

## P&A PROCEDURE

September 9, 2013

### **Executive Brief**

The scope of this work is to re-enter the old wellbore that had previously been plugged and abandoned. The well will be properly plugged and abandoned by setting cement plugs to isolate the formation, freshwater zone, and setting a cement cap near the surface. Then the surface casing will have a plate welled as final seal 5' below the surface. The old wellbore will then be buried and the surface location will be remediated.

Well Information	
Surface Location	660' FNL & 1980' FWL from the Section Line
Lat/Long	Lat: 40.631575 & Long:-104.070541
API Number	05-123-14398
AFE Number	
Ground Level Elevation, feet	4,870'
Working Interest	100%
Estimated TD, feet	6,977'

Formation Tops	
Top Names	Footage
Freshwater Zone	0' - 396'
Niobrara	6110'
D Sand	6810'
J Sand	6894'

Existing Tubular Data										
Size in	Depth	Weight	Grade	ID	Drift	Thread	Burst w/ No SF	Collapse w/ No SF	Capacity	Capacity
	(MD ft)	lb/ft		In	In		Psi	Psi	Bbl/ft	ft <sup>3</sup> /ft
8 5/8"	454	24		8.097	7.972	LTC	2,270	1,400	0.06368	0.35758

**Directions to Location:** From Briggsdale head east on Hwy 14 to CR 105. Then head south on CR 105 for about 0.75 miles. The McArthur 1 will be on the west side of 105. **All personnel should keep their speed down to 30 mph once they are near a residence or in a high traffic area to minimize dust.**

### **PERFORM SAFETY CHECKS AND SAFETY MEETING**

Perform safety meeting prior to rigging up **ANY** equipment on location. Discuss the job procedure and objectives with all personnel on location. Document the safety meeting on the report sent to Carrizo. Make note of all potential risks/hazards, and clearly identify an emergency route and emergency vehicle. Also make note of any new or inexperienced personnel on location. Ensure proper Personal Protective Equipment (PPE) is used during the job. Minimums are hard hats, steel toes, and safety glasses.

### **PROCEDURE**

1. Locate old surface casing using magnetometer. Record the GPS coordinates and the datum used for the GPS coordinates.

Set a stake and try to locate the boundaries of the old pad site.

2. Dig down to the old surface casing and cut plate off, install a slip collar to fit over the 8 5/8".

3. Install flange. If rig is not on location then install a dry hole tree to secure the well until the rig arrives.

**Re-enter & Cleanout Wellbore**

4. MIRU workover rig and related equipment including pipe racks, catwalk, rig tank, mud system, and pump. Bleed off any pressure on the dry hole tree. ND the dry hole tree and NU the rig BOP's.
5. Test the BOP's to 250 psi for a low test and 4,500 psi for a high test. RU the work floor and PU 2 7/8" 8 rd work string with a 6 1/2" rock bit.
6. Drill up top cement plug if encountered and expect the to be 30' - 50' in length. Continue drilling or RIH in the hole to top of the next plug at **429'**.
7. Pressure test the surface casing to 1000 psi. After a positive test, begin drilling on the second cement plug, this cement plug's bottom is expected to be at **479'**.
8. POOH with BHA and RIH with a notch collar to wash down to the top of the Niobrara at **6,110'**. Circulate for 1 hour to clean up hole.

**Set Cement Plugs and Abandon Well**

9. RU cementers. Test lines to 4,500 psi.
10. Set plugs coming up hole according to the following Cement Plug Table.
11. Once the top plug has been set cut casing to 5' below surface and weld on a plate to seal the well. Cover up the well and remediate the disturbed area with the appropriate seed mix.

Re-entry Hole Data		
Planned Hole Size in	Capacity bbl/ft	Capacity ft <sup>3</sup> /ft
6.50	0.04104	0.23044

Cement Plug Table						
Plug Number	Formation or Location	Plug Btm Depth	Plug Top Depth	Cement Class	Yield ft <sup>3</sup> /sk	Number of Sacks
1	Niobrara	6,110	5,810	G	1.18	59
2	Fresh Water Zone	600	0	G	1.18	165

Total                    **223**                    sacks