

# RKI Exploration & Production, LLC

## Toro 22 State 4

### Delaware Recompletion Procedure

Klein Ranch Field

Section 22 T19S R33E  
Lea County, NM

API # 30-025-35634  
Property No. 261300

**Spud Date:** 8/3/01  
**Comp Date:** 10/10/01

**Producing Formations:** Wolfcamp 10,617'-10,789' OA

**KB Elev:** 3,772'  
**GL Elev:** 3,752'  
**TD:** 11,100'  
**PBTD:** 10,988'  
**Marker Joint:** none

HOBBS OCD

MAY 08 2014

RECEIVED

#### CASING SUMMARY:

Safety Factor = 80% of new applied to burst, collapse and tension parameters in table.

Size	Depth (ft)	Weight (#/ft)	Grade psi	Connection Type	Capacity (bbls/ft)	ID (in)	Drift (in)	Burst (psi)	Collapse (psi)	Tension (lbs)
13 3/8"	597'	48	H-40	STC	0.1571	12.715	12.559	1,385	600	258,000
8 5/8"	5,119'	32	M-80	ST&C	0.0609	7.921	7.700	4,570	2,440	361,000
5 1/2"	11,093'	17	N-80/P110	LT&C	0.0233	4.778	4.653	7,350	7,165	342,000

Surface: 13 3/8" 48# H-40 STC: 0'-597' - TOC @ surface  
Intermediate: 8 5/8" 32# M-80 STC: 0'-5,119' - TOC @ surface  
Production: 5 1/2" 17# N-80/P-110 LTC: 0' - 11,093'; TOC @ 6,510' per CBL

**COMPLETION HISTORY TO DATE:** Wolfcamp 10,617'-10,789' OA. Well shut down because uneconomic.

**OBJECTIVE:** Complete Delaware; put back on rod pump.

**NOTE:** Maximum allowable surface pressure for Delaware sand treatments down 3 1/2" 9.3# L-80 is 8,150 psi. Test surface lines & frac pumps to 8,500 psi.

Make sure frac company installs a pressure transducer and a manual gauge on the annulus line so that the annulus pressure is monitored and recorded during the fracs.

#### **PROCEDURE:**

- 1) MI RU Service Unit. Set frac tank and lay flowline. Deliver and set 8 clean frac tanks and fill with 480 BFW.
- 2) HO PU. MI RU Hot Oiler. Pressure test tubing to 400 psi. Unseat pump. Pump 60 bbls hot water with paraffin dispersant down tubing. RD MO Hot Oiler.
- 3) ROH, LD sucker rods, send in for inspection.
- 4) ND WH. NU 5K# BOP.

- 5) MI RU Tuboscope. TOH, inspect and tally 2 7/8" 6.5# N-80 tubing. RD MO Tuboscope. Stand back in derrick 7,800' of good 2 7/8" tubing (white, yellow and blue band), LD remainder separating good tubing (white, yellow or blue band) from bad tubing (green or red band).
- 6) Deliver, unload and tally 6,700' 3 1/2" 9.3# L-80 CS Hydril IJ tubing.
- 7) MI RU wireline unit. RIH w/ JB/GR to 10,075'. RIH w/ CIBP and set at 10,045'. MI RU pump truck. Test plug, casing to 1000 psi w/ 2% KCL water. Dump bail 3 sx cmt on plug (35'). RIH w/ CIBP and set at 7,810'. MI RU pump truck. Test plug, casing to 1000 psi. Dump bail 3 sx cmt on plug (35').
- 8) TIH w/ SN, 2 7/8" tubing to 7,675'. Circulate hole w/ 150 bbls. 2% KCL water. RD MO pump truck. TOH w/ 2 7/8" tubing.
- 9) RU 5K# lubricator. Test lubricator 250 psi low and 4,000 psi high. RIH with 3-1/8" HSC gun loaded with 22.7 gram Titan EXP 3323-301T charges, 0.40 EHD, 35.60" pen and 60° phasing and perforate Brushy Canyon sands as listed below. (NOTE: Perforations correlated to Litho-Density/Comp Neutron Log dated 9/4/2001.) POOH, ensure all shots fired.

