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**State of New Mexico**
**Energy Minerals and Natural Resources**
**Oil Conservation Division**
**1220 South St. Francis Dr.**
**Santa Fe, NM 87505**

Form C-101
Revised December 16, 2011

Permit

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NMOCD ARTESIA

# APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

| [1] Operator Name and Address | [2] OGRID Number |
|---|---|
| Devon Energy Production, Co. L. P.<br>333 W Sheridan<br>Oklahoma City, OK 73102 | 6137 |
| | [3] API Number<br>30-015-21920 |

| [4] Property Code | [5] Property Name | [6] Well No. |
|---|---|---|
| 28709 | LONE TREE STATE | 1 |

## [7] Surface Location

| UL - Lot | Section | Township | Range | Lot Idn | Feet from | N/S Line | Feet From | E/W Line | County |
|---|---|---|---|---|---|---|---|---|---|
| K | 13 | 21S | 27E | | 1980 | South | 1980 | East | Eddy |

## [8] Pool Information

| | |
|---|---|
| Fenton; Delaware, NW | ~~24530~~ 24330 |

## Additional Well Information

| [9] Work Type | [10] Well Type | [11] Cable/Rotary | [12] Lease Type | [13] Ground Level Elevation |
|---|---|---|---|---|
| RC | Oil | R | State | 3163' GL |
| [14] Multiple | [15] Proposed Depth | [16] Formation | [17] Contractor | [18] Spud Date |
| N | 11,870' | Bone Spring | | 10/19/93 |

| Depth to Ground water | Distance from nearest fresh water well | Distance to nearest surface water |
|---|---|---|
| | | |

## [19] Proposed Casing and Cement Program

| Type | Hole Size | Casing Size | Casing Weight/ft | Setting Depth | Sacks of Cement | Estimated TOC |
|---|---|---|---|---|---|---|
| | 17 ½" | 13 3/8" | 48# H40 | 606' | Unknown per C104 | Surf |
| | 12 ¼" | 9 58" | 36# S80 | 3060' | Unknown per C104 | Surf |
| | 7 7/8" | 5 ½" | 17# S95 N80 | 11,870' | 1350 sx Total | TOC 4246' |
| | | | | | | |

## Casing/Cement Program: Additional Comments

PBTD @ 7900' See attached procedure w/ wellbore schematic.

## Proposed Blowout Prevention Program

| Type | Working Pressure | Test Pressure | Manufacturer |
|---|---|---|---|
| | | | |

I hereby certify that the information given above is true and complete to the best of my knowledge and belief
**I further certify that the drilling pit will be constructed according to NMOCD guidelines ☐, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.**

Signature: Judy A. Barnett

Printed name: Judy A. Barnett

Title: Regulatory Specialist

E-mail Address: Judith.Barnett@dvn.com

Date: 8/1/12 Phone: 405-228-8699

OIL CONSERVATION DIVISION

Approved By: T. C. Shapard

Title: Geologist

Approved Date: 8/3/2012 Expiration Date: 8/3/2014

Conditions of Approval Attached: cancels & supersedes APD 5-31-12

Ron Hays
Engineer
405.552.8150

# Lonetree State #1

WBS #

**Objective** - Abandon Bone Spring, cement block squeeze 5-1/2" csg and recomplete well in the Middle Brushy Canyon.

API# - 30-015-21920

Location - Sec 13 - T21S - R27E: 1,980' FSL, 1,980' FEL
(Eddy Co,NM)

GL - 3,163 ft

KB - (15')

