PACHECO HEIRS GU 1 – SQUEEZE PROCEDURE

1 Squeeze Niobrara, Sussex, Fox Hills. Set packer. Run on production.
2 Well already has a gyro (in OW, 2/28/14)
3 Call Automation Removal Group at least 24 hr prior to rig move. Request they catch and remove plunger, isolate production equipment and remove any automation prior to rig MIRU.
4 MIRU slickline services. Pull bumper spring and tag bottom. RDMO slickline services.
5 Prepare location for base beam equipped rig. Install perimeter fence as needed.
6 Check and record Bradenhead pressure. If Bradenhead valve is not accessible, re-plumb so that valve is above GL.
7 MIRU, kill as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing jt, LD.
8 TOH and stand back 2-3/8" production tubing (259 joints landed at 7942'.)
9 PU scraper for 4-1/2" 11.6 ppf casing. TIH on 2-3/8" tubing to 7850'. TOH, standing back all tubing. LD scraper.
10 MIRU hydrotesters.
11 RIH 4-1/2" RBP on tubing, hydrotesting to 6000 psi. Set RBP at 7800' to isolate J-Sand perfs.
12 Pick up off bridge plug. Circulate out gas. TOH, standing back tubing.
13 MIRU WL. Run CBL/VDL/CCL from 7800' to surface to determine cement coverage. Forward the results to Evans Engineering (lisa.denke@anadarko.com and dave.gomendi@anadarko.com). There are no prior CBL's on this well, and cement jobs will be adjusted per the CBL.
14 Pressure test casing and RBP to 1000 psi for 15 minutes. Dump 2 sx sand on RBP (note: dump sand, not cement).
15 PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 7050' and 6740'. Depths to be adjusted pending bond log results. RDWL.
16 PU CICR on 2 3/8" tbg. RIH and set CICR at 6780'. Break circulation w/ fresh water with biocide.
17 RU Cementers. Pump Niobrara Suicide: 110 sx (188.1 cf of slurry) 50/50 Poz "G" w/ 20% silica flour, 3% gel, 0.1% sodium metasilicate and 0.4% FL-52 mixed at 13.5 ppg and 1.71 cf/sk. Underdisplace and sting out of CICR to leave 3 bbl cmt on top of retainer. Volume based on 8-7/8" OH hole size w/ 40% excess. Caliper based on this hole, log beginning at 7000'.
18 Pull and SB tbg to 6500'. Circulate clean with water containing biocide. TOH.
19 WOC per cement company's recommendation. PU & TIH with 3-7/8” bit and 2-3/8” TBG. Drill to 6800' (past top perfs and CICR). Pressure test through drill bit to 1,000 psi for 15 minutes. If PT passes proceed to next step. If test fails contact Evans Engineering for updated procedure.
20 Drill out remaining cement plug. Pressure test squeeze holes to 1000 psi. POH with bit, stand back tubing.

Summary of work to be done: Squeeze Niobrara, squeeze Sussex, squeeze Fox Hills, run packer
TOC/NB Top: See diagram
HZ Offset Pads: Pad #3 Land; Pad #4 Land; Pad #5 Fehrn
Distance to nearest horizontal well: 85'
STIPS: Crops
Gyro Status: Gyro run 2/28/14
Noble trade well: No

