

## Miller Elton C #2 remedial cement and production packer

- 1 Well has GYRO: 11/23/11
- 2 Call Foreman or Field Coordinator before rig up to isolate production equipment. Catch and remove plunger. Enter plunger into PLUNGER DATABASE. Call 24 hours prior to the rig moving onto location so that any automation equipment can be removed prior to the rig showing up. Install fence if needed. NOTE: Report surface casing pressure to engineer. If surface casing is not accessible at ground level, re-pipe so valve is at ground level.
- 3 Level location for base beam rig.
- 4 MIRU slickline company. RIH to retrieve production equipment. RIH and tag for fill. Note tagged depth in OpenWells. The most recent tagged depth was 7,800' KB (top of JSAND perfs) on 10/16/2001. RDMO slickline company
- 5 MIRU Workover (WO) Rig. Control well with biocide treated water. Nipple Down (ND) Wellhead (WH) and Nipple Up (NU) Blow Out Preventer Equipment (BOP). Unseat landing joint and lay down (LD).
- 6 MIRU EMI services. EMI 2-3/8" TBG on TOOH and tally while standing back. Lay down joints with wall loss or penetrations > 35%. Replace bad joints as necessary. Note joint number and depth of bad tubing and create Production Equipment Failure Report in OpenWells. RDMO EMI services.
- 7 MIRU E-Line service Company
- 8 PU and RIH with Gauge ring and junk basket combo for (4-1/2", 10.5/11.6 #, K-55) CSG. Run Gauge ring to 7,250', POOH.
- 9 RIH w/ 10,000 psi rated from above and below CIBP (4-1/2", 10.5/11.6 #, K-55) and set CIBP at 7,170' (Tie into Schlumberger CBL w/ Perforating Summary dated 10-MAY-1995). Pressure test CIBP and casing to 1,000 psi for 15 min. Note pass/fail in OpenWells. If pressure test fails, contact engineering for possible change in procedure.
- 10 PU & RIH with 3-1/8" guns and shoot squeeze holes at 6,980', then 6,550' (Tie into Schlumberger CBL w/ Perforating Summary dated 10-MAY-1995) (NOTE: LOG ONLY GOES TO 6,800'), using 3 SPF, 0.38" EHD, 33.65" penetration, 1' net, 6 total shots, 3 per perf depth. POOH with perf guns.
- 11 PU & RIH with CCL & CICR and set at 6,890'. RDMO E-Line service company. NOTE: CICR can be set on 2-3/8" TBG if desired.
- 12 PU & RIH with CICR stinger on 2-3/8" TBG and sting into CICR at 6,890'. Circulate with 140 bbl biocide treated water
- 13 MIRU Cementing Services
- 14 Establish injection rate with fresh water, keeping casing valve open for circulation. Once injection rate has been established, mix and pump 140 sks cement as follows: 42.5 bbl of cement (50/50 POZ "G" w/ 20% silica flour, 3% gel, 0.1% sodim metasilicate and 0.4% FL-52, Mixed at 13.5 ppf and 1.71 (yield) cuft/sk), displace with 26 bbl (leaves approximately 1 bbl cement in tbg to be dumped on CICR while stinging out). Volumes calculated using 430' between 10" hole and 4-1/2" casing + 20% excess, with perfs @ 6,980' & 6,550' and CICR @ 6,890'
- 15 Sting out of CICR and dump remaining cement on CICR.
- 16 TOOH to have EOT at 5,500' (1,000' above top squeeze perf holes). Reverse circulate down csg an up tbg using biocide treated water, 2x tubing capacity and have clean returns (approximately 42 bbl if EOT is at 5,500').
- 17 WOC minimum 36 hours; TOOH with tbg, standing back. (DO NOT PRESSURE TEST UNTIL CBL IS RUN)
- 18 PU & TIH with 3-7/8" bit (rock, blade, etc.) and 2-3/8" TBG. Drill out cement to CICR at 6,890'.

Well needs Remedial Cement, 5,000 psi rated wellhead, and production packer

Well is to be worked on in preparation for the upcoming APC EAGLE STIPS HZ (NOV. 15).

