



Plug & Abandon Procedure

Well: Horseshoe Canyon 1-19

Prepared by John Grubich

WELL INFORMATION:

Well Name: Horseshoe Canyon 1-19
API #: 05-077-08652-00

Pad: N/A
County: Mesa
Field: Shire Gulch

Surface Location: 945 FEL & 1696 FNL SEC 19 T9S R97W
Bottom Hole Location: Same

Elevations: KB Elevation: 5164
KB Height: 13
GL Elevation: 5151

TD: 2930 MD / 2930 TVD
PBTD: 2878 MD / 2878 TVD

Casing: Surface: 12.25" hole @ 450', 8-5/8" 24 ppf J55 STC @ 449', TOC @ surface
Production: 7.875" hole @ 2920', 4-1/2" 11.6 ppf K55 LTC @ 2920', TOC @ surface from foamed cement job following primary cementing.

Tubing: 2 3/8", 4.7 ppf J55 EUE @ 2772' (82 jts)

Perforations: 2503-2754

Bridge plug: N/A

Well Status: SI

Directions: From the Debeque exit on I-70 follow Debeque cut across (45 ½ road) South for 3.0 miles to compressor station. Turn right and follow main traveled road 3.5 miles. Turn right and follow 0.9 miles. Turn right and follow 0.6 miles to "Y". Stay left at "Y" and follow 1.0 mile. Turn right and follow 0.2 miles to "Y". Stay right at "Y" and follow 0.6 miles to well location.

Contacts:

Health & Safety Coordinator	Laura Lancaster	970 644 1259
Production Coordinator	Luke Cody	970 618 2571
Completions Manager	John Grubich	970 589 9496
Production Manager	Eric Lane	970 640 9172
Senior Regulatory Manager	Wayne Bankert	970 985 5383
Operations Manager	Chris Clark	970 462 8375
COGCC Contact	Aaron Katz	970 765 6300
BLM Contact	Stephen Garcia	970 876 9031

PROCEDURE:

1. Hold pre-job safety meeting with all personnel involved in each operation.
2. MIRU service rig. Blow down well through production equipment.
3. Pump top kill on well with lease water.
4. ND production tree and NU and test 5K BOPE to 2500 psi for 10 minutes.
5. Un-land hanger and TOOHS standing back 2 3/8" J55 tubing visually inspecting for use as work string to plug well. If tubing shows signs of corrosion LD and prepare to PU 2 3/8" work string for P&A procedure.

Isolate Corcoran/Cozzette Production Perforations:

6. MIRU Wireline service. PU gauge ring for 4 1/2" 11.6 ppg casing and RIH to 2500'. LD gauge ring and PU 4 1/2" CIBP and RIH to set plug at 2450'.
7. Pressure test production casing to 300 psi for 15 minutes.
8. TIH with tubing and spot 10 sacks Class G (15.8 ppg, 1.15 cu.ft./sk yield, 4.97 gal/sk water) cement plug on top of CIBP.
9. TOOHS standing back 10 stands and LD remaining tubing.

Isolate Surface Shoe:

10. RU Wireline service. PU CBL tool and run CBL from 600' back to surface to look for cement cap from recent job with foamed cement. RD Wireline service.
11. **If no cement is identified on CBL continue to step 12. If cement is identified, then skip to step 16.**
12. PU 3 1/8" perf gun with 4 spf 90 degree phased and RIH to shoot 4 perforations at 550'. RD Wireline service.
13. RU rig pump to 4 1/2" production casing and attempt to circulate down 4 1/2" casing and up 4 1/2" annulus through braden head valve. If circulation is achieved, make sure fluid coming out of annulus is clean before pumping cement. If circulation is not achieved contact Completion Manager in Grand Junction to discuss plan for surface shoe cement plug.
14. TIH with 2 3/8" tubing to +/- 600'
15. Place 60 sacks (200 LF) Class G (15.8 ppg, 1.15 cu.ft./sk yield, 4.97 gal/sk water) balanced cement plug inside 4 1/2" casing and 4 1/2" casing annulus @ 350-550'.
16. If cement cap from foam cement job is identified in annulus of 4 1/2" production casing then balance 15 sacks (200 LF) Class G (15.8 ppg, 1.15 cu.ft./sk yield, 4.97 gal/sk water) cement plug inside casing from 350-550'.

Surface Cement Plug:

17. **If no cement was identified on CBL in step 10 continue to step 18. If cement was identified between 100' and surface, then skip to step 23.**
18. RU wireline service. RIH and shoot 4 spf 90 degree phased @ 100'.
19. Establish circulation down 4 1/2" casing and out braden head valve.
20. RDMO wireline service and service rig.
21. RU cement service company to wellhead and pump down 4 1/2" casing.
22. Pump 30 sacks (100 LF) Class G (15.8 ppg, 1.15 cu.ft./sk yield, 4.97 gal/sk water) cement plug inside and outside 4-1/2" casing from Surface-100'.
23. TIH with 2 3/8" tubing to at least 100' and secure tubing.
24. RU cement service to tubing and pump 10 sacks (100 LF) Class G (15.8 ppg, 1.15 cu.ft./sk yield, 4.97 gal/sk water) cement to balance plug inside 4 1/2" production casing from 100' to surface.
25. LD 2 3/8" tubing and top off 4 1/2" production casing with Class G cement as necessary.

26. RDMO service rig.
27. Cut off casing 3-4 feet below GL.
28. Install abandonment marker over SHL as per COGCC regulations. The following minimum information shall be permanently placed on the marker with a plate beaded on by welding:
 - a. Operator name
 - b. Lease number
 - c. Well name and number
 - d. API number
 - e. Location by $\frac{1}{4}$ $\frac{1}{4}$ Section, Township and Range.

POST-JOB:

29. Send tubing to Petros for inspection or Debeque yard for storage.