### Brushy Canyon sands (7,634'-7,669' OA) Perforations

<u>Set</u>	<u>Upper</u>	<u>Lower</u>	<u>Feet</u>	<u>SPF</u>	<u>Shots</u>	<u>Phasing</u>
1	7,664'	7,669'	5	1	5	60°
2	7,650'	7,660'	10	2	20	60°
3	7,634'	7,644'	10	2	20	60°
TOTAL			25		45	60°

- 10) RIH w/ wireline set 10K# Composite frac plug (1.75" ID) and set @ 7,300'. RD MO wireline.
- 11) Change out 2-7/8" pipe rams for 3 1/2" pipe rams in BOP.
- 12) TIH w/ 2-7/8" x 5 1/2" Model AS-1X HP packer (2.375" min ID), XO, 6,600' 3 1/2" 9.3# L-80 CS Hydril IJ tubing. Set packer @ 6,600' w/ 20K# tension. Install 10K# frac valve. MI RU pump truck. Load annulus and test packer, casing, tubing to 700 psi. SI casing with 500 psi. RD MO pump truck.
- 13) MI RU wireline. MI RU frac company. Pressure test lines/pumps to 8,500 psi. Fracture stimulate Brushy Canyon sands with 2,500 gals 15% NE FE acid + 70 B.S. (1.3 SG) + 69,900 gals. 30# linear gel/x-link gel + 100,000# 20/40 Ottawa sand + 10,000# RC 20/40 Ottawa sand @ 50-55 BPM @ 5,500 psi (8,150 psi maximum STP) in the following stages:

### Brushy Canyon sand Fracture Treatment Schedule

<u>Stage</u>	<u>Fluid Type</u>	<u>Stage Vol (gal)</u>	<u>Cum Vol (gal)</u>	<u>Prop. Conc. (ppg)</u>	<u>Proppant*/ Fluid Type</u>	<u>Stage (lbs)</u>	<u>Cum Prop. (lbs)</u>	<u>Rate (BPM)</u>
1	Linear (30#)	2,500	2,500		Load/Bkdn Well			10-15
2	Acid	2,500	5,000		15% NEFE Acid/70 BS			10-15
3*	Linear (30#)	3,500	8,500		Acid Flush			10-15
4	Linear (30#)	3,500	12,000		Pad			50-55
5	X-Link (30#)	15,000	27,000		Pad			50-55
6	X-Link (30#)	10,000	37,000	1.0	20/40	10,000	10,000	50-55
7	X-Link (30#)	10,000	47,000	2.0	20/40	20,000	30,000	50-55
8	X-Link (30#)	10,000	57,000	3.0	20/40	30,000	60,000	50-55
9	X-Link (30#)	10,000	67,000	4.0	20/40	40,000	100,000	50-55
10	X-Link (30#)	2,000	69,000	5.0	20/40 RC	10,000	110,000	50-55
11	Linear (30#)	3,400	72,400		Flush			40-55

**\*(NOTE: SD, Surge (5 seconds) ball sealers after pump Stage 3, Wait 15 minutes, start Stage 4.**

SD, Record ISIP, 5 min SIP, 10 SIP, 15 min SIP. Drop frac ball.

- 14) RU 5K# lubricator. Test lubricator 250 psi low and 4,000 psi high. RIH w/ JB/GR and chase ball to 7,300' (frac plug).
- 15) Load tubing with 2% KCL water and test casing & plug to 4,800 psi for 5 minutes.
- 16) RIH with 2 1/8" strip gun loaded, DP charge, 0.27 EHD, 23.6" penetration w/ 60° phasing and perforate Middle Delaware sands as listed below. (NOTE: Perforations correlated to Litho-Density/Comp Neutron Log dated 9/4/2001.) POOH, ensure all shots fired. RD MO wireline.

**Middle Delaware sands (6,852'-7,020' OA) Perforations**

<u>Set</u>	<u>Upper</u>	<u>Lower</u>	<u>Feet</u>	<u>SPF</u>	<u>Shots</u>	<u>Phasing</u>
1	7,004'	7,020'	16	2	32	60°
2	6,852'	6,862'	10	2	20	60°
TOTAL			26		52	60°

- 17) MI RU wireline. MI RU frac company. Pressure test lines/pumps to 8,500 psi. Fracture stimulate Middle Delaware sands with 2,500 gals 15% NE FE acid + 75 B.S. (1.3 SG) + 69,200 gals. 30# linear gel/x-link gel + 100,000# 20/40 Ottawa sand + 10,000# RC 2/40 Ottawa sand @ 50-55 BPM @ 5,200 psi (8,150 psi maximum STP) in the following stages:

