

## Rademacher Louis J GU 2: Bradenhead, Replace Wellhead, & Set Production Packer

- 1 Call foreman and/or field coordinator 24 hours before rig up to isolate any production equipment (remove plunger, wellhead automation, etc.). Prepare to move base beam rig onto location. Install fence if needed. Operations need to bleed off the bradenhead pressure before the rig gets on location.
- 2 Check and report surface casing pressure. If valve is not accessible at ground level, re-plumb so valve is at ground level.
- 3 MIRU slickline. RIH to retrieve production equipment and tag for fill (**last cleaned out to 7,400' on 10/30/05**). Note tagged depth in OpenWells. RDMO slickline.
- 4 MIRU WO rig. Kill well as necessary with water and biocide. ND wellhead. NU BOP.
- 5 Unland 2-3/8" tbg and lay down landing joint.
- 6 MIRU EMI services. EMI 2-3/8" tbg while TOO H and tally while standing back. Lay down joints that have greater than 35% penetration or wall loss. Replace all joints that fail EMI testing. Document joint numbers and depth of bad tubing and create a Production Equipment Failure report in OpenWells. RDMO EMI services.
- 7 PU 10,000 psi rated from above and below RBP (4.5", 10.5#/11.6#, K-55), retrieving head, and 2-3/8" tubing. Set RBP at +/- 6,900' (collars located at 6,889' and 6,933').
- 8 Release tbg from RBP and circulate all gas out of the hole. Pumping water with biocide, pressure test RBP and production casing to 1,000 psi for 15 minutes. If pressure test passes, proceed; otherwise contact engineering.
- 9 Circulate 2 sx of sand on top of RBP and TOO H with 2-3/8" tubing.
- 10 ND BOP. Screw 4-1/2" pup joint into production casing and un-land 4-1/2" production casing. NU double entry flange. NU BOP.
- 11 PU approx. 154 joints of 1.66" 2.3# J-55 10RD IJ tubing and TIH between the 4-1/2" production casing and open hole to +/- 4,835'. Circulate with freshwater and biocide to clean up annulus while TIH.
- 12 MIRU cementing services. Pump 1 bbl freshwater spacer and cement job consisting of 20 bbls of sodium metasilicate, 510 sx (based on 11" hole size and 10% excess) of 15.8ppg Class G cement with 1/4# per sx of cello-flake, 0.4% CD-32, 0.4% ASA-301, and yield of 1.15 cuft/sk. Attempt to cement from 4,835' to 3,865'.
- 13 Under displace cement in 1.66" 2.3# J-55 10RD IJ tubing to 3,650' using 6.7 bbls of freshwater (estimated TOC at +/- 3,768'). RDMO cementing services
- 14 TOO H and stand back 1.66" 2.3# J-55 10RD IJ tubing. ND BOP and double entry flange. Use 4-1/2" pup joint to re-land 4-1/2" casing. NU BOP. Shut well in and WOC.
- 15 MIRU wireline services. RIH with CCL-GR-CBL-VDL. Run from +/- 4,890' to top of cement (estimated +/- 3,768'). If the cement is not above 3,865' contact engineer. RDMO wireline services.
- 16 ND BOP. Screw 4-1/2" pup joint into production casing and un-land 4-1/2" production casing. NU double entry flange. NU BOP.
- 17 PU approx. 31 joints of 1.66" 2.3# J-55 10RD IJ tubing and TIH between the 4-1/2" production casing and open hole to +/- 970'. Circulate with freshwater and biocide to clean up annulus while TIH.
- 18 MIRU cementing services. Pump 1 bbl freshwater spacer and cement job consisting of 230 sx (based on 11" hole size and 10% excess) of 14 ppg Type III cement with 1/4# per sx of cello-flake and yield of 1.53 cuft/sk. Attempt to cement from 970' to surface.
- 19 Under displace cement in 1.66" 2.3# J-55 10RD IJ tubing to 150' using 0.2 bbls of freshwater (estimated TOC at +/- 215'). RDMO cementing services

Well needs bradenhead cement job, Replace Wellhead, and Set Production Packer

Well is to be worked on in preparation for HZ pads upcoming during 2014 crop season

TOC: 6,570'; NB top: 6,900'