21 MIRU WL. Run CBL/VDL/CCL from prior top of cement to 500' above new top of cement to determine if there is sufficient coverage over the Niobrara. Forward the results to Evans Engineering (lisa.denke@anadarko.com and dave.gomendi@anadarko.com).
22 PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 4980' and 4370'. RDWL.
23 PU CICR on 2 3/8" tbg. RIH and set CICR at 4430'.
24 RU Cementers. Pump 5 bbl water w/ biocide, 20 bbl Sodium Metasilicate, and another 5 bbl biocide water spacer immediately preceding cement.
25 Pump Sussex Suicide: 380 sx (437 cuft of slurry) class "G", w/0.25 pps cello flake, 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cuft/sk to place suicide squeeze between perfs. Underdisplace and sting out of CICR to pump the final 3 bbls cement on top of retainer. Cement volume based on 410' in 10-1/2" annulus with 20% excess (Caliper log for this hole covers this zone).
26 Pull and SB tubing to 4300'. Circulate water containing biocide to clear tubing. POH standing back tbg.
27 WOC per cement company's recommendation. PU & TIH with 3-7/8" bit and 2-3/8" TBG. Drill to 4700' (past top perfs and CICR). Pressure test through drill bit to 1,000 psi for 15 minutes. If PT passes proceed to next step. If test fails contact Evans Engineering for updated procedure.
28 Drill out remaining cement plug. Pressure test squeezes to 1000 psi. POH with bit, stand back tubing.
29 MIRU WL. Run CBL/VDL/CCL from 6700' to 500' above the new TOC to determine if there is sufficient coverage over the Sussex. Forward the results to Evans Engineering (lisa.denke@anadarko.com and dave.gomendi@anadarko.com).
30 RUWL & PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 1500' and 780'. Adjust perf depths as necessary per CBL. RD WL.
31 RIH w/CICR on 2 3/8" tbg. Set at 840' ±10' per CCL.
32 RU cementers. Pump 10 bbl SAPP (Sodium Acid Pyrophosphate) followed by 20 bbl (min) fresh water spacer immediately preceding cement.
33 Pump Fox Hills Suicide job: 430 sx (571.9 cuft.) Type III cement w/ 0.25 pps cello flake and CaCl2 as deemed necessary mixed at 14.8 ppg and 1.33 cf/sk (based on 720' in 10-1/2'' annulus with 40% excess). Sting out of CICR early and spot the final 3 bbls of cmt on top of retainer.
34 Pull and SB tubing to 500'. Circulate water containing biocide to clear tubing. POH standing back tubing.
35 WOC per cement company's recommendation. PU & TIH with 3-7/8" bit and 2-3/8" TBG. Drill to 900' (past top perfs and CICR). Pressure test through drill bit to 1,000 psi for 15 minutes. If PT passes proceed to next step. If test fails contact Evans Engineering for updated procedure.
36 Drill out remaining cement plug. Pressure test squeezes to 1000 psi.

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Noble trade well: No

37 Cleanout to RBP at 7800'. TOH and SB tubing.

38 MIRU WL. Run CBL/VDL/CCL from 2000' to surface to determine if there is sufficient coverage over the Fox Hills. Forward the results to Evans Engineering (lisa.denke@anadarko.com and dave.gomendi@anadarko.com). RDMO WL.

39 PU retrieving head for RBP. TIH w/ retrieving head on 2-3/8" tbg. Circulate out sand. Latch onto RBP, release RBP and TOH, standing back 2-3/8" tbg, LD RBP.

40 RIH open ended with 2-3/8" tubing. Clean out to PBMD at 8017'. RU rig lubricator. Broach tubing to check for cement on inside. RD rig lubricator. TOH.

41 Run packer: RIH with 2-3/8" NC, 2-3/8" XN profile nipple, ±3200' (103 jnts) of 2-3/8 tbg Arrowset AS-1X packer rated to 10,000 psi (4-1/2", 11.6#), 2-3/8" tbg to surface. Set packer at ±4700 (adjust per CCL and CBL to set packer in cemented interval above Niobrara squeeze). Land EOT approximately 1 joint above J-Sand formation top perf at 7931'.

42 Fill 2-3/8" by 4-1/2" annulus w/ biocide treated water. Pressure test annulus to 1000 psi for 15 min.

43 ND BOP and NU WH.

44 Install 2-3/8" pup joint above master valve. Using hydrotester, pressure test from below TBG head through master valve to 5,000 psi.

45 RDMO WO Rig

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