Critical Well Notes

- Artificial lift method - Plunger lift
- *Required 10% excess cement for every 1000' depth (included in proposed calculations)*
- *Rule 434.a.(5) Plug and Abandon - The Operator will not cap or seal the well until 5 days after placing the last plug to allow monitoring for successful plugging and will cap or seal the Well within 90 days after placing last plug.*

Offline Activity

- Set cast iron tubing plug in tubing and pressure test same to 1000 psi to confirm integrity.

Procedure - Rig Only

1 MIRU pulling service rig
2 Check pressure on all casing and tubing strings. Verify no pressure and observe well for 15 minutes to verify no flow. Kill well with available kill fluids, brine if necessary.
  1 Trickle kill fluid down production casing as needed to keep well dead
3 Set cast iron tubing plug and pressure test same to 1000 psi to confirm integrity [if not done previously]
  1 If this step is not feasible, plan to hydrotest tubing while POOH or TIH.
4 N/U stump-tested BOPE.
  1 Install BPV in tubing hanger. N/D production tree.
  2 Install 5k Class III BOP and pressure test 250 psi low and 1000 psi, MASP, or max anticipated pressure (whichever is larger) high for 5 min each.
5 MIRU wireline unit to jet cut 2-7/8" tubing above cast iron tubing plug
6a. If tubing failed prior pressure test, plan to POOH to pick up workstring
6b. If tubing passed pressure test, plan to proceed with procedure
7 Conduct pressure test of casing, mech. Bridge plug to 500 psi for 15 minutes. Document results in WellView.
  1 Discuss picking up squeeze packer if casing failed previous pressure test
  2 Note previously squeezed casing leaks in wellbore schematics
8 Bubble test all annuli for 30 minutes each and document results in WellView under daily pressures
9 TIH with tubing string (and squeeze packer if necessary) to tag CIBP if work string was picked up
10 Plug #1: mech. barrier + cement to isolate open perforations, previously squeezed perfs from 9804' - 9868'
  1 Spot 48 sacks Class G cement from 10025' to 9750'
11 Plug #2: Isolate previously squeezed perforations ranging from 8371' to 9142'
  1 Spot 197 sacks Class G cement from 9192' to 8320'
    1 100 sacks Class G cement spot inside 5" liner from 9192' to 8594'
    2 97 sacks Class G cement spot inside 7" intermediate casing from 8594' to 8320'
12 Plug #3: Isolate Sundance
  1 Spot 32 sacks Class G cement from 6920' to 6820'
13 Plug #4: Isolate Morrison, Dakota, Mowry, Frontier, 9-5/8" shoe
  1 Spot 200 sacks Class G cement from 6400' to 5750'
14 Plug #5: Isolate Niobrara
  1 Spot 27 sacks Class G cement from 4180' to 4080'
15 Plug #6: Isolate Mancos
  1 Perforate at 1250'
  2 Circulate 500' inside & out of 7" casing. Total job = 187 sacks Class G cement from 1250' to 750'
  3 WOC, tag, pressure test. Minimum tag depth is 1150' (100' above formation top).
16 Plug #7: Isolate Surface
  1 Perforate at 250'

2 Bring cement to surface with 85 sacks Class G cement

17 Discuss with engineer any changes to proposed plan forward during execution

Summary Table	Plug Base	Top	Volume	Perf & Squeeze	Notes
Isolate open perforations	10025	9750	48	NO	
Isolate prev. squeezed	9192	8594	100	NO	Inside 5"
perfs	8594	8320	97		continuous plug, inside 7"
Sundance	6920	6820	32	NO	
Morrison thru 9-5/8" shoe	6400	5750	200	NO	
Niobrara	4180	4080	27	NO	
Mancos	1250	750	187	YES	
Surface	250	0	85	YES	
Total Sacks	776				
Total Perf & Squeeze		2			
Total Spot		6			