

TUTTLE INVEST CO UNIT 1 Bradenhead, Replace WH & Production Packer

- 1 Well has a Gyro survey – 7/12/2013
- 2 Level location for base beam equipped rig.
- 3 Call Foreman or Field Coordinator before rig up to catch plunger, isolate production equipment, and ask if replacement parts/equipment are requested. Operations need to hook up the Bradenhead pressure and bleed off the pressure before the rig gets on location.
- 4 Check and report surface casing pressure. If surface casing is not accessible at ground level, re-plumb so valve is at ground level.
- 5 Spot a minimum of **145** jts of 2-3/8", 4.7#, J-55, EUE tbg to set RBP and 160 jts 1-1/4", 2-33#/ft, J-55, 10rd IJ for annular cement job.
- 6 MIRU Slickline. RIH to retrieve production equipment. RIH and tag for fill. Note tagged depth in OpenWells. (Last cleanout depth was **8100'** on **12/20/2007**) RDMO Slickline.
- 7 MIRU WO rig. Kill well, as necessary, with freshwater and biocide. ND wellhead. NU BOP.
- 8 PUH with tubing string to break any possible sand bridges, unseat landing joint and lay down. Do not exceed a tensile stress of **57,384** lbs.
- 9 MIRU "EMI". TOOH with 2-3/8" tubing. EMI tubing while TOOH. Lay down joints with wall loss or penetrations >35%. Replace joints as necessary. **Keep yellow & blue band tubing. Note joint number and depth of tubing leak(s) on PRODUCTION EQUIPMENT FAILURE REPORT IN OPEN WELLS.
- 10 TIH with 2-3/8" tbg and 5.5" RBP (5.5" csg 17# N-80). Set RBP @ +/-**4570'**. Pressure test the RBP and casing to **1000** psi. Circulate 2 sx of sand on top of RBP and trip out of the hole.
- 11 Bleed off pressure, open pipe rams, stack out tbg on RBP. Release pup joint so that top of tbg is below BOP.
- 12 ND BOP.
- 13 ND existing tbg head off of 5-1/2" csg and install new WHI 5000 psi flanged tubing head complete w/ 5000 psi rated casing valves. Install 7-1/16", 5000 psi tbg head adaptor w/ new 5000 psi master valve w/ 2-3/8" 8rd threaded connection.
- 14 Pressure test casing and tubing head to **1000** psi using hydrotester for 15 min
- 15 If pressure test unsuccessful, call Evans office for alternate procedures.
- 16 ND wellhead. Un-land 4 1/2" casing string. NU double entry flange.
- 17 PU 1-1/4" 2.3#/ft J-55 10rd IJ tubing, and TIH outside 4-1/2" casing and open hole to **3800'**. Circulate with freshwater and biocide to clean up annulus while TIH.
- 18 Rig up cement truck and pump **375** Bbls of drilling mud followed with freshwater spacer

Well needs 5,000 psi rated wellhead, production packer and bradenhead pressure remediated

Well is to be worked on in preparation for the upcoming APC EISENACH 8-8HZ pad

Gyro ran: 7/12/2013

TOC: 3,840'; NB top: 7,044'

Shortest Distance: 354'

Frac Date: 10/14/2013

NPV: \$140M

No known casing issues.

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and cement job consisting of **20** Bbls Sodium Metasilicate and then **1550** sx 15.8 ppg neat Class G cement with ¼ #/sx cello-flake. The cement to be retarded for 125 degree Fahrenheit for six hour pump time. (Attempt to cement from **3810** to **722**).

- 19 TOH with **51** stands and stand back in derrick to end of tubing at **+600'** and reverse circulate 2 times the tubing volume or until the water cleans up
- 20 Trip out of the hole with tubing and shut in overnight.
- 21 Rig down cementing company.
- 22 MIRU wireline services.
- 23 PU and RIH with CCL-GR-CBL-VDL. Run from **4300'** to **722'**, or the top of cement. RDMO wireline. If the cement is not above **722'** then contact Engineer.
- 24 ND TBG head adapter and master valve. NU BOP
- 25 PU and TIH with 2-3/8" tbg and retrieving head. Circulate sand off RBP at @ **+/-4570'**. TOOH standing back tubing.
- 26 Hydrotest tubing to 6,000psi while TIH. PU 2-3/8" NC, 2-3/8" XN profile nipple (make sure nipple is properly input into Open Wells), **102** jnts 2-3/8 tbg, Arrowset AS-1X packer rated to 10,000 psi, 2-3/8" tbg and TIH. Set packer at **4,570'** (Collar located at **4,558'** and **4,600'**). EOT should be at @ **7,744'**. (1 joint above the top J-sand perf)
- 27 Fill 2-3/8" to 5-1/2" annulus w/ biocide treated water. Pressure test to 1000 psi for 15 min.
- 28 ND BOP, NU WH. (Make sure all valves on TBG head are rated to 5,000 psi.)
- 29 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.
- 30 RU rig lubricator. Broach tbg to seating nipple. RD rig lubricator.
- 31 RDMO WO Rig
- 32 Return well to production team
- 33 END OF SAFETY PREP STEPS, STEPS BELOW ARE FOR UN-PREPPING THE WELL.
- 34 When notification sent to un-prep well, MIRU slickline service company. RIH and tag for fill. Note tagged depth in OpenWells.
- 35 MIRU WO Rig.
- 36 ND WH. NU BOP.
- 37 Unset Arrowset AS-1X packer and TOOH 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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- 38 If slickline tag shows fill across the perfs, PU and TIH 2-3/8" TBG and cleanout out to 8,146' (PBTD). Use nitrogen if/when necessary to assist with the J-sand cleanout.
 - 39 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 tubing w/ EOT at +/- 7,744' (one joint above the top J-sand perf)
 - 40 ND BOP. NU WH.
 - 41 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.
 - 42 RU rig lubricator. Broach tbg to seating nipple. RD rig lubricator.
 - 43 RDMOSU. Return well to production team.
 - 44 RDMO WO rig.
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