**Middle Delaware sand Fracture Treatment Schedule**

<b>Stage</b>	<b>Fluid Type</b>	<b>Stage Vol (gal)</b>	<b>Cum Vol (gal)</b>	<b>Prop. Conc. (ppg)</b>	<b>Proppant*/ Fluid Type</b>	<b>Stage (lbs)</b>	<b>Cum Prop. (lbs)</b>	<b>Rate (BPM)</b>
1	Linear (30#)	2,500	2,500		Load/Bkdn Well			10-15
2	Acid	2,500	5,000		15% NEFE Acid/75 BS			10-15
3*	Linear (30#)	3,500	8,500		Acid Flush			10-15
4	Linear (30#)	3,500	12,000		Pad			50-55
5	X-Link (30#)	15,000	27,000		Pad			50-55
6	X-Link (30#)	10,000	37,000	1.0	20/40	10,000	10,000	50-55
7	X-Link (30#)	10,000	47,000	2.0	20/40	20,000	30,000	50-55
8	X-Link (30#)	10,000	57,000	3.0	20/40	30,000	60,000	50-55
9	X-Link (30#)	10,000	67,000	4.0	20/40	40,000	100,000	50-55
10	X-Link (30#)	2,000	69,000	5.0	20/40 RC	10,000	110,000	50-55
11	Linear (30#)	2,700	71,700		Flush			40-55

**\*(NOTE: SD, Surge (5 seconds) ball sealers after pump Stage 3, Wait 15 minutes, start Stage 4.**

SD, Record ISIP, 5 min SIP, 10 SIP, 15 min SIP. RD MO frac company. SI well overnight.

- 18) Install flow valve/choke w/ carbide seat/stem. Open well, flow back and test.
- 19) **IF NECESSARY**, MI RU pump truck. Pump 75 bbls. 10.2 ppg brine water down tubing to kill well. Feed in brine water as necessary to keep well dead.
- 20) Release packer, TOH, LD pkr, 3 1/2" tubing.
- 21) MI RU pump, tank, and swivel.
- 22) TIH w/ 4 1/2" bit, 4 DC, XO, 2 7/8" tubing. Clean out sand, DO Comp frac plug and push to CIBP/cmt @ 7,775'. Circulate hole clean.
- 23) TOH, LD BHA. RD MO pump, tank, swivel.

- 24) Feed in brine water as necessary to keep well dead. TIH w/ BP, 2 jts tubing, 4' PS, SN 8 jts 2 7/8" tubing, TAC, 208 jts. 2 7/8" 6.5# L-80 EUE. EOMA @ 6,930'+/-, SN @ 6,850'+/-, TAC @ 6,600'+/-.
- 25) ND BOP. Set TAC w/ 15K# tension @ 6,600'. NU B-1 flange. RD MO pump truck. Install pumping tee.
- 26) Deliver and unload inspected rods, pump.
- 27) RIH w/ 2½"x1¾"x22' RHBC w/ steel SVR, top seal w/ ss guide, .006" SMP, brass nacarb barrel, TC seats, Silicon Nitrate balls, collet on pull rod, w/ 20' GA, 1' lift sub, 8 ct. (200') 1½" Flexbar C sinker bars, 95 ct. (2,375') ¾" Tenaris KD rods, 85 ct. (2,125') 7/8" Tenaris KD rods, 84 ct. (2,100') 1" Tenaris KD rods, PR/Inr. Seat pump and space pump 18" off bottom. Install stuffing box.
- 28) MI RU pump truck. Load tubing with produced SW and test to 400 psi. RD MO pump truck. HO PU. Should be set up on 168" stroke, **resheave for 9 spm**.
- 29) RD MO Service Unit.
- 30) **IF NEEDED**, Rebalance unit, install revamped surface electric equipment. Start PU and set vibration switch and POC.

**RKI Contact List:**

<b>RKI</b>	<b>Title</b>	<b>Office</b>	<b>Cell</b>
Brent Umerham	Manager-Drig & Prod Ops	405-996-5748	405-623-5080
Ed Glass	Manager - Completion	405-996-5786	405-757-5448
Ken Fairchild	Production Manager	405-996-5764	469-693-6051
Gene Thompson	Production Superintendent	575-885-1313	817-908-9219
Paul Munding	Senior Production Engineer	405-996-2140	405-820-2825
Jaime McAlpine	Engineering Consultant	405-996-5741	405-850-6685

**Emergency Contacts – New Mexico:**

Hospital:	Carlsbad Medical Center 2430 W. Pierce St., Carlsbad, NM 88220	(575) 887-4100
Sheriff's Office:	Lea County Sheriff Dept Eddy County Sheriff Dept	(575) 396-3611 (575) 887-7551

