

## FRACTURE TREATMENT PROCEDURE

- Notify NMOCD of planned work.
  - Move in C114 pumping unit from Devonian State #2. Run in 54" SL.
  - Use 2% KCl water for all water placed in wellbore
  - Install 2"(fluid) and 3"(gas) SDR-11 flowlines to battery.
  - Dig working pit w/ bank for circulating w/ air unit.
14. MIRU PU. Kill tbg and csg w/ 2% KCL water as necessary.
  15. ND WH. NU BOP. POH and LD 10 jts 2 3/8" tbg.
  16. RU WL w/ full lubricator. RIH w/ 3 1/8" select fire csg gun. Correlate to new logs. Perf Seven Rivers w/ 1 jspf (0.38") as per Reservoir Department recommendation (est. 35 holes f/ 3350' - 3570'). POH.
  17. RIH and dump bail 2 sx cmt on CIBP (10' cmt / sack. Volume may change depending on perforated interval). RD WL.
  18. RU hydrotesters. RIH w/ 5 1/2" Weatherford Arrowset 1-X Frac PKR w/ T-2 on-off tool, double flapper valve and flow tube and 2 7/8" SN on 2 7/8" WS. Test tbg to 7000 psi AS (66% of new rating). Set pkr @ 3600'. Test CIBP to 3000 psi. Release pkr and PUH to +/- 3570' (btm perf).
  19. Spot 15% AS HCl acid across perfs. PUH and reverse 5 bbls. Set pkr +/- 100' above top Seven Rivers perf. Load csg w/ 2% KCl. Hold 500 psi on csg w/ pop off set at +/- 750 psi. Monitor csg throughout acid and frac job.
  20. RU acid company. Acidize Seven Rivers w/ 15% AS HCL acid (volume to be determined) at +/- 8-10 BPM. Flush w/ 2% KCL. Record rates, ISIP's and max and min pressures. RD acid company.  
**(NOTE: Max pressure = 5500 psi)**
  21. RU frac company. Frac Seven Rivers as per service company recommendation using CO<sub>2</sub>. Tag w/ IR-192 @ 0.5MC/1M# sand (74 day half-life). Record rates, max and min pressures and SIP's. **(NOTE: Max pressure = 5500 psi. All sand tagged w/ IR-192.)**
  22. Release On-Off tool. PUH to btm Yates perf. Spot double inhibited 15% AS acid across Yates interval (interval and volume to be determined). POOH w/ frac PKR flow tube on 2 7/8" WS.
  23. RU WL w/ full lubricator. Pressure csg to 500 psi w/ 2% KCl. RIH w/ 3 1/8" select fire csg gun. Correlate to new logs. Perf Yates w/ 1 jspf (0.38") as per Reservoir Dept. recommendation (est. 35 holes f/ 3025' - 3260'). POH. RD WL.
  24. RIH w/ 5 1/2" RTTS PKR and SN on 2 7/8" WS to +/- 100' above top Yates perf. Rev 5 bbls. Set PKR.
  25. Load csg w/ 2% KCl. Hold 500 psi on csg w/ pop off set at +/- 750 psi. Monitor csg throughout acid and frac job.
  26. RU acid company. Acidize Yates perfs w/ 15% AS HCl acid at +/- 8-10 BPM (volume to be determined). Record rates, max and min pressures and SIP's. RD acid company. **(NOTE: Max pressure = 5500 psi)**
  27. RU Frac Company. Fracture stimulate Yates perfs as per service company recommendation. Tag w/ SC-46 @ 0.5MC/1M# sand (84 day half-life). Record rates, max and min pressures and SIP's. **(NOTE: Max pressure = 5500 psi. All sand tagged w/SC-46.)**
  28. Flow back well to TT as per service company recommendation.
  29. RU SL. Set SL Tbg plug in 2 7/8" SN. Load and test 2 7/8" tbg w/ 2% KCL. Perf 2 7/8" tbg above SN. RD SL. RU and swab back load from annulus. RD swab. **(NOTE: Perforate w/ SL Tbg punch.)**
  30. Rlse Pkr. POOH w/ 2 7/8" WS. LD Pkr.
  31. RIH w/ 2 7/8" frac PKR retrieving head and 2 7/8" SN on 2 7/8" WS to frac PKR. RU foam air unit and clean out sand to PKR. RD foam air unit. Latch onto PKR and release. POH w/ frac PKR and 2 7/8" WS.
  32. TIH w/ 4 3/4" MT skirted bit and 2 7/8" SN on 2 7/8" WS. Tag for fill. RU foam air unit and clean out frac sand to PBSD. RD foam air unit. POH w/ bit and LD 2 7/8" WS.

33. Run 2 3/8" 4.7# J-55 EUE 8rd production tbg string as follows: (NOTE: Tally in Hole. Set TAC w/ 8K Tension or 8" stretch.)

QTY	ITEM	LENGTH	DEPTH
<b>TUBING</b>			
+/- 95	Jts 2 3/8" J-55 4.7# eue 8rd tbg	3006'	3016'
1	5 1/2" TAC	3'	3019'
6	Jts 2 3/8" J-55 4.7# eue 8rd tbg	189'	3208'
1	Jt 2 3/8" J-55 4.7# IPC eue 8rd tbg	31'	3239'
1	2 3/8" SN	1'	3240'
1	2 3/8"x 4' TBG Sub	4'	3244'
1	2302-G Desander	20'	3264'
2	2 Jts 2 3/8" BPMA	62'	3326'

34. RU Swab. Swab well until clean fluid is produced. RD Swab.

35. Run rod string as follows: (Will need to pick up all 3/4" KD Rods)

#### RODS

1	1 1/2" x 26' Polish Rod	26'
1	3/4" KD Rod Subs	10' (+/-)
128	3/4" KD Rods w/SM couplings	3200'
1	2" x 1 1/4" x 14' RHBC Pump	14'

36. Load tbg w 2% KCl and pressure test pump. Space out and hang well on. Place pumping unit in 54" SL at +/- 8 SPM (Expected production rate +/- 60 BFPD w/ 1 1/4").

37. RD PU. Return well to production and place on test.