TD -11,870 ft

PBTD - 7,900 ft

| Casing | OD | #s/FT | Grade | Top | Bottom | Drift | 80% Collapse (psi) | 80% Burst (psi) |
|---|---|---|---|---|---|---|---|---|
| Surface | 13-3/8" | 48.00# | H-40 | 0' | 606' | | | |
| Intermediate | 9-5/8" | 36.00# | S-80 | 0' | 3,060' | | | |
| | | | | | | | | |
| Production | 5-1/2" | 15.5# | J-55 | 0' | 4,996' | 4.825" | 3,232 | 3,848 |
| Production | 7" | ? | ? | 4,996' | 5,000' | ? | | |
| Production | 5-1/2" | 17.00# | S-95 & N-80 | 5,000' | 11,870' | 4.767" | 5,024 | 6,192 |
| **Production** | | | | | | | | |
| Tubing | 2-3/8" | 4.7# | J-55 | 0' | 7,818' | 1.901" | 6,480 | 6,160 |
| Tubing (Proposed) | 2-7/8" | 6.5# | J-55 | 0' | 5,100' | 2.347" | 6,144 | 5,808 |

**Note: This well was re-entered in 1993. The original 5-1/2" 17# csg was cut off @ 5,000'. They then ran 5,005' of 5-1/2", 15.3# J-55 with 7' of 7" csg on btm. They used the 7" to slip over the top of the existing 5-1/2" csg before cementing w/ 200 sks.**

Top of cement (5-1/2" csg): Reported @ 4,246' (CBL - 11/12/93)

Current TBG string (top down): 227 jts 2-3/8", 4.7#, J-55 (7,392'), 5-1/2" X 2-3/8" TAC (3.20'), 13 jts 2-3/8", 4.7#, J-55 (423'), 2-3/8" SN (1.10'), 2-3/8" X 2/7/8" XO (0.8'), 2-7/8" perf sub (4') & 2-7/8" MA (32')

Current Rod String (top down): 1-1/4" polish rod (22'), 98 - 7/8" grade D rods (2,450'), 204 - ¾" grade D rods ( 5,100'), 10 - 7/8" grade D rods (250') and 1- 2" RHBC pump (20')

Current perforations:

**Bone Spring:** **7,558'-7,770'**

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**Safety:** **All personnel will wear hard hats, safety glasses with side shields, and steel toed boots while on location. Assess wellhead working height for safety. If needed, use work platform or man-lift for fall protection. H2S monitoring equipment is required to be on location.**

## Lonetree State # 1
## Procedure:

1. Hot oil well 2-3 days prior to moving in rig.

2. Notify all regulatory agencies prior to move in (if required). Hold tailgate safety meetings prior to R.U., each morning and before each operational change or event. Test and/or install and test anchors. MIRU WSU. Spot necessary tanks and temporary flow lines to tanks. Blow down tbg and csg to tanks.

3. Remove PR and Stuffing Box. Install Rod rams. Unseat pump and T.O.H. with rods & pump LAYING DOWN (see detail).Top kill tubing and casing with 2% KCL if necessary.

4. ND wellhead. NU 5,000 psi BOPE, w/1 set of blind rams on bottom plus 1 set of 2-3/8" tbg rams on top. Test BOPE to Devon specifications.

5. Unset TAC @ ~ 7,392'. Drop standing valve, load tubing with 2% KCL and test 2-3/8" tubing to 3,000 psi @ surface. T.O.H. with 2-3/8", 4.7#, J-55 production string.

6. If tubing and/or TAC looked dirty, make 4-3/4" bit /17# scraper run to 7,400' KBM (hydro test 2-3/8" tubing to 5,000 psi below slips if the tbg didn't test in step 5) and TOH; otherwise

7. RU WL with full lubricator. Test lubricator to Devon specifications.
   - Make 5-1/2", 17# GR run to 7,400' KBM.
   - Set 5-1/2",17# CIBP @ 7,400' KBM
   - Dump bail 35' of cement on top of CIBP (PBTD now @ 7,365' KBM)
   - Load 5-1/2" csg w/ 2% KCL and test csg to 500 psig for 15 min. Report results in Wellview and notify OKC engineering if casing doesn't test.
   - Run GR-CCL-CBL from 5,500' - 3,000' KBM w/ 500 psi @ surface.
   - Based on bond log results, we will likely shoot squeeze holes at: 5,150' (1'- 4spf 90 degree phasing) & 5,050' (1'- 4spf 90 degree phasing). Then,

