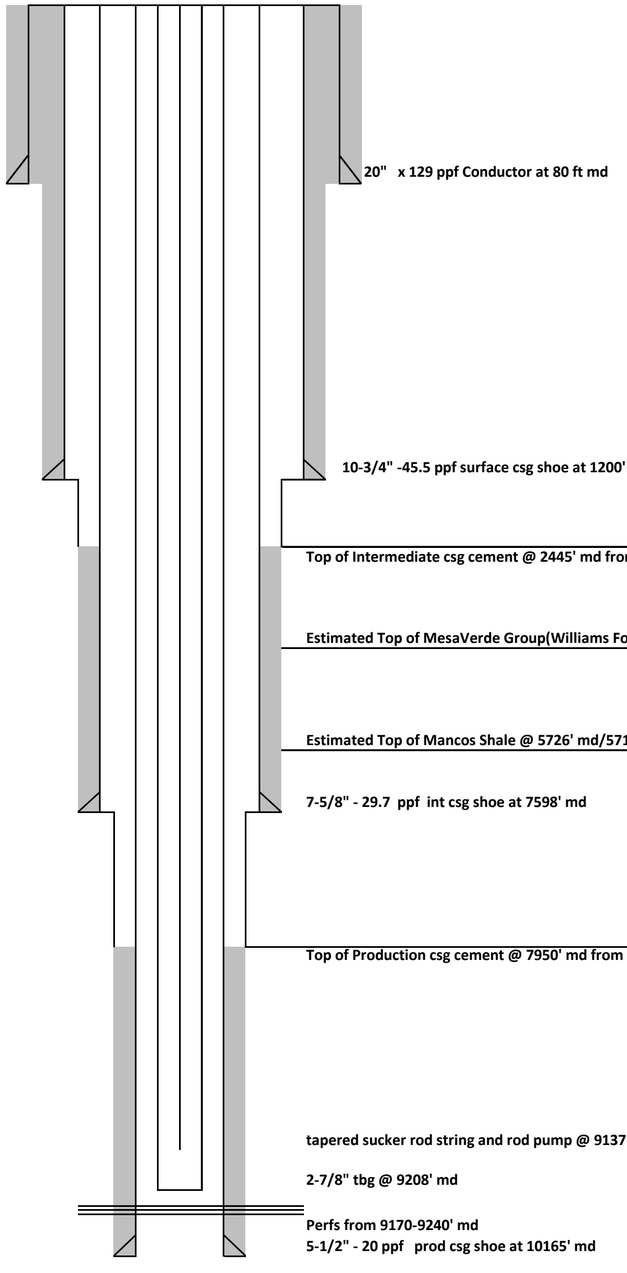
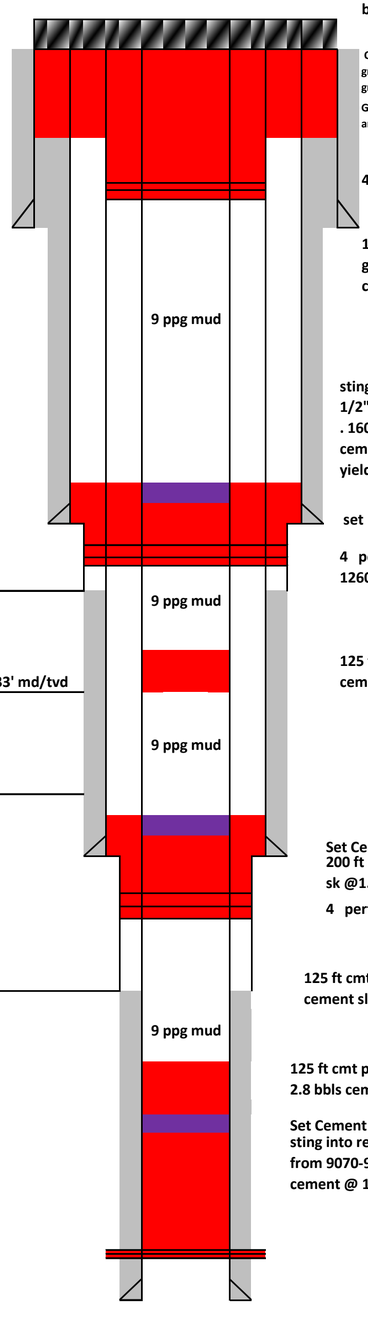
North Hayden 26-1 "As is" and "Plugged and Abandoned " Wellbore Diagrams

