

Report on Deepening & Acid Job
Tilley #5
Section 8-17S-24W
Ness County, Kansas

Well Data: 5 1/2" casing set at 4442, Current TD 4461
2 7/8" Tubing; 2 1/2 x 2 x 14 Insert Pump
Completion Date: 4/17/95

(* NOTE: Top full joint of tubing is crimped and needs replaced. Could barely get pump through it.)

8/20/99 Move in Leon's Drilling Service rig, set up.

08/21/99 Pull rods & tubing

08/23/99 Go in. Found 175 feet fluid in hole.
Drilled 3 feet: 4455-58: Dol., gray tan crystalline with some scat ppt-vug porosity, show oil, live spotty stain, some crystalline porosity; iron sulfide.
Drilled 1 more foot: 4458-59: Increase cream sucrosic dolomite, soft, no live stain and Dolomite as above, iron sulfide. No increase in fluid level 2 hours after making last foot.
Drilled 2 more feet: 4459-61: 50% cream soft sucrosic Dolomite, no live stain and 50% crystalline Dolomite as above, gray tan some scat. Ppt-vug porosity and some scat dark live stain. Total footage drilled: 6 feet.

08/24/99 Found 150 feet fluid in hole - mostly oil. Treat with acid as follows: At 11:55 pump in 30 bbls. Miss. water to fill void of previous acid jobs. Then pumped in 750 gals., or 18 bbls of 20% FE acid. Casing capacity equals 109 bbls. Hole loaded at 137 bbls. fluid in. Acid on bottom at approximately 139 bbls. in. Caught pressure at 138 bbls. in. The following are the pressures and rates during treatment:

| | | | | |
|------------|-----------------|------|-----------------|-------------------|
| | At 138 bbls in: | rate | .75 BPM @ 100# | |
| | At 139 bbls in: | rate | .75 BPM @ 250# | Acid on bottom |
| | At 141 bbls in: | rate | .75 BPM @ 475# | |
| | At 142 bbls in: | rate | 1.5 BPM @ 750# | |
| | At 146 bbls in: | rate | .85 BPM @ 1200# | |
| | At 147 bbls in: | rate | .35 BPM @ 1175# | |
| | At 150 bbls in: | rate | .3 BPM @ 1210# | |
| | At 153 bbls in: | rate | .3 BPM @ 1100# | Pressure drop |
| Inc rate: | At 155 bbls in: | rate | .7 BPM @ 1240# | |
| Slow rate: | At 156 bbls in: | rate | .4 BPM @ 1200# | |
| | At 157 bbls in: | rate | .7 BPM @ 1175# | Acid in formation |

Pump 2 bbls. overflush. Total load 159 bbls. ISIP equals 1150#. 500# pressure at 15 minutes, 150# at 60 minutes, 50# at 90 minutes. Acid soaked for 1 hour, 45 minutes. Start swabbing at 2:15 p.m.

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8/24/99
 (CON'T) 1st hour: Swabbed 95.03 bbls., water - swabbed down to 2100 feet
 2nd hour: Swabbed 30.84 bbls., black iron sulfide water - swabbed down to 2750 feet (15 bbls. of additional fluid came into hole during this hour).
 3rd hour: Swabbed 33.36 bbls. black iron sulfide water with trace of oil - swabbed down to 3650 feet (12 bbls. of additional fluid came into hole during this hour).
 Recovered total of 159.33 bbls. or all of load.

8/25/99 Found 1800 feet of fluid in hole with 200 feet of oil. This equates to 11% oil. Decided to put back on pump. Ran tubing string as follows from top to bottom:

| | |
|-----------------------------|-------------------------------------|
| To KB | 2.50 |
| Tubing Stretch | .93 |
| Tubing Sub | 20.00 |
| 144 jts. 2 7/8" Tubing | 4413.34 |
| Seating Nipple | 1.10 |
| Perforated Sub & Mud Anchor | <u>20.15</u> |
| Tubing Set at | 4458.02 KB (4452 KB Drill Meas.) |

TD equals 4461. Tubing set 9 feet off bottom or at 4452 KB.

Ran a new 2 1/2 x 2 x 14 insert pump, 175 3/4" rods, 3 subs and a 16 foot polished rod. Back on pump at 5:00 p.m.

