



Procedure to Re-enter & Properly P&A Well Prior to Offset HZ Fracs COA for Desha DSU

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UPRR 33 Pan Am Nav 1
05-001-06229
2014' FSL, 651' FWL
NWSW Sec 9, T1S, R65W
Adams County, CO

Proposed Work:

Locate Well and Make-Up Wellhead

- 1.) Call Line Locates & Provide 48 hr. Form 42 notice to COGCC prior to 'excavation and rig up.'
- 2.) Survey and locate abandoned well, mark with stake, and take location photos.
- 3.) Excavate to expose top of surface casing.
- 4.) Prepare location surrounding exposed casing as necessary for rig.
- 5.) Set and test deadman anchors as necessary.
- 6.) Weld 2" collar to top of 8-5/8" surface casing cap. Make up to collar, pneumatic drill with non-sparking bit. Drill out cap venting possible trapped gas.
- 7.) Once verified that no gas exists beneath top of surface casing plate, cut off surface casing below plate with torch, dress up smooth.
- 8.) Butt weld 8-5/8" casing to dressed cut, bringing threaded end of casing to ground level.
- 9.) Make up to 8-5/8" casing one 8-5/8" collar, and an 8-5/8" starter well head.
- 10.) NU flange adaptor and 5k BOP, test BOP.

Drill out Old Plug, Squeeze and Set New Plugs

- 11.) NU and RIH with 6-1/8" bit, PU 2-7/8" (or 3-1/2") drill collars, 2-7/8" 6.5# tubing, and TIW valve.
- 12.) Drill out 10 sx cement plug at surface. Roll hole with kill fluid until well dead, or blown down.
- 13.) Continue RIH w/ 2-7/8" work string, cleaning out with drilling mud or water to +/- 7860', the estimated top of plug over the J-Sand, tag top of plug. Circulate hole clean.

Note, slow down @ +/- 7500' as top of plug could be near 7650'

- 14.) TOOH tubing, drill collars and bit.
- 15.) MIRU logging truck, Run CBL to confirm production casing cement tops. Wait on orders if any issues found. Make 2nd run with Gyro survey.
- 16.) Based on CBL and 1st stage cement top, evaluate potential location to squeeze in to 4-1/2" x 7-7/8" annulus. Need to provide >400' cement barrier above Niobrara.
- 17.) Pressure test casing to 500 psi.
- 18.) RIH w/ perf guns and shoot squeeze holes @ +/- 5500' based on evaluation. POOH w/ wireline.
- 19.) MU BHA for cement squeeze. RIH w/ 4-1/2" cement retainer, stinger assembly and 2-7/8" workstring to +/- 5470'. Set cement retainer.

20.) RU cementers. Squeeze 180 sx of 15.8 ppg Class G 'neat' cement down tubing/ retainer and into squeeze holes.

Squeeze 1 - Calculated Sacks for required annular squeeze above Nio

Class G Neat

Desired Coverage From 5500' to 4900' = 600'

30' inside 4-1/2", 600' in 4-1/2" x 7-7/8" Annulus. 50% Excess

Yield : 1.15 cu ft / sx

$$30 \text{ lin ft} \quad * \quad \frac{0.0872 \text{ cu ft}}{1 \text{ lin ft}} \quad * \frac{1 \text{ sx}}{1.15 \text{ cu ft}} \quad = \quad 2 \text{ Sacks Cement}$$

$$600 \text{ lin ft} \quad * \quad \frac{0.2278 \text{ cu ft}}{1 \text{ lin ft}} \quad * \frac{1 \text{ sx}}{1.15 \text{ cu ft}} \quad = \quad 119 \text{ Sacks Cement}$$

$$50\% \text{ Excess in Annulus} \quad = \quad 59 \text{ Sacks Cement}$$

$$\text{Total Sacks} \quad = \quad 180 \text{ Sacks Cement}$$

21.) Sting out of cement retainer, spot last 5 sacks on top of retainer. PU 75', circulate hole clean, TOOH with 2-7/8" tubing. WOC.

22.) MIRU wireline. Run CBL across squeeze. Confirm >400' cement coverage. If 1st CBL also showed good cement over Fox Hills, prep for cement plug inside 4-1/2" casing.

23.) TIH w/ mule shoe 2-7/8" tubing, tag cement retainer, PU to 1500'.

24.) RU cementers. Pump 25 sx balanced plug of 15.8 ppg Class G 'neat' cement in 4-1/2" casing.

Plug 1 - Calculated Sacks for Fox Hills protection inside 4-1/2"

Assume Class G Neat

Desired Coverage From 1500' to 1200' = 300' coverage, 25 sx = 330' coverage

4-1/2" Casing

Yield : 1.15 cu ft / sx

$$330 \text{ lin ft} \quad * \quad \frac{0.0872 \text{ cu ft}}{1 \text{ lin ft}} \quad * \frac{1 \text{ sx}}{1.15 \text{ cu ft}} \quad = \quad 25 \text{ Sacks Cement}$$

25.) Pull 2-7/8" tubing up to 1,000'. Roll hole clean. POOH.

26.) RIH on wireline with perf or chemical cutter gun, shoot 2 squeeze holes in 4-1/2" casing above TOC @ +/- 250'. If TOC is in 8-5/8" surface casing, ensure hole penetration will not shoot through 8- 5/8". POOH.

27.) RU cementers to 4-1/2" casing. Pump 74 sx of 15.8 ppg Class G 'neat' cement inside/outside the production casing from 250' to surface.

Plug 2 - Calculated Sacks for Surface Plug in 4-1/2" & 4-1/2" x 8-5/8"

Assume Class G Neat

Desired Coverage From +/- 250' to 0' = 250'

Neglect 4-1/2' casing displacement, calculate volume as volume inside 8-5/8" casing

Annulus

$$250 \text{ lin ft} \quad * \quad \frac{0.3382 \text{ cu ft}}{1 \text{ lin ft}} \quad * \frac{1 \text{ sx}}{1.15 \text{ cu ft}} \quad = \quad 74 \text{ Sacks Cement}$$

28.) RD cementers.

Reclaim

- 30.) Excavate around wellhead to 8' below grade, cut off 8-5/8" casing, top off cement if necessary, weld on cap.
- 31.) Obtain GPS location data as per COGCC Rule 215.
- 32.) Backfill hole and reclaim surface to original conditions.