bonding is not clear.
17. Reset RBP 50' below TOC in 7" casing.
18. Perf two holes within 50' of the TOC.
19. Set a packer 50' above TOC in 7" casing. If leaks were found above this point, a different approach to the squeeze may be necessary.
20. Establish circulation to surface, calculate annular volume with a dye.
21. Pump a preflush for high fluid loss applications prior to the squeeze.
22. Pump 300% of annular volume of cement through squeeze perfs. Annular volume is expected to be 70 bbl. Stage last 5 bbl and note returns throughout job.
23. WOC at least 24 hours.
24. Drill out cement to uppermost RBP.
25. Pressure test squeeze perfs to 1000 psi; run CBL if pressure holds.
26. Resqueeze until pressure test holds, and cement is to surface.
27. Retrieve upper RBP.
28. TIH with 4 1/2" casing, screw in joint, and DV tool. Tie back into 4 1/2" casing. If pressure test held in step 12, do not run DV tool and skip ahead to step 32.
29. Open DV tool, establish circulation to surface, and cement with 100 sacks of neat cement.
30. WOC at least 24 hours.
31. TIH with 3 7/8" bit and casing scraper and drill out to RBP. TOH.
32. TOH with RBP.
33. TIH with original open ended 2 3/8" tubing and seating nipple. Land tubing at 4889' KB.
34. Return well to production.