Wellbore Diagram "As Is" - 2 August 2017



Gray shading indicates current cement

Wellbore Diagram after P & A Complete



backfill and level on top of well stub

Cut all csg strings off at minimum 4'+ md below grade - seal weld on 1/2" plate cap and backfill to grade

Grout in 7-5/8" x 10-3/4" annular space and 20" x 10-3/4" annular space down to 100 ft below grade

4 perfs in 5-1/2" csg at 150' md

145 ft cmt plug from 150' md + to 5' below grade (5.6 bbls cmt slurry, 28 sk cmt @ 1.15 cu ft/sk yield)

sting into retainer and pump cmt in 5-1/2" csg, 5-1/2" x 7-5/8 annulus & 7-5/8" x 10-3/4" annulus . 160 ft cmt plug from 1100-1260' md. (10.3 bbls cement slurry, 51 sk cement @ 1.15 cu ft/sk yield)

set 5-1/2" cement retainer at 1100' md

4 perfs in 5-1/2" & 7-5/8" csg at 1260' md

125 ft cmt plug from 4500-4375' md (2.8 bbls cement slurry, 14 sk cement @ 1.15 cu ft/sk

Set Cement retainer at 7500' md
200 ft cmt plug from 7700-7500' md (8 bbls, 39 sk @1.15 cu ft/sk yield)

4 perfs in 5-1/2" & 7-5/8" csg csg at 7700 ' md

125 ft cmt plug from 7650- 7525' md on top of retainer (2.8 bbls cement slurry, 14 sk cement @ 1.15 cuft/sk)

125 ft cmt plug from 9070- 8945' md on top of retainer (2.8 bbls cement slurry, 14 sk cement @ 1.15 cuft/sk)

Set Cement retainer at 9070' md
sting into retainer and pump cmt into perfs . Cmt plug from 9070-9240' md (4.1 bbls cement slurry, 20 sk cement @ 1.15 cu ft/sk yield)

Red = min 15.8 ppg cmt, 4000 psi compressive strength in 24 hrs

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NORTH HAYDEN 26 # 1

AFE# 1010779

PLUG AND ABANDON PROCEDURE

Date: 10/10/2017

Sand Wash Basin Operations
Routt County, CO
API # 05107062630000

Well Status

The well is noncommercial and will be blown down to zero pressure on casing and tubing and filled with water in all annular spaces and inside tubing prior to commencing P & A Ops. Final Plugging and abandonment is required in 2017.

Objective

Plug and abandon well in prep for pad reclamation and full asset retirement.

Casing & Tubing

Size	Grade	Weight	Thread	Depth	ID	Drift	Collapse	Burst
20”		129 ppf	LTC	0-80’	19.00”			
10-3/4”	J-55	45.5 ppf	Buttress	0’ – 1,200’	9.875”			
7-⅝”	P-110	29.7 ppf	LTC	0’ – 7,598’	6.875”			
5½"	HCP-110	20 ppf	CDC	0’ – 10,165’	4.20”			
2-7/8”	L-80	6.5 ppf	8rd	0-9,208’	2.441			

Casing & tubing capacities	10- ¾ 45.5 ppf	4.0393 gal/ft.	0.0962 bbls/ft
	7-⅝” 29.7 ppf	1.9284 gal/ft	0.0459 bbls/ft
	5½“ 20# ppf	0.9314gal/ft	0.0222 bbls/ft
	2-7/8” 6.5 ppf	0.2431 ga;/ft	0.0058 bbls/ft

Wellbore Schematic - See attached

Procedure

Safety

Safety is the top priority. All service personnel need to be familiar with SEPCO safety policies and practices. Safety meetings should be held daily and noted on the daily reports. Well control and overall work safety is the responsibility of everyone on location. Everyone on location is required to be H_2S and TAPs certified. Do not begin operations without proper onsite supervision. Stop any operations and confer with the Completion Foreman or Superintendent if a situation develops that is dangerous and/or requires additional measures.

