

## Harkis #43-2 P&A

1. Provide notice to COGCC prior to MIRU per Form 6 COA.
2. MIRU slickline services. Pull bumper spring and tag for fill.
3. Run gyro survey from 7560' to surface. RDMO slickline services.
4. Call foreman or Lead Operator before rig up to isolate and remove automation and production equipment. Install fence if needed.
5. Notify CDC when rig moves on location to generate work order for flowline removal and one call for line locates.
6. Place cement services on will call when rig moves on location, providing expected volumes of cement needed. (~40 sx plug #1; ~470 sx plug #2; ~160 sx plug #3)
7. MIRU WO rig. Confirm with Openwells that Gyro survey has been completed. If no gyro event in OpenWells contact APC Engineer.
8. Kill well, as necessary, with water containing biocide. ND wellhead. NU BOP's. Unseat landing joint and lay down.
9. TOOH and stand back 2-3/8" tbg.
10. PU and TIH with casing scraper & bit for 4.5 casing. Scrape casing to ~7500'. Circulate hole clean. TOOH and lay down scraper and bit and stand back 7020' of tubing, lay down remaining tubing.
11. MIRU wireline services. PU 4-1/2" CIBP and RIH to 7490', set CIBP. POOH.
12. PU cement bailer. RIH and dump bail 2 sx of cement on top of CIBP. POOH.
13. PU 4-1/2" CIBP and RIH to 7020', set CIBP. POOH.
14. Pressure test plug to 1500 psi for 15 min.
15. PU CBL. Run CBL from 7000' to surface to confirm cement coverage. Contact APC Engineer with coverage depths and change procedure accordingly. RDMO wireline services.
16. PU 2-3/8" tbg. TIH to CIBP @ 7020' hydrotesting to 3000 psi.
17. Circulate wellbore with at least 9 ppg mud w/ biocide to fill hole.
18. MIRU cementing services. Mix and Pump 40 sx of Class "G" w/ 20% silica flour, 0.4% CD-32, 0.4% ASA-301 and R-3 to achieve 2:30 pump time (yield 1.38 ft<sup>3</sup>/sx, 15.8 ppg, ~10 bbl slurry). Place balanced plug from 7020'-6425'.
19. PUH 52 jts (~1638') to 5389' laying down tubing, and circulate hole with at least 9 ppg mud w/ biocide remove any cement. RDMO cementing services. TOOH and stand back 4300' of tbg, lay down remaining tubing.
20. MIRU wireline services. PU perf gun loaded with 2' of 3 spf, 0.6" EHD, 7" penetration, 120 phasing. RIH to 5275' and shoot 1' of perfs.
21. PUH to 4250' and shoot remaining 1' of perfs. POOH. RDMO wireline services.
22. PU 4-1/2" CICR and TIH w/ 2-3/8" tbg to 4300'. Set CICR. Establish circulation through CICR.
23. MIRU cementing services. Preflush with 5 bbl H<sub>2</sub>O, 20 bbl of sodium metasilicate, 5 bbl H<sub>2</sub>O.
24. Mix and Pump 470 sx of Class "G" cement with ¼ #/sx cello-flake, 0.4% CD-32 and 0.4% ASA-301 through CICR (yield 1.15 ft<sup>3</sup>/sx, 15.8 ppg, ~96 bbl slurry). Underdisplace w/ mud leaving 3 bbl of cement on top of CICR.

25. PUH 100 jts (~3150') to 1150' laying down tubing and circulate hole with at least 9 ppg mud to remove any cement. RDMO cementing services. TOOH and stand back 1075' of tbg, lay down remaining tubing.
26. MIRU wireline services. Shoot off casing at 975'. RDMO wireline services.
27. NDBOP NDTH. Unland casing from slips.
28. NU BOP on casing head. Install 4-1/2" pipe rams.
29. PU casing and conventionally circulate 125 bbl of mud. If circulation cannot be established contact engineer and COGCC for change in procedure.
30. TOOH with 4-1/2" casing and lay down.
31. PU 2-3/8" tbg and TIH into casing stub to 1075'.
32. MIRU cementing services. Mix and pump 160 sx of Type III cement from 1075' to 400' (yield 1.53 ft<sup>3</sup>/sx, 15.8 ppg, ~43.5 bbl slurry). Place balanced plug from 1075' – 400'. PUH to 100' and circulate 10 bbl of mud to remove any cement. RDMO cementing services. TOOH and stand back 500' of tubing, lay down remaining tubing. WOC 4 hrs or overnight.
33. TIH and tag cement plug, NOTE: DEPTH OF PLUG IN OPENWELLS. If plug top is above 500' TOOH and lay down tubing.
34. MIRU wireline services. PU 8-5/8" CIBP and RIH to 100'. Set CIBP and POOH. Pressure test CIBP to 1000 psi for 15 minutes. RDMO wireline services.
35. Assuming CIBP tests, RDMO
36. Wellsite supervisor turn all paper copies of cementing reports/invoices and logs in to Sabrina Frantz. NOTE: During the job, wellsite supervisor should instruct the logging and cementing contractors to e-mail all logs, job reports/invoices to Sabrina Frantz.
37. Have excavation contractor notify One-Call to clear for digging around wellhead and flowline removal.
38. Check top of cement inside 8-5/8" surface casing., place redi-mix cementer on will call. (6.5 bbl)
39. Excavate hole around surface casing of sufficient size and depth to allow welder to cut off 8-5/8" surface casing and at least 5' below ground level.
40. Have welder cut off 8-5/8" surface casing at least 5' below ground level.
41. MIRU ready cement mixer. Use 4,500 psi compressive strength redi-mix cement (sand and cement only, no gravel) to finish filling surface casing and production casing to top of cut off.
42. Have welder spot weld steel marker plate on top of surface casing. (Note: marker shall be labeled with well name and number, legal location (¼ ¼ description) and API number.
43. Properly abandon flowlines as per Rule 1103.
44. Have excavation contractor back fill hole with native material. Clean up location and have leveled to plant any vegetation required.
45. Submit Form 6 to COGCC. Provide "As Plugged" wellbore diagram identifying the specific plugging completed.

2002 JS/CD with DK under plug. This well has been uneconomic for the previous two years. Due to HZ activity this well need's safety prep'ed or P&A'ed. P&A believe to be most economically beneficial decision.