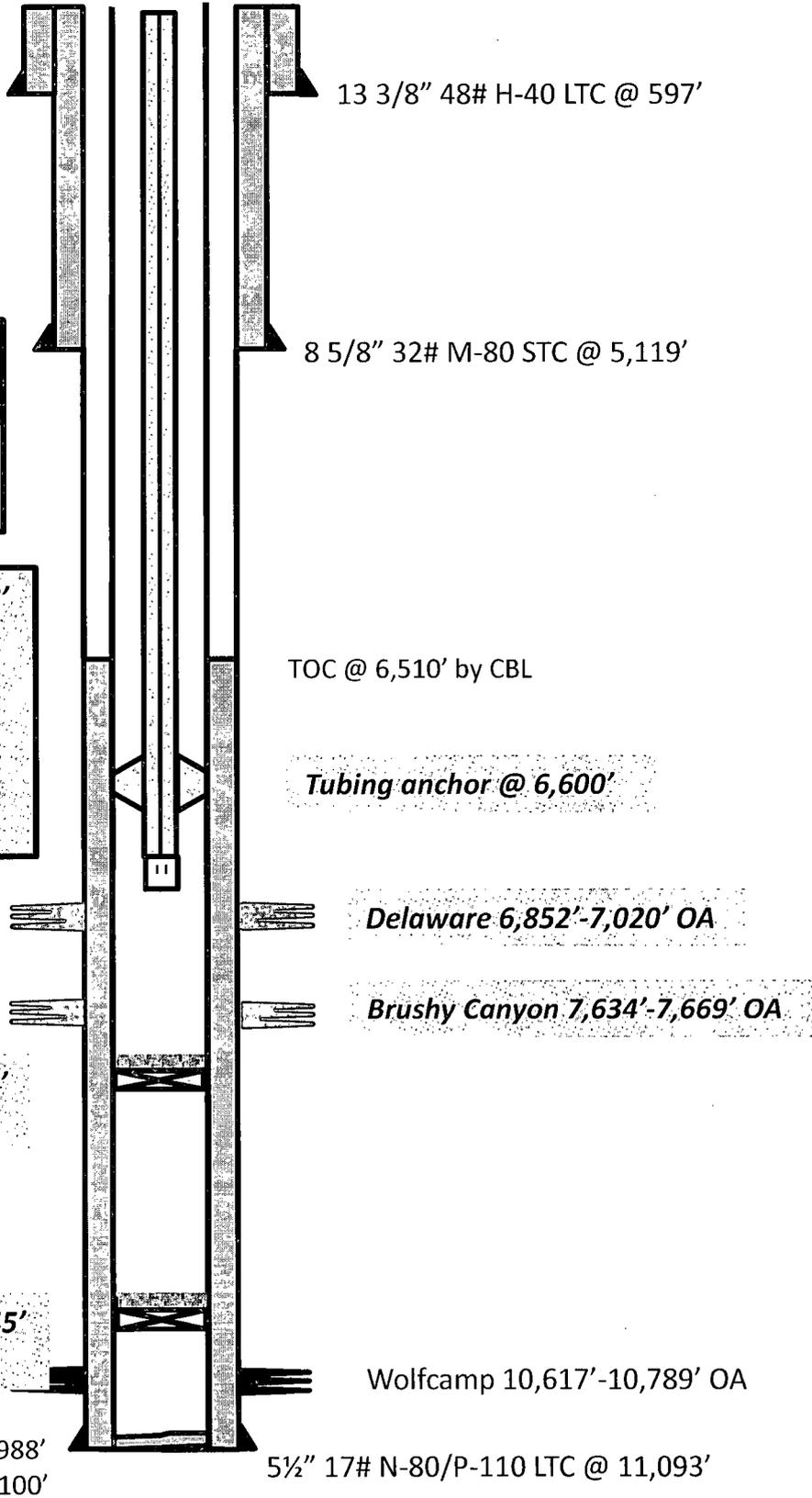
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Toro 22 State 4  
 Section 22 T19S R35E  
 Lea County, NM  
 API No. 30-025-35634

**PROPOSED**

KB - 3,772'  
 GL - 3,752'

2/14/14; JLM



Tubing Top to Btm: 208 jts. (6,600') 2-7/8" 6.5# N-80 EUE Tbg, TAC, 8 jts. (250') 2 7/8" tubing, SN, 4' PS, 2 jt tbg MA, BP. EOMA @ 6,930', SN @ 6,850', TAC @ 6,600'.

Rod string top to btm: 1 1/4" x 1 1/2" x 24' x 28' PR/liner, 84 ct. (2,100') 1" Tenaris KD rods, 85 ct. (2,125') 7/8" Tenaris KD rods, 95 ct. (2,375') 3/4" Tenaris KD rods, 8 ct. (200') 1 1/2" C sinker bars, 1' lift sub, pump. See procedure for pump design specifics.

