

**District I**  
1625 N French Dr., Hobbs, NM 88240  
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**District II**  
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**District III**  
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Phone (505) 334-6178 Fax (505) 334-6170

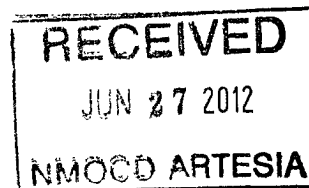
**District IV**  
1220 S St Francis Dr., Santa Fe, NM 87505  
Phone (505) 476-3460 Fax (505) 476-3462

**State of New Mexico**  
**Energy Minerals and Natural Resources**

Form C-101  
Revised December 16, 2011

**Oil Conservation Division**  
**1220 South St. Francis Dr.**  
**Santa Fe, NM 87505**

*Amended*



Permit

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

<sup>1</sup> Operator Name and Address Devon Energy Production, Co. L. P. 333 W. Sheridan Oklahoma City, OK 73102		<sup>2</sup> OGRID Number 6137
		<sup>3</sup> API Number 30-015-30851
<sup>4</sup> Property Code 309217	<sup>5</sup> Property Name OXY PEARL STATE	<sup>6</sup> Well No. 2

**<sup>7</sup> Surface Location**

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
A	32	19S	29E		860	North	660	East	Eddy

**<sup>8</sup> Pool Information**

Winchester; Bone Spring	<i>65010</i>
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**Additional Well Information**

<sup>9</sup> Work Type RC	<sup>10</sup> Well Type Oil	<sup>11</sup> Cable/Rotary R	<sup>12</sup> Lease Type State	<sup>13</sup> Ground Level Elevation 3280' GL
<sup>14</sup> Multiple N	<sup>15</sup> Proposed Depth 11,575'	<sup>16</sup> Formation 1 <sup>st</sup> Bone Spring	<sup>17</sup> Contractor	<sup>18</sup> Spud Date 12/04/99
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

**<sup>19</sup> Proposed Casing and Cement Program**

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
H40	17 1/2"	13 3/8"	48#	400'	500 sx C	Surf
K55	11"	8 5/8"	32#	1305'	990 sx C	Surf
N80	7 7/8"	4 1/2"	11.6#	11575'	935 sx H	TOC 3270' CBL
N80		2 3/8"	4.7#	6700'		

**Casing/Cement Program: Additional Comments**

4 1/2" 11.6# 10K CIBP @ 5250' KBM. Dump bail 35' CI C (PBTD to be @ 5215'). See attached procedure w/ wellbore schematic.
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**Proposed Blowout Prevention Program**

Type	Working Pressure	Test Pressure	Manufacturer
	5000 psi	5000 psi	

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:

Printed name: Judy A. Barnett

Title: Regulatory Specialist

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

Date: 6/26/12

Phone: 405-228-8699

**OIL CONSERVATION DIVISION**

Approved By:

Title:

Approved Date:

Expiration Date:

Conditions of Approval Attached

## DVN: Oxy Pearl State # 2

API #30-015-30851

860' FNL & 660' FEL

Lat/Long: 32.622150053765 ; -104.090620104005

Sec 32-T19S-R29E

Eddy County, NM

6/20/12

WBS #

Purpose: PB 1<sup>st</sup> BS, recompleat Delaware (Version 1)

GLM: 3,280' KBM: 3,297' KB: 17' AGL

T.D. – 11,575' PBDT - 6,797' (cement) Drilled – 1/2000

Wellbore fluid: Frac sand, formation oil, natural gas and produced water.

**NOTE: WELL CONTAINS H<sub>2</sub>S. SAFETY TRAILER, EQUIPMENT AND PERSONELL ARE REQUIRED.**

### Casing and Tubing Data:

Size	Wt. lb/ft	Grade	Interval	(.80 S. F.) Collapse	(.80 S. F.) Burst	Drift	Capacity (bbls/ft)
13-3/8"	48	H-40	0 - 400'			12.559"	
8-5/8"	32	K-55	0 - 1,305'	2,024	3,144	7.796"	
4-1/2" *	11.6	N-80	0 - 11,575'	5,080	6,224	3.875"	0.0155
2-3/8"	4.7	N-80	0 - 6,700'	9,424	8,960	1.901"	0.00387

\*4-1/2" casing tested to 4,000 psi @ surface on 5/10/2012

2-3/8" by 4-1/2" - 0.0101 bbls/ft.

Top of Cement: Reported @ 3,720' (JSI CBL/GR/CCL – 5/14/2012).

4 -1/2" csg perf'd for Sqz @ 6,900'. Pumped 1,000 sks class C (5/11/2005).

