



**Nelson Ranches A-5
REDTAIL
Remedial Cement
API No. 051231614000
AFE #**

WELL DATA

Surface Location: 660' FNL & 660' FWL of Sec 20, T10N, R58W, Weld County, CO
Elevations: Ground Level: 4840 ft Kelly Bushing: 4851 ft (11' KB)
Depths: Total Depth: 6812 ft KBMD

Surface Casing:

<u>OD</u>	<u>Grade</u>	<u>Weight</u>	<u>ID</u>	<u>Drift</u>	<u>Cap</u>	<u>Collapse</u>	<u>Burst</u>	<u>Tensile</u>
8-5/8"	K-55	24	8.097 in	7.972 in	0.0636 bbl/ft	1370 psi	2950 psi	263,000 Lbs.

Production Casing:

<u>OD</u>	<u>Grade</u>	<u>Weight</u>	<u>ID</u>	<u>Drift</u>	<u>Cap</u>	<u>Collapse</u>	<u>Burst</u>	<u>Tensile</u>
4-1/2"	J-55	11.6	4.000 in	3.875 in	0.0155 bbl/ft	4960 psi	5350 psi	154,000 Lbs.

OBJECTIVE

The following is a procedure to place remedial cement in order to isolate the Niobrara formation and uphole groundwater zones in the Nelson Ranches A-5 well located in Weld County, Colorado

Remedial Cement Procedure

1. Provide the COGCC with 48-hour notice of MIRU via electronic Form 42.
2. MIRU WO rig. Mob-in pump, tank, tubing float, and all other necessary equipment. NU 7-1/16" 5K BOP w/ 2-3/8" pipe rams on top and blind rams on bottom, pressure test high and low, function test BOP. Have delivered clean 500-bbl upright tank and fill with fresh water. Heat as necessary. Fresh water to be used for cementing operation, circulating, and cement displacement.
3. Bleed any pressure off well. TOO H with 2-3/8" tbg laying down on tbg float. PU 2-3/8" workstring, bit and scraper for 4-1/2" csg, TIH to 6,700 ftKB. TOO H, LD tools.
4. MIRU gyro equipment (use Scientific Drilling). PU tools and RIH while logging down to 6,600 ftKB. POOH while logging, LD tools. Send data to Denver engineer ASAP.
5. PU RBP for 4-1/2", 11.6 lb/ft casing. RIH and set RBP @ 6,550 ftKB. Place 5 sks of sand on top of RBP. Circulate well clean. TOO H w/ 2-3/8" workstring standing back. Change out Larkin head for 5K wellhead equipment.
6. MIRU wireline company. PU CBL logging tools and NU pack-off or lubricator. RIH w/ logging tools to 6,400 ftKB and log under 1,500 psi. Send processed log to engineer **ASAP** and verify depths prior to moving forward.
7. PU 1-ft perforating guns loaded w/ 4 spf, 90 degree phasing (0.50" EHD) and pack off, NU pack-off to BOP. RIH w/ gun and fire gun **5,750 ftKB**. POOH with spent gun, ND pack-off, LD gun, and ensure all shots fired.
8. PU cement retainer for 4-1/2" 11.6 lb/ft csg, TIH on 2-3/8" tbg. Set retainer at **5,675 ftKB**. Sting into CR and establish circulation to surface. If circulation is established, circulate 200 bbls fresh water mixed with 20 bbls of chem wash (circulate full amount or when returns clean up). Pull into test position, pressure test tbg to 1,000 psi., sting back in and establish injection rate into perforations, target 2 bpm injection rate (monitor 4-1/2" csg for pressure). Record rate and pressure. Pass onto engineering and cement company.