8. TIH with 5-1/2", 17# cement retainer and 2-3/8", 4.7# tubing to 5,100' KBM (hydro test 2-3/8" tubing to 5,000 psi below slips if tbg didn't test in step 5 and/or a bit and scraper run wasn't made in step 6). Load hole & pump a minimum of 25 bbls 2% KCL through tubing & cement retainer prior to setting retainer. Set cement retainer @ 5,100' KBM.

9. Sting in and out of cement retainer to make sure it is working properly.

10. RU pumping services. Test lines. Sting into cement retainer. Pump 2% KCL to determine if circulation can be achieved below retainer into perfs @ 5,150' and out the perfs @ 5,050' (top pressure 1,000 psi at surface). If circ is achieved, pump a minimum of 15 bbls of 2% KCL once circulation is established. Sting out of retainer and reverse circulate clean with at least 40 bbls 2% KCL or more if necessary to clean up above cement retainer.

11. RU BHI cementing services (proposal # 814150247A) or equivalent. Test lines. Sting into retainer.
    - Establish circ & pump 10 bbls fresh water ahead
    - Mix & pump 50 sks class C neat cement (catch surface samples of cmt)
    - Flush with 18-3/4 bbls 2% KCL
    - Pull 2-3/8" tbg to ~ 5,000' and reverse circ clean with a minimum of 40 bbls of 2% KCL or until clean. Report any cement returns volumes noted.
    - TOH with 2-3/8" tbg and cement stinging tool (remove stinging tool)
    - RD BHI or equivalent cementing services used
    - Run Kill string and SWI a minimum of 24 hrs (check surface samples for hardness)

12. If cement samples are hard (after a min of 24 hrs), load hole with 2% KCL and test 5-1/2" csg to 500 psig for 30 min. If ok, proceed to step 13 if not contact OKC Engineering.

13. TIH with 4-3/4" bit, x/o and 2-3/8" tubing - find & tag new PBTD. If necessary, drill out cement to 5,025' KBM for producing rathole. Circ clean. Test 5-1/2" casing to 500 psig for 15 min. TOH with 2-3/8" tbg and 4-3/4" bit (LAYING DOWN). Send 2-3/8" tubing to Tuboscope for testing (issue credit to this well for any good tested 2-3/8" tubing that will be utilized in another well if feasible).

14. Change out pipe rams from 2-3/8" to 2-7/8".

15. RU WL with full lubricator. Test lubricator to Devon specifications:
    - Perforate the Middle Brushy Ss with 3-1/8" slick guns as follows: (Use **Schlumberger – Compensated Neutron-Formation Density** log **dated Nov. 18th, 1976 for correlation**):

| Formation | Perf Interval (ft) | Feet | Density (spf) | Phasing (°) | Charge (in) | # of Holes |
|---|---|---|---|---|---|---|
| Middle Brushy | 4,934' - 4,936' | 2 | 3 | 120 | 0.43 | 6 |
| Middle Brushy | 4,944' - 4,952' | 8 | 3 | 120 | 0.43 | 24 |
| Middle Brushy | 4,957' - 4,959' | 2 | 3 | 120 | 0.43 | 6 |

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16. TIH with 5-1/2" 15.5# 10K RBP, 5-1/2" 10K treating packer, 6' - 2-7/8", 6.5#, J-55 tbg sub, HDSN and new 2-7/8", 6.5 J-55 tubing (pick up, rabbit and strap in hole with tbg) to 4,980' KBM w/RBP and set RBP.