Well Preparation

1. Hold pre-job safety meeting before each operation. Ensure all applicable PPE is available, in proper working order, and used as required. Ensure everyone is TAPS certified.
2. Upon arrival at well site check pressure on production tubing. Bleed off trapped pressure and verify no gas. Fill with water after bleeding off trapped pressure. Record fill volume.
3. Check for pressure on 5-1/2" production casing. Bleed off trapped pressure and verify no gas. Fill with water after bleeding off trapped pressure. Record fill volume.
4. Bleed off pressure from 5-1/2" x 7-5/8" Csg Annulus. Verify no flow and fill with water as necessary. Record fill volume. Pressure Test annulus to 100 psig to verify annular cement integrity.
5. Bleed off pressure from 7-5/8" x 10-3/4" Csg Annulus. Verify no flow and fill with water as necessary. Record fill volume. Pressure Test annulus to 100 psig to verify annular cement integrity.
6. MIRU WOR and support equipment.
7. N/U rod pulling bops and test same to 250/1500 psig.
8. Pull sucker rod string, bha, and rod pump and l/d same. (see rod string detail attached) . Keep hole full .
9. N/D rod pulling bops.
10. Install BPV lubricator and set BPV in tubing spool. N/D lubricator.
11. Nipple up 5k BOP's on top of tubing spool and Test BOP's with work string to 250/1500 psig.
12. N/U BPV lubricator and pull BPV.
13. POOH and L/D 286 joints 2-7/8" tbg. (see tubing string detail attached) . Keep hole full . Verify no flow. If there is any flow circulate 9 ppg mud all the way around.
14. R/U wireline & lubricator on top of bop's and test lubricator to 250/2000 psig.
15. RIH with 5-1/2" cement retainer on wireline to 9070' md and set retainer.

16. Pooh and r/d wireline and lubricator.
17. Ensure well is killed ,N/D BOP's, and pull tbg spool.
18. Nipple up 5k BOP's on top of 5-1/2" Production Casing Spool and Test BOP's with work string to 250/1500 psig.
19. RIH with open ended work string to 9050'.
20. Establish circulation with water . Once circulation is established, switch to mud and displace wellbore fluids and brine out of hole with 9 ppg WBM (estimated 204 bbls of mud required to displace hole).
21. Sting into cement retainer at 9070' md. Test backside to 500 psig.
22. MIRU Cementing spread. (Test lines to 250/2000 psi), Mix, Pump, and squeeze 180 foot cement plug from approx. 9070' to 9240' MD/TVD. Cement plug volume is 4 bbls (estimated 20 sks Class H Cement @ 1.15 cu ft/sk yield). Displace cmt into place with 9ppg WBM.
23. Pull 1 jts work string and fill hole with 9 ppg mud. Close BOP's and Test Csg and retainer to 500 psig. Bleed off pressure and verify no flow.
24. RIH and tag top of retainer and p/u 2 ft.
25. Mix, Pump, and spot 125 foot balanced cement plug from 9070' to 8945 ' MD/TVD. Cement plug volume is 2.8 bbls (estimated 14 sks Class H Cement @ 1.15 cu ft/sk yield). Displace cmt into place with 9ppg WBM.
26. POOH and fill hole.
27. R/U electric line and lubricator on top of BOP's. Test lubricator to 250/2000 psig.
28. RIH with perf guns to 7700'. Pressure up to 500 psig. Perf 4 holes through 5-1/2" casing looking for a pressure increase in 5-1/2" x 7-5/8" annulus to verify perfs . Pooh with eline.
29. If no pressure jump observed attempt to circulate down 5-1/2" with returns up 5-1/2" x 7-5/8" csg annulus to verify communication through 5-1/2" csg. Reshoot perfs if necessary.
30. POOH w/ eline .
31. RIH with 5-1/2" cement retainer on eline to 7500 ' md and set retainer.
32. POOH with eline
33. RIH with workstring to 7500'. Sting into cmt retainer, test backside to 500 psig.
34. Mix, Pump, and spot 200 foot cement plug from 7700' to 7500' MD/TVD taking returns up 5-1/2" x 7- 5/8" annular. Cement plug volume is 8 bbls (estimated 39 sks Class H Cement @ 1.15 cu ft/sk yield). Displace cmt into place with 9ppg WBM.
35. POOH to 4500' . Fill casing with 9 ppg mud as pooh.
36. Pressure test csg to 500 psig
37. Mix, Pump, and spot 125 foot balanced cement plug from 4500' to 4375' MD/TVD. Cement plug volume is 2.8 bbls (estimated 14 sks Class H Cement @ 1.15 cu ft/sk yield). Displace cmt into place with 9ppg WBM.