9. MIRU cement crew. Pressure test surface lines to 2,000 psi. Mix and pump 80 sks, Class G, 1.15 cu-ft/sk, 15.8 ppg cement, squeezing through perforations @ 5,750 ftKB. Shut in surface csg valve, sting out, spot 5 sks cement on top of CR. TOO H w/ 4 stands, reverse clean with fresh water. TOO H w/ remaining tbg. Let cement cure overnight.
10. MIRU wireline company. PU 1-ft perforating guns loaded w/ 4 spf, 90 degree phasing (0.50" EHD) and pack off, NU pack-off to BOP. RIH w/ gun and fire gun 1,700 ftKB. POOH with spent gun, ND pack-off, LD gun, and ensure all shots fired. Close BOP rams, open csg valve and establish circulation, close csg valve, pressure up to 700 psi and monitor for bleed off.
11. PU cement retainer for 4-1/2" 11.6 lb/ft csg, TIH on 2-3/8" tbg. Set retainer at 1,625 ftKB. Sting into CR and establish circulation to surface. If circulation is established, circulate 100 bbls fresh water mixed with 20 bbls of chem wash (circulate full amount or when returns clean up). Pull into test position, pressure test tbg to 1,000 psi., sting back in and establish injection rate into perforations, target 2 bpm injection rate (monitor 4-1/2" csg for pressure). Record rate and pressure. Pass onto engineering and cement company.
12. MIRU cement crew. Pressure test surface lines to 2,000 psi. Mix and pump 425 sks, Class G, 1.15 cu-ft/sk, 15.8 ppg cement, squeezing through perforations @ 1,700 ftKB and up to surface. Shut in surface csg valve, sting out, spot 5 sks cement on top of CR. TOO H w/ 4 stands, reverse clean with fresh water. TOO H w/ remaining workstring laying down. Let cement cure overnight.
13. TIH w/ tbg, tag TOC, and record depth. Pass information onto engineer. TOO H, LD tbg.
14. ND BOP, NU WH, RDMO WO rig.
15. Verify pressure gauges are installed. Monitor pressures daily during offset frac operations.
16. When offset frac operations are completed MIRU WO rig. NU 7-1/16" 5K BOP w/ 2-3/8" pipe rams on top and blind rams on bottom, pressure test high and low, function test BOP.
17. PU mill for 4-1/2", 11.6 lb/ft csg, TIH on 2-3/8" tbg (original production string). Mill out cement and cement retainer at 1,625 ftKB. Pressure test perforations to 500 psi. Continue TIH and mill out cement and cement retainer to a depth of 6,500 ftKB. Pressure test perforations to 500 psi. Circulate well clean with fresh water. TOO H w/ tbg standing back.
18. MIRU wireline company. PU CBL logging tools and NU pack-off or lubricator. RIH w/ logging tools to 6,400 ftKB and log under 1,500 psi. RD wireline.
19. TIH w/ 2-3/8" tbg and latch onto RBP @ 6,550 ftKB. TOO H w/ tbg standing back, LD tools.
20. ND BOP, NU WH, return well to production. RDMO WO rig.

***Note: All values in red need to be verified with initial CBP**

SAFETY & ENVIRONMENTAL****EMERGENCY CONTACTS BELOW****

Whiting Operating stresses safety and environmental stewardship in all operations. Safety tailgate meetings are encouraged prior to commencing with any major wellsite task. Spills of notable size should be reported and recorded. The proper personal protective equipment (PPE) should be worn at all times while on location. Should there be any questions regarding Whiting's safety/environmental policies, the Wellsite Supervisor will provide instruction.

EMERGENCY CONTACT INFORMATION

Contacts	Phone Number & Description
EMERGENCY	911 or (800) 472-2121
Sheriff's Department (Sterling, CO)	(970) 522-3512 (Logan County)
New Raymer Fire Dept	(970) 437-5713
After Hours Emergency (WOG)	
Engineer: James Kopp	Cell: (303) 681-1997, Office: (303) 357-1410
Rig Supervisor: Brent Brown	Cell: (701) 290-0123
Operations Supervisor: Mike Staab	Cell: (307) 299-0095, Office: (970) 493-2900