

- 1 Contact foreman or lead operator and request that they isolate production equipment, catch and remove plunger and remove automation equipment prior to workover rig mobilization. Install perimeter fence as needed. Provide 48 hr notice of MIRU to COGCC as required in approved Form 6. Place cement services on "will call" when rig moves on location.
- 2 MIRU slickline. Pull bumper spring/standing valve. RDMO
- 3 MIRU VES Gyro services. Run gyro from 8000' to surface. RDMO.
- 4 MIRU workover rig. Blow down/ kill well with clean water/biocide.
- 5 NDWH (upper wellhead). NUBOP.
- 6 Unland 2 3/8" production tubing string.
- 7 MIRU EMI services. POOH while inspecting tbg. Stand back ~7300' of good tbg (<35% loss). RDMO EMI. Haul in additional joints of 2 3/8" tbg if needed.
- 8 MIRU E-line. RIH with gauge ring for 4 1/2", 11.6# casing to 8000'. Run segmented CBL from 8000' to surface. Note: Calculated cement top is 6500'.
- 9 RIH and set 4 1/2" 11.6# CIBP +/- 7970'. Pressure test CIBP/casing to 1500 psi and dump bail two sacks of cement.
- 10 If cement top is above 6800', skip to step 13. If cement top is 6800' or lower, Niobrara must be cement squeezed (need 400' above Niobrara top). Perforate (4) 1/2" squeeze holes 20' above TOC determined with CBL. Run cement retainer (CICR) on wireline and set 100' above squeeze holes. RDMO E-line.
- 11 Pick up stinger and RIH on 2 3/8" tubing. Hydrotest tubing to min 3000 psi while RIH.
- 12 MIRU cementer. Establish injection rate into the sqz perfs with water at max of 2500 psig. Note injection rate and pressure in OpenWells. Mix and pump 100 sxs 15.8 ppg "G" + 35% silica flour + 0.2% R-3. Displace cmt to 1.5 bbl above CICR. Sting out of CICR and pull four stands tubing. Reverse out cement with water and then circulate hole with min 9.0 ppg/36 vis mud treated with biocide. RDMO cementer.
- 13 POOH and standback ~4400' tubing, lay down remaining tbg. If needed, turn well over to min 9.0 ppg/36 vis mud treated with biocide.
- 14 MIRU E-line. Perforate squeeze (4) 1/2" squeeze holes at 4800', and (4) 1/2" squeeze holes at 4300'. Run cement retainer (CICR) on wireline. Set at ~4330' depending on collar location. Standby E-Line.
- 15 Pick up stinger and RIH on 2 3/8" tubing. Sting into retainer.
- 16 MIRU cementer. Establish injection rate into the sqz perfs with water at max of 2500 psig. Note injection rate and pressure in OpenWells. Precede cement with 20 bbl of sodium metasilicate. Mix and pump 180 sxs 15.8 ppg "G" cement + 0.25#/sk cello-flake. Displace cement to 2.0 bbl above CICR. Sting out of CICR and pull six stands tubing. Reverse out cement with mud and then circulate hole with min 9.0 ppg/36 vis mud treated with biocide. RDMO cementer.
- 17 POOH and standback about 850' tubing. Lay down remainder of tbg.
- 18 RU E-Line. Shoot off (or break a coupling) at ~800'. Standby e-line (for CIBP @ 100')..
- 19 Remove BOP and tubing head. Unland 4 1/2" casing. Re-install BOP with 4 1/2" OD pipe rams on surface casing head. Circulate hole with min 9.0 ppg mud treated with biocide. Pull and laydown 4 1/2" casing. Change pipe rams back to 2 3/8".
- 20 RIH with tubing to ~800'.
- 21 MIRU cementer. Spot 200 sxs 15.8 ppg "G" +2% CaCl<sub>2</sub> from 800' up to ~100'. Pull and stack back 120' of tubing and lay down remainder. Circulate as deemed necessary. WOC min 4 hrs.
- 22 RIH with tubing and tag plug, POOH and stand back tbg. Contact engineer if cement tag is deeper than 120'. If cement is 100' or less, RDMO cementer.
- 23 RU E-line. Set CIBP in 8 5/8", 24# surface casing above top of cement plug. Pressure test CIBP/casing to 1000 psi for 15 min. RDMO E-line.
- 24 Remove BOP. RDMO workover rig.
- 25 MIRU redi-mix cement mixer. Use 4,500 psi compressive strength redi-mix (cmt and sand only, no aggregate) to finish filling surface casing to top of cut off. Check 8 5/8" & 4 1/2" annulus. Fill with cement if needed. RDMO ready cement mixer.
- 26 Wellsite supervisor turn all paper copies of cementing reports/invoices and logs 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.
- 27 Have excavation contractor notify One-Call to clear for digging around wellhead and flowline removal. Excavate hole around surface casing to allow welder to cut off 8 5/8" surface casing 5' below ground level. Weld steel plate across top of surface casing cut off. Information to be stamped on plate is: Well name and number, ¼, ¼ description of surface location and API number. Cover steel plate and backfill hole with native material removed.

- 28 Properly abandon flowlines as per Rule 1103. Reclaim location/ROW as required by surface owner(s).
- 29 Submit Form 6 to COGCC. Provide "As Plugged" wellbore diagram identifying the specific plugging completed.

