

Wolf Creek Unit #4

Sec 26, T8S-R90W

Pitkin County, Colorado

API 05-097-05013

GL: 9,619'; RKB: 9,630' TVD: 4,897' PBTB: 4,867'

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|---------------------------|---|
| Surface casing: | 8 5/8 24# J-55 SA 237' KB w/ 160 sx |
| Production casing: | 4-1/2" 11.6# J-55 SA 4,897' KB w/ 280 sx |
| Production tubing: | 2-7/8" 6.5# EUE 8rd (147 jts) |
| Perforations: | 4,585' – 4,595' w/ 2 spf |
| PBTB: | 4,867' KB |
| Drilled date: | 1964 |

Surface location: NAD 83

Lat: 39.323046

Long: -107.402655

Proposed work: Workover to pump a cmt plug at the base of the surface csg shoe.

NOTE: Rig is currently rigged up on well (7/15/19)

1. TIH w/ 4-1/2" RBP on tbg to 1400'. Set plug. TOOH w/ tbg.
2. Perforate four 0.48" diameter squeeze holes 90 deg phasing @ 1325'.
3. PU a 4-1/2" composite cmt retainer (CCR). TIH on tbg to +/- 1100'. Set retainer. Dump 3 sx sand down tbg to cover & protect the RBP.
4. RU pump. Pump down tbg thru retainer to attempt to establish circulation from lower perms and up thru up the bradenhead. Record rates and pressures.
5. If circulation is established go to step 8 below.
6. If circulation is not established, TOOH w/ tbg and perforate four 0.48" diameter squeeze holes/ 90 deg phasing @ 1050'.
7. TIH. Sting into retainer. Pump down tbg and establish circulation from lower perms @ 1325' thru upper perms @ 1050'. Record rates & pressures. If unable to establish circulation between upper & lower perforations see step 28.
8. Once circulation is established mix neat Class G cmt (yield = 1.16). Begin by pumping a red dye marker 15 bbls ahead of cmt. Pump 120 sx cmt (10% excess) observing returns throughout job. Once red dye is observed in flowback, calculate displacement volumes to over-displace thru top perforations by ~ 1 bbls cmt slurry. Cmt calculation: eHalliburton Red Book was used to calculate volumes -> 12 bbls between 4-1/2" csg & 7-7/8" open

hole and leave 2 bbls in 4-1/2" csg. Thus 14 bbls = 588 gals/5 gal/sx = 118 sx. A 10% excess cmt was input in the Red Book calculation.

9. Sting out of CCR. Slowly pull 3 stands of tbg. Reverse circulate to clean cmt out of tbg. Finish TOOH.
10. WOC for 12 hrs.
11. PU a 4" bit & 4 drill collars. TIH. Tag top of cmt. Drill out CCR & cmt inside 4-1/2" csg to top of plug SA 1400'. Circulate csg clean. Pressure test squeeze holes to 300 psig to ensure there are no leaks.
12. RU wireline truck & run a GR/CBL/CCL log through the squeezed interval from 1400' to surface.
13. Send results to office for orders.
14. If there is good bond thru interval, proceed to step 15.
15. Perforate four 0.48" diameter squeeze holes @ 340' w/ 90° phasing. POOH.
16. PU a 4-1/2" CCR. TIH to +/- 275'. Set retainer. Dump 3 sx sand to cover & protect CCR.
17. MIRU cmt truck & pump.
18. Start pumping down tbg to establish a rate & pressure.
19. Mix & pump a minimum of 50 sx Class G w/ 2% CaCl. Displace to retainer. Note: do not over displace. Cmt calculation: eHalliburton Red Book was used to calculate volumes -> 4 bbls between 4-1/2" csg & 7-7/8" open hole and leave 1 bbls in 4-1/2" csg. Thus 5 bbls = 210 gals/5 gal/sx = 42 sx. 8 sx were added for excess.
20. Sting out of retainer. Pull up 2 jts. Reverse out & TOOH w/ tbg.
21. RDMO cementers.
22. Allow 18 hours for cmt to cure.
23. PU a 4" bit & 4 drill collars. TIH to TOC. Drill out CCR & cmt until bit falls free. Note: should have no cmt in 4-1/2" csg below 340'.
24. Pressure test squeeze holes for 15 mins to 300 PSIG.
25. If well pressure tests, TOOH with bit & collars laying collars down.
26. TIH w/ bit & scraper to top of sand above RBP. Reverse circulate cement fines & sand off of RBP. TOOH.
27. TIH w/ RBP retrieving head. Circulate any remaining sand off RBP. Release RBP & TOOH.
28. Please note: If unable to establish circulation thru lower perforated intervals, each interval (1325' & 1050') will separately be squeezed.