PLUG AND ABANDOMENT PROCEDURE

GURTLER 24-10J

Step	Description of Work
1	Provide 48 hr notice to COGCC prior to rig up per request on approved Form 6 (e.g. call field coordinator, submit Form 42, etc.). Call IOC (970-506-5980) at least 24 hr prior to rig move. Request they catch the plunger, isolate production equipment and remove any automation prior to rig MIRU.
2	Prepare location for base beam equipped rig. Install perimeter fence as needed.
3	Check and record Bradenhead pressure. If Bradenhead valve is not accessible, re-plumb so that valve is above GL.
4	MIRU slickline services and pressure bomb services. Pull bumper spring, tag bottom, and run pressure bomb survey and obtain pressure gradient survey from surface to 6947' making gradient stops every 1000'. Forward pressure bomb results to Evans Engineering. RDMO pressure bomb services. MIRU VES and run gyro survey from 7064' to surface with stops every 100'. Forward gyro survey data and invoices to Sabrina Frantz. RDMO slickline services and VES.
5	MIRU workover rig, kill as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing jt, LD.
6	POOH and stand back 2-3/8" tbg. (landed at 7064')
7	MIRU WL. RIH w/ gauge ring for 4.5" 11.6# csg to 6750'.
8	RIH and Set 4.5" CIBP mid joint at 6725'. PT csg and CIBP to 1000 psi for 15 minutes. RDMO WL.
9	Notify Cementers to be on call.
10	RIH 2-3/8" tbg while hydrotesting to 3000 psi to CIBP at 6725'. Tag CIBP and pick up 5'.
11	RU Cementers. Pump Niobrara plug consisting of 34.5 cu-ft (25 sx)"G" w/ 20% silica flour , 0.4% CD -32, 0.4% ASA -301 and R-3 to achieve 2:30 pump time mixed at 15.8 ppg and 1.38 cuft/sk. Calculated top in the 4-1/2" csg is 6350'.
12	PUH to 6000' and circulate hole clean. TOOH and stand back 128 jnts (4050') of 2-3/8" tbg. Lay down remainder.
13	RU WL. PU 2-1' 3-1/8" perf guns with 3 spf, 0.5" diam, 120 phasing. Shoot 1' of squeeze holes at 4430' and 4020'. RD WL.
14	PU 4-1/2" CICR and RIH on 2-3/8" tbg. Set at 4050'.
15	Establish circulation through squeeze perfs. Pump 5 bbls fresh water w/ biocide followed by 20 bbls sodium metasilicate followed by 5 bbl spacer fresh water w/ biocide.
16	Pump Sussex Suicide plug: 230 cu-ft (200 sks) "G" w/ 0.25 pps cello flake ,0.4% CD-32, 0.4% ASA-301 with CaCl2 as necessary. Mixed at 15.8 ppg, 1.15 cuft/sack. Underdispace by 3 bbls and unsting from CICR. Spot final 3 bbls on top of CICR to leave 200' on top. Volume based on 410' of 9.25" hole with 20% excess and 4-1/2" casing up to 3850'.

17 PUH to 3200' and circulate hole clean with fresh water w/biocide. POOH standing back 42 jnts and laying down the rest.

18 RU WL. Cut off 4-1/2" csg at 1220'. RDMO WL. Circulate using water and biocide to remove all gas from wellbore.

19 ND BOP and wellhead. Install a BOP on surface casing head with 4-1/2" pipe rams. Install 3000 psi ball valves on both casing head outlets. Install a choke or choke manifold on one outlet.

20 POOH and LD 4-1/2" csg. Remove the 4-1/2" pipe rams and Install 2-3/8" pipe rams.

21 RIH w/ 2-3/8" WS open ended 100' past the 4-1/2" csg stub to 1320'.

22 MIRU Cementers. Pump Fox Hills Balanced plug: Pump mud flush of 10 bbls SAPP followed by 20 bbls water ahead of 439 cu-ft (330 sx) Type III w/cello flake and CaCl2 as deemed necessary, mixed at 1.33 cf per sack, 14.8 ppg. Plug size is based on 9" hole with 40% excess covering 1320' to shoe of surface casing at 652' plus capacity of surface casing to 450'. PUH to 150' and circulate out any excess cmt. TOH and WOC per cement company recommendation.

23 RIH and tag top of plug. Plug needs to be tagged at 452' or shallower. POOH and LD 2-3/8" tbg.

24 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. RDMO workover rig.

25 Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to rscDJVendors@anadarko.com within 24 hrs of completion of the job.

26 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.

27 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.

28 Excavate hole around surface casing enough to allow welder to cut casing minimum 5’ below ground level.

29 Welder cut casing minimum 5' below ground level.

30 Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).

31 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.

32 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.

33 Back fill hole with fill. Clean location, level.

34 Set an above ground marker. Cut off 14' below new grade when established.

35 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.

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