Gyro ran: 11/23/11

TOC: 7030'; NB top: 7120' NOTE: NO NB PERFS IN THIS WELL

ADDITIONAL CEMENT FROM 3900' – 4760' SQUEEZED ACROSS SUSSEX

Shortest Distance: 1447'

NPV: 143M

Production Packer

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- 19 TOO H with 2-3/8" tbg and 3-7/8" bit, SB TBG and BIT
- 20 MIRU E-Line service company.
- 21 PU and RIH w/ CCL-CBL-VDL tools and log from CICR at 6,890' to surface. NOTE: TOC MUST BE ABOVE 6,720' (400' ABOVE TOP OF NIOBRARA FORMATION AT 7,120'). IF INSUFFICIENT CEMENT OR CEMENT IS NOT FOUND above 6,720', CONTACT EVANS FOR NEW PROCEDURE.
- 22 POOH, RDMO E-Line service company.
- 23 ND BOP, ND existing tbg head off of 4-1/2" csg and install new WHI 5,000 psi flanged tubing head complete w/ 5,000 psi rated casing valves. Install 7-1/16", 5,000 psi tubing head adaptor w/ new 5,000 psi master valve w/ 2-3/8" 8rd threaded connection.
- 24 Pressure test the top squeeze perf hole, casing and tubing head to 1,000 PSI, for 15 min. If pressure test fails, contact Evans office for possible change in procedure
- 25 ND tubing head adaptor and master valve, NU BOP
- 26 PU & TIH with 3-7/8" bit (rock, blade, etc.) and 2-3/8" TBG. Drill out CICR and cement to below squeeze perf holes at 6,980'. Pressure test perf holes to 1,000 psi for 15 min.
- 27 Drill out CIBP at 7,170' and push to bottom if necessary, PBMD 7,935'.
- 28 TOO H w/ 2-3/8" tbg and 3-7/8" bit, stand back tbg, LD bit
- 29 Hydrotest tbg to 6,000 psi while TIH. PU 2-3/8" NC, 2-3/8" XN profile nipple, 2-3/8 tbg, Arrowset AS-1X packer rated to 10,000 psi (4-1/2", 10.5/11.6 #, K-55) and 2-3/8" tbg.
- 30 Land EOT at 7,319' (30' above top CD perf), set Arrowset Packer minimum 100' below TOC from log in step 21 (estimated TOC will be at 6,550') (Make sure OpenWells correctly reflects configuration)
- 31 Fill 2-3/8" to 4-1/2" annulus w/ biocide treated water. Pressure test to 1,000 psi for 15 min.
- 32 ND BOP, NU WH, make sure all valves on TBG head are rated to 5,000 psi (2 csg valves, and master valve).
- 33 Install 2-3/8" pup joint above master valve. Pressure test TBG head from below TBG head through master valve w/ hydrotester to 5,000 psi.
- 34 RU rig lubricator. Broach tbg to seating nipple. RD rig lubricator.
- 35 RDMO WO Rig
- 36 Return well to production team
- 37 END OF SAFETY PREP STEPS, STEPS BELOW ARE FOR UN-PREPPING THE WELL.
- 38 When notification sent to un-prep well, MIRU slickline service company. RIH and tag for fill. Note tagged depth in OpenWells.
- 39 MIRU WO Rig.
- 40 ND WH. NU BOP.
- 41 Unset Arrowset AS-1X packer and TOO H w/ 2-3/8" tbg, Arrowset packer, XN profile nipple, and NC. Stand back tbg., LD packer. Return Packer to shop it was purchased from and have it redressed.

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- 42 If fill is encountered above 7,852' (bottom JSAND perf), PU and TIH w/ tubing string consisting of 2-3/8" hydrostatic bailer assembly and 2-3/8" tbg. Bail sand (about 94.5' - 3 joints- per trip) to the PBMD 7,935' KB. TOOH, SB tbg, LD bailer assembly.
- 43 PU and TIH w/ 2-3/8" NC, 2-3/8" XN profile nipple, 2-3/8" tbg. (ensure OpenWells correctly reflects tbg. configuration). Land EOT at +/- 7,778' (one joint above top JSAND Perf)
- 44 RU rig lubricator. Broach tbg to seating nipple. RD rig lubricator.
- 45 ND BOP. NU wellhead.
- 46 Install 2-3/8" pup joint above master valve. Pressure test TBG head from below TBG head through master valve w/ hydrotester to 5,000 psi.
- 47 RDMOSU. Return well to production team.

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