

## GORDON TURKEY FARMS D 1 – REMEDIAL CEMENT PROCEDURE

- 1 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. Ensure fence is installed prior to MIRU. NOTE: Report surface casing pressure to engineer & document in OpenWells. If surface casing is not accessible at ground level, re-pipe so valve is at ground level.
- 2 Level location for base beam rig.
- 3 MIRU slickline. RIH to retrieve production equipment. RIH and tag for fill. Note tagged depth in OpenWells. The most recent tagged depth was 7998' KB on 6/7/2011 (Bottom JS perf: 8112'). RDMO slickline.
- 4 MIRU WO Rig, flat tank, & rig pump. Relieve pressure from well & control with biocide treated fresh water. ND WH and NU BOP. Unseat landing joint and LD.
- 5 MI & spot at least 10 jts 2-3/8", 4.7#, J-55 EUE TBG for cleanout/replacement.
- 6 Drop down and spot sand plug across JSand perforations from tagged depth up to 7960'.
- 7 MIRU EMI services. (last EMI date: unknown.) EMI 2-3/8" TBG on POOH 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.
- 8 PU casing scraper for 5-1/2", 15.5/17# casing and TIH to +/- 7960' KB. Circulate all debris from wellbore with clean water. POOH and stand back tubing and LD scraper.
- 9 PU & RIH w/CIBP & Packer for 5-1/2", 15.5/17# casing on 2-3/8" TBG and set CIBP at +/- 7920' KB. Circulate out any gas and load hole. Set packer at +/- 7820'. Pressure test CIBP/packer down tubing to 1000 psi for 15 minutes. If pressure test passes, release packer and P&SB tubing. LD packer.
- 10 MIRU WL. Dump 2 sks (50 lb sks) of cement to cover CIBP over J-sand perfs.
- 11 RIH on wireline w/ 10,000 rated from above and below CIBP for 5-1/2", 15.5/17# casing and set CIBP at 7310' (36' above Niobrara perfs). Pressure test CIBP to 1000 psi for 15 minutes.
- 12 If pressure test passes, POOH and RDMO WL.
- 13 PU and TIH with TBG to just above CIBP.
- 14 MIRU Cementing services. Mix and pump balanced plug cement job as follows: Freshwater spacer, 25 sxs 15.8 ppg neat Class G cement. (NOTE: Design is for 200' of cement coverage in 5-1/2", 15.5/17# CSG, yield of 1.15 cf/sk.)
- 15 TOOH & SB TBG.
- 16 RDMO cementing services. Allow cement at least 12 hours to set.
- 17 MIRU WL. RIH with CCL and perf gun. Perf lower squeeze holes as per the following: 5260' – 5261', 3 spf, 0.38" EHD, 33.65" penetration, 120° phasing, 3 shots. RDMO WL.
- 18 PU and TIH with packer. Set packer at 5000'.
- 19 Establish injection rate into perfs at a pressure not to exceed 2500 psi. Note rate and pressure reached, and fluid volume pumped during injection test. TOOH and LD packer. If established injection rate is adequate, proceed. If rate is inadequate, consult with Evans Engineering on suicide cement design.
- 20 TOOH while standing back tbg and LD packer.
- 21 MIRU hydrotesters. While hydrotesting TBG to 5000 psi, PU and TIH with CICR on tubing. Set CICR at 4860'. RDMO hydrotesters.
- 22 Prepare 425 sks Class G cement containing 20% silica flour, 3% gel, 0.4% fluid loss add, and 0.1% sodium metasilicate and 0.4% ASA-301, mixed at 15.8 ppg and 1.15 cu ft/sk. Pump 20 bbls sodium metasilicate followed by cement into squeeze holes at 5260'. Displace cement to CICR. Sting out of CICR and reverse out. Design is for coverage from 5260' to 4380', plus 10% excess. Calculation assumes 10.5" hole from caliper log.
- 23 TOOH and stand back tbg. LD stinger. WOC overnight.
- 24 MIRU WL. PU and RIH with CCL/CBL/GR. Correlate depth to CBL/GR. Run CBL from 4860' to surface. Deliver logs to Matt Agee in Evans for review.
- 25 Once cleared with Evans engineering, proceed with next step.

- 26 PU & RIH w/NC, XN Nipple, & 2-3/8" TBG and land TBG at +/- 4830', which is approximately 1 joint above CICR.
- 27 ND BOP, NU WH.
- 28 RDMO WO Rig.
- 29 Secure WH. Make sure safety prep sign is hung on WH.
- 30 Contact Production Engineering for follow up procedure after HZ fracs are completed.