

**Plug and Abandonment Procedure**  
**Brookman 1**  
**NWNW Section 5, T1N, R64W**  
**API# 05-123-10874**

All cement pumped is to be class G, 1.15 yield, 15.8ppg unless specified otherwise.

1. Perform Bradenhead test prior to commencing operations. IF pressure on Bradenhead valve is greater than 25 psi, sampling is required (See COGCC COA for more details). Complete Form 17 and submit to Greely office at end of day.
2. MIRU WOR. ND WH. NU BOP.
3. TOO H w/ 2-3/8" tbg (*estimated* EOT @ 7200' MD), visually inspect and tally. Stand back approximately (First CICR) 2450' and LD remainder of tbg. Send tbg to Tuboscope for inspection.

**J Sand**

1. MIRU wireline. TIH and set CIBP @ 7600'. TOO H. TIH w/ dump bailer on wireline and dump 2 sks of class G cement on top of the CIBP @ 7200' MD to isolate J Sand. TOO H w/ wireline.

**Producing Formation**

2. TIH on wireline and set CIBP @ 7200'. TOO H. TIH w/ dump bailer on wireline and dump 2 sks of class G cement on top of the CIBP @ 7200' MD to isolate Codell. TOO H w/ wireline.

**Niobrara plug**

3. TIH w/ wireline and set CIBP @ 6890'. TOO H. TIH w/ dump bailer on wireline and dump 16 sks of class G cement on top of the CIBP @ 6890' MD. TOO H w/ wireline.

**Mid Well, 2<sup>nd</sup> Aquifer perf/plug**

4. TIH w/ perforating guns and shoot 4 holes @ 2,500' MD. TOO H w/ perf guns. TIH w/ 4-1/2" CICR and set @ 2,450' MD. TOO H w/ setting tool and RD wireline.
5. TIH w/ tbg and sting into CICR. Mix and pump 34 sks of cement into CICR. Sting out & pump 8 sks of cement on top of CICR to isolate 2<sup>nd</sup> aquifer. POOH w/ tbg to 1250' MD

**Fox Hills/Lower Arapahoe**

6. Spot balanced plug from 950'-1250' (25 sks) to cover Fox Hills/Lower Arapahoe (cement calculations call for 23 sks but COGCC requested 25 so we will oblige them).

**Surface Casing Shoe**

1. Pump down casing and pressure up to 500 psi for 15 minutes to verify plug integrity and ensure no fluid migration is present.

2. RU wireline. TIH w/ perforating guns and shoot 4 holes @ 261' MD. TOO H w/ perf guns. TIH w/ 4-1/2" CICR and set @ 200' MD. TOO H w/ setting tool and RDMO wireline.
3. TIH w/ tbg and sting into CICR. Establish circulation through braden head (**contact office if circulation through braden head cannot be established**). Mix and pump 61 sks of cement into CICR.
4. Sting out of CICR and pump 16 sks of cement from CICR to surface. Pull tubing out of hole. Top off casing w/ cement.
5. SI well and WOC.
6. ND BOP and cut off casing below surface casing flange. Install P&A marker w/ cement to comply w/ regulations.
7. RD and move off location. Cut off anchors and restore location.