As of 9/7/99, this well is pumped down, lightly pounding. The following are barrel tests for this well before and after this deepening and acid job:

| | <u>BFPD</u> | <u>OIL CUT</u> | <u>BOPD</u> |
|----------|-------------|----------------|-------------|
| 6/15/99: | 6.65 | 54.89% | 3.65 |
| 9/07/99: | 36.0 | 20.0% | 7.20 |

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WICHITA, KANSAS 67202

October 3, 1997

**Report on Acid Job
Tilley #5
Section 8-17S-24W
Ness County, Kansas**

Well Data: Completed 4/17/95
Open Hole Completion
5 1/2" set at 4442', RTD 4455'

9/11/97 Move in, break well down, pulled rods & pump. Scale on pump, parafin on rods.
Pulled tubing.

9/12/97 Run in with sand pump. Recovered very little fill. Run in with Baker Model A
tension packer and tubing. Treated with 1,000 gallons (24 bbls), Stimsol 15%
acid as follows: Spotted 2 1/2 bbls acid on bottom at 12:18p.m. Set packer at
4355' - 87ft. above open hole. Started rest of acid at 12:38p.m. Pumped all
acid (24 bbls) and 26 bbls flush at 0# pressure and 2.25 to 2.5 BPM. Caught
pressure at 50 bbls in; initial pressure 100#, rate 1.25 BPM. Pumped an
additional 11.7 bbls flush after catching pressure, to put acid out into tighter,
untreated rock. Total load = 61.7 bbls. Pressure increased to 750# maximum
with .25 BPM rate; Job done at 1:16p.m. Instantaneous shut in pressure was 720#;
5 minute pressure = 450#, 15 minutes pressure = 300#.
Had little pressure left when took off valve at approximately 45 minutes.

Run in with swab at 3:45p.m. Hit fluid 250 ft. from surface. First hour swabbed
30 BF (26 bbls water + 4 bbls sli. oil cut acid water). Last pull was off bottom.
Swabbing 1 1/2 bbl. oil cut acid water every 10-15 minutes or approximately
6 BFPH with 15 to 20% oil cut. Started to rain. Amount of load back = 50 bbls.
Shut down.

9/13/97 Run in with swab, had 450 ft. of fill, est. 65% oil. Continue to swab 1 1/2 bbls oil cut
water every 15 minutes or 6 BFPH, last oil cut was 12.5%.
Amount of load back 58 1/2 bbls.
Released and pulled packer and tubing. Run tubing string as follows:

| | |
|-------------------------|--|
| Mud Anchor & Perf. Sub. | 20.15 |
| Seating Nipple | 1.10 |
| 144 Jts 2 7/8" Tubing | 4413.34 |
| 1 Tubing Sub. | 10.00 |
| Tubing Stretch | .93 |
| To KB | <u>3.00</u> |
| Tubing Set at | 4448.52 KB Measured from Tally (4442.0 KB Drilling Measurement) |

(NOTE: This crew was having a hard time getting a tally that they felt confident with; so rig tally is questionable.)

RTD = 4455'. Touched bottom, pulled up 13 ft. Set tubing at 4442' KB drilling measurement.
Shut down. (Note: Replaced 2 pitted jts. tubing.)

9/15/97 Ran 2 ½ x 1 ½ x 12 insert pump, one 2' rod sub., 175 ¾" rods, one 10' rod sub, one 4' rod sub., and a 16' x 1.25" polish rod (Note: Replaced 5 pitted rods).
 Back on pump this A.M.

| | <u>BARREL TESTS</u> | <u>OIL CUT</u> | <u>TOTAL FLUID</u> | <u>LEASE OIL IN STOCK TANK</u> |
|------------------|----------------------|----------------|--------------------|--------------------------------|
| Before Acid Job: | 4 BO & 7 BWPD | 36.4% | 11 BBLS | 13 BO |
| 9/17/97 | 8.75 BO & 8.35 BWPD | 51% | 17.1 BBLS | 19.3 BO |
| 9/18/97 | 7.35 BO & 9.70 BWPD | 43% | 17.05 BBLS | 17.25 BO |
| 9/19/97 | 6.84 BO & 10.26 BWPD | 40% | 17.1 BBLS | 14.50 BO |
| 9/21/97 | 3.15 BO & 5.85 BWPD | 35% | 9 BBLS | 13.85 BO |
| 9/22/97 | 3.15 BO & 5.85 BWPD | 35% | 9 BBLS | 13.85 BO |
| 9/25/97 | 4.51 BO & 6.49 BWPD | 41% | 11 BBLS | 13.85 BO |

(NOTE: Barrel tests on low fluid well will vary to some extent.)

Unfortunately, we did not help the well with this acid job. The well is now back to where it was before the acid job. Although the #5 Tilley well is offset in 2 directions by good Mississippi dolomite wells, apparently the dolomite here is tighter. We were not able to open this well up to the better reservoir close by.

Larry P. Friend
 Project Manager