Soonest Frac: 4/1/14 (2014 crop season well)

NPV: \$220M; squeeze holes at +/- 7,023'

Prep & Produce

## Rademacher Louis J GU 2: Bradenhead, Replace Wellhead, & Set Production Packer

- 20 TOO H and LD 1.66" 2.3# J-55 10RD IJ tubing. ND BOP and double entry flange. Use 4-1/2" pup joint to re-land 4-1/2" casing. NU BOP. Shut well in and WOC.
- 21 MIRU wireline services. RIH with CCL-GR-CBL-VDL. Run from 1,050' to surface (estimated TOC at 215'). If the cement is not above 320' contact engineer. RDMO wireline services.
- 22 PU and TIH with retrieving head and 2-3/8" tubing. Circulate sand off of RBP. Latch onto and release RBP at +/- 6,900'. TOO H standing back all 2-3/8" tubing and LD RBP.
- 23 ND BOP.
- 24 ND existing tubing head off of 4.5" casing and install new WHI 5,000 psi flanged tubing head complete with 5,000 psi rated casing valves.
- 25 NU BOP.
- 26 PU 2-3/8" NC, 2-3/8" XN nipple (be sure nipple is correctly input into OpenWells), 17 joints of 2-3/8" 4.7# J-55 tbg, Arrowset AS-1X packer rated to 10,000 psi, and 2-3/8" 4.7# J-55 tbg to surface. Set packer at +/- 6,650'. Land EOT at +/- 7,180' (1 joint above top Codell perms).
- 27 Load 2-3/8" x 4-1/2" annulus with biocide treated water and pressure test to 1,000 psi for 15 minutes to be sure packer is set properly.
- 28 RU rig lubricator. Broach tubing to seating nipple. RD rig lubricator. ND BOP.
- 29 Install 7-1/16" x 5,000 psi tubing head adaptor with new 5,000 psi master valve with threaded 2-3/8" connection. Make sure all wellhead valves are rated to 5,000 psi.
- 30 Install 2-3/8" pup joint above the master valve. Pressure test the tubing head from below the tubing head through the master valve to 5,000 psi using hydrotester.
- 31 RDMO WO rig. Return well to production team.
- 32 END OF SAFETY PREP STEPS. BELOW ARE STEPS FOR UN-PREPPING THE WELL
- 33 When notification is sent to un-prep the well, MIRU WO rig. Kill well as necessary with water and biocide. ND wellhead. NU BOP.
- 34 Unland 2-3/8" tbg and lay down landing joint.
- 35 Release Arrowset AS-1X packer and TOO H standing back all 2-3/8" tubing and LD packer. Return packer to shop it was purchased from and have the packer redressed.
- 36 If sand fill tagged above 7,225' on initial safety prep then reverse circulate to cleanout to +/- 7,400'. **\*\*DON'T CLEANOUT DEEPER THAN 7,400' SINCE THERE IS NOT CLEARANCE TO COMMINGLE THE J SAND\*\***. Otherwise proceed to next step.
- 37 PU 2-3/8" NC, 2-3/8" XN nipple (be sure nipple is correctly input into OpenWells), and 2-3/8" 4.7# J-55 tbg to surface. Land EOT at +/- 7,180' (1 joint above top Codell perms).
- 38 RU rig lubricator. Broach tubing to XN seating nipple. RD rig lubricator. ND BOP. NU WH.
- 39 Install 7-1/16" x 5,000 psi tubing head adaptor and 5,000 psi master valve with threaded 2-3/8" connection. Make sure all wellhead valves are rated to 5,000 psi.
- 40 Install 2-3/8" pup joint above the master valve. Pressure test the tubing head from below the tubing head through the master valve to 5,000 psi using hydrotester. If wellhead does not pressure test, replace wellhead/ wellhead valves as necessary with 5,000 psi rated equipment.
- 41 NU WH. RDMO WO rig. Return well to production team.

Well needs bradenhead cement job, Replace Wellhead, and Set Production Packer  
Well is to be worked on in preparation for HZ pads upcoming during 2014 crop season  
TOC: 6,570'; NB top: 6,900'  
Soonest Frac: 4/1/14 (2014 crop season well)  
NPV: \$220M; squeeze holes at +/- 7,023'  
Prep & Produce