17. PUH w/ 5-1/2" treating packer +/- 10'. Load hole w/ 2% KCL and set packer. Test RBP to 1,000 psi for 15 min. If ok,

18. Unset Packer and pull 5-1/2" packer to ~ 4,880' KBM and set packer. Load 2-7/8" x 5-1/2" annulus and test to 500 psi.

19. MIRU BHI Acid crew or equivalent and test lines. Apply 500 psi on tbg/csg annulus & monitor throughout job (have pop off on 5-1/2" csg by tbg annulus to go off at 750 psi to blowback tank). Acid stimulate the Middle Brushy perfs @ 4,934' - 4,959' (oa) w/ 500 gals Rustbuster followed by 2,500 gals 7-1/2% HCL (containing 32 bio balls) via tbg per BHI proposal # 690850906B. **Top surface pressure 4,000 psi**. Let acid react 1 hr while RD BHI.

20. RU swab equipment. Swab back acid job load. Once load is recovered, make hourly swab runs. Record fluid entry & oil cut and report to OKC Engineering. RD swab equipment.

21. If swab test was favorable, R.U. BHI Services. Install Frac valve. Test lines. Fracture Stimulate the Middle Brushy Ss perfs from 4,934' - 4,959' (oa) per BHI proposal # 690850906B. **Top surface pressure 4,000 psi**. Close pipe rams and chained down 2-7/8" tubing. Monitor 5-1/2" x 2-7/8" annulus during Frac job. Apply 500 psi on tbg/csg annulus & monitor throughout job (have pop off on 5-1/2" csg by 2-7/8" tbg annulus to go off at 750 psi to blowback tank).

    15 BPM
    23,000 gals Spectra Frac 2500 (25# gel system)
    2,170 gals 25# Linear Gel
    18,000 lbs SiberProp, 16/30 (4 ppg)
    23,250 lbs Sand, White, 20/40 (1-3 ppg) 2 - Frac tanks required
    (Record average treating pressure, rates and job load along with ISIP, 5, 10 & 15 min readings)

22. RD BHI Services. Flow well back immediately at 30 bbl/hr rate for a minimum of 12 hours (or overnight), and then slowly open well up to 60 bbl/hr until well dies.

23. Once well dies, unset treating packer and TOH with 2-7/8" tubing, HDSN, 2-7/8" tbg sub and 5-1/2" treating packer.

24. TIH w/RBP retrieving tool and 2-7/8" tbg to top of sand fill or RBP. Reverse circ any sand/balls off of RBP. Retrieve RBP and and TOH w/ 2-7/8" tbg & RBP.

**Lonetree State #1**
**Procedure Cont.**

25. TIH with bull plugged 30' MA, 4' perforated sub, SN,10 jts 2-7/8", 6.5#,J-55 tubing, 2-7/8" by 5-1/2",15.5# TAC and 2-7/8",6.5#, J-55 tubing. Set SN @ ~ 4,950' KBM; TAC @ ~4,650' KBM.

26. ND BOP; NU Rod rams.

27. TIH with new/reconditioned Norris 96s or reconditiond Norris 97s (if available) rod string. Space and seat pump.

    An initial design for 4,950' is:

    - 1-1/4" x18' Stanly Filter,
    - 2" pump,
    - 1 - 7/8" pony rod (Norris 96/97),
    - shear coupling,
    - 12 - (300') - 1-1/2" C (sinker bars),
    - 123 - (3,075') - 7/8" Norris 96s (new/recond) or 97s (if recond is available),
    - 42 - (1,575') 1-1/4" Fibercom fiberglass rods (37.5' ea).
    - Install PR with PR coupling.

    Well design listed is for 7.5 spm with a 2" pump ~ 320 btfpd.

28. Test downhole pump.

29. Move in and set a New/Used 640-365-144 pumping unit w/60 hp electric motor. (Note: will need to run PU on generator until electric is available - should be on a few months)

30. Put well on and release to production.

31. RDMO WSU. Release all rentals.

**Estimated Costs**