

## PLUG AND ABANDONMENT PROCEDURE

### Leona 1

Step	Description of Work
1	Locate and expose 8 5/8" casing stub. Extend stub to surface and install 8 5/8"x 11" SOW, 3M casing head with 3000 psi ball valves in both outlets. Prepare location for workover rig. Install perimeter fence as needed. NOTE: This well is under a hay barn.
2	Provide notice to COGCC prior to rig up per request on approved Form 6 (e.g. call field coordinator, submit Form 42, etc.). Install perimeter fence as needed.
3	MIRU workover rig. NU 9" 3000 psi BOP stack on casing head. PT BOP and csg head per approved Form 2. Function test BOPE. Install a choke or choke manifold on casing outlet. NU rotating head on BOP. Hook up return line to shale shaker on flat tank. Ensure full opening 2-7/8" TIW on rig floor.
4	PU 7 7/8" mill tooth bit, inline float, necessary drill collars and drill pipe/work string (WS). Drill through existing cement plugs at surface (10sk) and at the base of surface casing (35 sk plug 1/2 in, 1/2 out of sfc csg) using fresh water with biocide.
5	Once surface cement plugs are drilled, Displace hole with drilling mud and drill out 35 sack open-hole plug set at ~750'-800'. Continue going in hole washing down to 4 1/2" casing stub at 6500'.
6	TOOH standing back WS. LD drill collars and bit. RIH WS open-ended to ~6500'. Circulate and condition hole for cement plug.
7	RU Cementers. Mix and equalize cement plug (6500'-6100') consisting of 180 sx Thermal-35 with 0.5% CFR-2, 0.25% FMC mixed at 15.6 ppg and 1.51 cuft/sack. Calculated top of plug is 6200' based on 9 1/2" hole with 40% excess. POOH to ~5000' and circulate clean. WOC per cement company recommendation.
8	Tag top of plug at 6100'. TOH and LD WS to place end of WS at 4800'
9	Equalize cement plug consisting of 360 sx "G" w/0.25 lb/sk polyflake, 0.5% CFR-2, 0.2% FMC, 0.5% LWA with CaCl <sub>2</sub> as deemed necessary. Mixed at 15.8 ppg, 1.15 cuft/sack. Cement to be preceded by 5 bbls water, sodium metasilicate mixed in 20 bbls water per cementing company recommendation, and 5 bbl water spacer. Cement volume calculated to cover 4800'-4370' based on 11.5" hole with 40% excess.
10	POOH to ~3500' and circulate clean. WOC per cement company recommendation.
11	Tag plug at 4370'. LD WS to place end of WS at 1120'.
12	Equalize cement plug consisting of 530 sx Type III w/cello flake and CaCl <sub>2</sub> as deemed necessary, mixed at 1.34 cf per sack, 14.8 ppg. POH and WOC per cementing company recommendation. Plug size is based on 12" hole with 40% excess covering 1120' to base of surface casing at 242' plus capacity of surface casing to 100'. Pump plug in two stages if necessary due to volume.
13	POOH and WOC per cementing company recommendation.
14	Tag top of plug at 100'. POOH and LD WS.
15	RU wireline. Run and set CIBP in the 8 5/8", 24# surface casing at 80'. PT CIBP and surface casing to 1000 psi for 15 minutes. Assuming successful test, RD wireline.
16	RDMO workover rig.
17	Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to <a href="mailto:rscDJVendors@anadarko.com">rscDJVendors@anadarko.com</a> within 24 hrs of completion of the job.
18	Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
19	Excavate hole around surface casing of sufficient size to allow welder to cut off 8 5/8" casing at least 5' Below ground level (depending on land owner requirements).
20	Fill sfc casing with 4500 psi compressive strength cement (no gravel).
21	Spot weld steel marker plate on top of sfc casing stub. Marker shall be labeled with well name, well number, legal location (1/4 1/4 descriptor) and API number.
22	Obtain GPS location data as per COGCC Rule 215 and send to <a href="mailto:rscDJVendors@anadarko.com">rscDJVendors@anadarko.com</a> .
23	Back fill hole with native material. Reclaim location to landowner specifications
24	Submit Form 6 to COGCC. Provide "As plugged" wellbore diagram identifying the specific plugging completed.