

PLUG AND ABANDONMENT PROCEDURE

September 26, 2016

Gamma 1-15

Big Gulch Field

1980' FWL, 1980' FSL, Section 15, T7N, R93W,
Moffat County, CO API #05-081-05723

Note: All cement volumes use 10% excess per 1000 foot of depth. The stabilizing wellbore fluid will be 8.3 ppg, sufficient to balance all exposed formation pressures. All cement will be Class B, mixed at 15.8 ppg with a 1.18 cf/sx yield.

1. This project will use of an A-Plus steel waste tank to contain waste fluids circulated from the well and cement wash up.
2. Install and test location rig anchors. Comply with all COGCC, BLM, and Operator safety regulations. MOL and RU daylight pulling unit. Conduct safety meeting for all personnel on location. Record casing, tubing and bradenhead pressures. NU relief line and blow down well. Kill well with water as necessary and at least pump tubing capacity of water down the tubing. ND wellhead and NU BOP. Function test BOP.

3. Rods: Yes___, No X, Unknown____.
Tubing: Yes___, No X, Unknown____, Size____, Length____.
Packer: Yes___, No X, Unknown____, Type_____.

If this well has rods or a packer, then modify the work sequence in step #2 as appropriate.

Drill out 7" CIBP at 4651'.

Round trip 7" gauge ring or mill to 7848' or as deep as possible.

4. **Plug #1 (Dakota open hole and top, 7848' – 7748'):** RIH and set 7" cement retainer at 7848'.
Pressure test tubing to 1000#. Attempt to pressure test casing to 800#. If casing does not test then spot or tag subsequent plugs as appropriate. Mix 34 sxs cement and spot a balanced plug inside the casing to cover the Dakota interval. PUH.
5. **Plug #2 (Niobrara top, 7064' - 6964'):** Mix 33 sxs cement and spot a balanced plug inside the casing to cover the Niobrara top. TOH.
6. **Plug #3 (9-5/8" shoe, 7" liner top, 4801' – 4601'):** Perforate 3 squeeze holes at 4751'. Establish injection rate into squeeze holes if casing tested. Set 7" cement retainer at 4751'. Sting into CR and establish injection rate into squeeze holes. Mix and pump 99 sxs Class B cement, squeeze 34 sxs outside casing and leave 65 sxs inside casing to cover through the 7" liner top.
7. **Plug #4 (13-3/8" casing shoe and Mesaverde top, 1252' – 966'):** Perforate squeeze holes at 1252'. Establish injection rate into squeeze holes if casing tested. Round trip 9-5/8" gauge ring to 1202'. TIH and set 9-5/8" CR at 1202'. Sting into CR and establish injection rate into squeeze holes if casing tested. Mix and pump 211 sxs Class B cement, squeeze 101 sxs outside casing and leave 110 sxs inside casing to isolate the 13-3/8" casing shoe and Mesaverde top. TOH and LD tubing.

8. **Plug #5 (13-3/8" Surface plug, 100' - Surface):** Perforate 3 squeeze holes at 100'. Establish circulation out bradenhead with water and circulate the BH annulus clean. Mix approximately 65 sxs Class B cement and pump down the 13-3/8" casing and circulate good cement out bradenhead. Shut in well and WOC.
9. ND BOP and cut off wellhead below surface casing flange. Install P&A marker with cement to comply with regulations. Record GPS coordinate for P&A marker on tower report. Photograph P&A marker in place. Cut off anchors and clean up location. Restore location per BLM stipulations.