38. R/U electric line and lubricator on top of BOP's. Test lubricator to 250/2000 psig.
39. RIH with perf guns to 1,260'. Pressure up to 500 psig. Perf 4 holes through 5-1/2" casing and 7-5/8" csg looking for a pressure increases in annular space to verify perfs . Pooh with eline.
40. If no pressure jump observed attempt to circulate down 5-1/2" with returns up 5-1/2" x 7-5/8" csg annulus and 10-3/4" x 7-5/8" annulus to verify communication . Reshoot perfs if necessary.
41. RIH with wireline and set cement retainer at 1100' +/-.
42. POOH and r/d wireline and lubricator.
43. RIH with workstring. Before stinging into retainer pressure test to 500 psig.
44. Sting into cmt retainer at 1100' md.
45. Mix, Pump, and spot 160 ft cement plug through cement retainer in 7-5/8" x 5-1/2" and 10-3/4" x 7-5/8" annulus taking returns up annular space while pumping and displacing cmt. (10.3 bbls cement slurry, 51 sk cmt at 1.15 cu ft/sk yield)
46. Sting out of cmt retainer. Verify no flow up workstring and test to 500 psig
47. TOOH. Fill casing with 9 ppg mud as pooh
48. R/U wireline and lubricator on top of BOP's. Test lubricator to 250/2000 psig.
49. RIH with perf guns to 150'. Pressure up to 500 psig. Perf 4 holes through 5-1/2" casing looking for a pressure increase in 5-1/2" x 7-5/8" annulus to verify perfs . Pooh with wireline.
50. If no pressure jump observed in annular space attempt to circulate down 5-1/2" with returns up 5-1/2" x 7-5/8" csg annulus to verify communication through 5-1/2" csg. Reshoot perfs if necessary.
51. POOH and r/d wireline and lubricator.
52. Mix, pump, and spot 145 ft balanced cmt plug in 5-1/2" csg and 7-5/8" x 5-1/2" annular (5.7 bbl cement slurry , 28 sk at 1.15 cu ft/sk yield) from 150 feet to 5 feet below grade.
53. N/D BOPS
54. Cut and pull 20", 13-3/8", 7-5/8", and 5-1/2" csg at 4+ feet below grade. Remove all csg spools and stubs.
55. Run 1" polypipe down all annular spaces to 100 ft depth or to top of cement in annular space and circulate cement back to top of casing stubs. (4 bbls max in 10-3/4" x 7-5/8" annular and 25 bbls max in 20" x 10-3/4" annular) .
56. Excavate around and secure excavation around 20" Conductor.
57. Weld ½" wall thickness steel cap plate with ½" long weephole on cap plate weld on top of 20" Conductor Stub. Dry hole plate with well legal id # must be on plate.
58. Back fill, Compact backfill soil every 2 feet while backfilling until no settling observed.
59. Top dress over abandoned well with rock.
60. Clear location of all debris and de-mob equipment and personnel. Remove rig anchors .

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