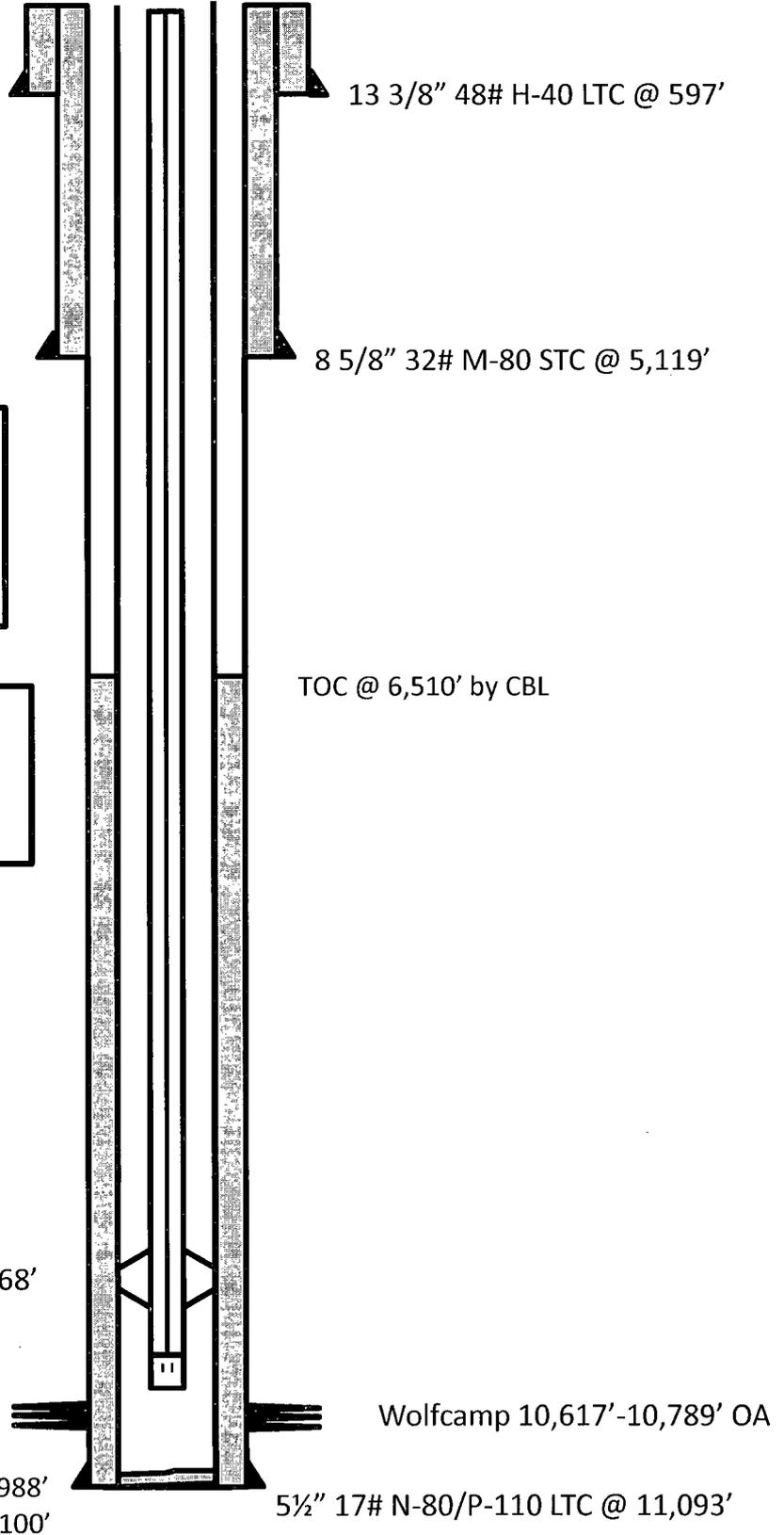
# RKI Exploration and Production, LLC

Toro 22 State 4  
Section 22 T19S R35E  
Lea County, NM  
API No. 30-025-35634

**CURRENT**

KB - 3,772'  
GL - 3,752'

2/7/14; JLM



**Tubing Top to Btm:** 322 ct. (10,168') 2-7/8" 6.5# N-80 EUE Tbg, TAC, 22 jts 2-7/8" tubing, SN, 4' PS, 1 jt tbg MA. EOMA @ 10,936', SN @ 10,900', TAC @ 10,522'.

**Rod string top to bottom:** PR/lnr, 3 ct. pony rods, 113 ct. 1" rods, 115 ct. 7/8" rods, 192 ct. 3/4" rods, 12 ct. 7/8" rods, 1' lift sub, pump.