Rod Detail: 1-1/4" x 26' polish rod, 1 -7/8" D rod sub (8'), 103 – 7/8" D rods (2,575'), 100 – 3/4" D rods (2,500'), 60 - 7/8" D rods (1,500') and 2" x 1-1/2" x 20' pump.

Tubing Detail: 164 jts (5,198') 2-3/8", 4.7#, N-80 tbg, 1 - (2') TAC, 45 jts - (1,428') 2-3/8", 4.7#, N-80 tbg, 1 - (1.0') SN, 1 - (24') 2-3/8" tbg sand screen, and 1 – (32.5') bull plugged MA.

Current Production: SI. Due to H<sub>2</sub>S (reported 10,000 ppm)

### Current Perfs:

1<sup>ST</sup> Bone Spring 5,293' – 5,302' (9'; 4 spf; 90 degrees)  
6,615' – 6,626' (11'; 4 spf; 90 degrees)

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. **H<sub>2</sub>S SAFETY PERSONELL AND MONITORING EQUIPMENT IS TO BE ON LOCATION DURING WORKOVER OPERATIONS.**

## Oxy Pearl State # 2

### Procedure:

**Notify all regulatory agencies prior to initiation of work (if required) and Devon EHS personnel.** Hold tailgate safety meetings prior to R.U., each morning and before each operational change or event.

1. MIRU WSU. Spot necessary tanks and temporary flow lines to tanks. **Have H2S safety equipment and personnel on location during all well work.** Blow down tubing and casing pressure if any. Top kill well with 2% KCL - if necessary.
2. Remove PR and Stuffing Box. Install Rod rams. Unseat pump and TOH with rods and pump (see detail above). Send in pump to be checked and redressed.
3. ND wellhead. NU 5,000 psi BOPE, w/1 set of blind rams on bottom plus 1 set of 2-3/8" tbgrams on top. Test BOPE to Devon specifications.
4. Unset TAC @ ~5,213' and T.O.H. with tubing (see detail above).
5. RU WL Service Co. w/full lubricator. Test lubricator to Devon specifications.
  - Make GR run to 5,275' KBM.
  - **Set 4-1/2", 11.6# 10K CIBP @ 5,250' KBM.**
  - Load hole w/ 2% KCL & test 4-1/2" casing to 4,000 psi at surface.
  - **Dump bail 35' Class C cement on top of CIBP (PBSD to be @ 5,215' KBM).**
  - **Perforate the Delaware using 3-1/8" HP slick guns as follows: (Use Baker Hughes/Atlas – Compensated Z-Densilog, Compensated Neutron Log Gamma Ray Caliper dated Jan. 10<sup>th</sup>, 2000 for correlation):**

Formation	Perf Interval (ft)	Feet	Density (spf)	Phasing (°)	Charge (in)	# of Holes
Delaware	4,881' - 4,883'	2	2	60	0.43	4
Delaware	4,921' - 4,927'	6	2	60	0.43	12
Delaware	4,939' - 4,941'	2	2	60	0.43	4
Delaware	4,982' - 4,986'	4	2	60	0.43	8
Delaware	5,002' - 5,006'	4	2	60	0.43	8
Delaware	5,056' - 5,058'	2	2	60	0.43	4
		20				40

6. TIH with 4-1/2", 11.6#, 10K treating packer, 10K nipple and 2-3/8", 4.7#, N-80 tubing to 4,840' KBM and set packer.
7. RU BHI Services or approved acid service co. Test lines. Load annulus. Close pipe rams and chain down 2-3/8" tubing. Monitor 4-1/2" x 2-3/8" annulus during Acid job. Install a pressure relief valve to annulus and pipe any released pressure above 500 psi to divert to flowback tank during job. **Breakdown & Acidize Delaware perfs 4,881' - 5,058' per BJ proposal 690851080A with total of ~ 3,000 gals 7.5% HCL Acid containing 70 BioSealers.** Flush acid with ~ 24 bbls 2% KCL. **Top surface pressure 5,000 psi.** (Record avg. treating pressure, rates and total load to recover along with ISIP, 5, 10 & 15 min shut-in pressures.)

**Oxy Pearl State # 2 PB 1<sup>st</sup> BS and recomplete DLWR Cont.**

8. Let acid react 1 hr. Surge back balls. **Flow back and/or Swab test Delaware perfs for 1- 2 days to determine viability to frac.** Unset 4-1/2" packer, drop down below perfs to insure all biosealers are knocked off perfs and TOH with 2-3/8" tubing and 4-1/2" treating packer.
9. If swab test was favorable in step 8, ND BOPE and NU Frac valve.
10. **RU BHI Services Test lines. Fracture Stimulate the Delaware perfs from 4,881' - 5,058' down 4-1/2" casing per BJ proposal 690851081A. Top surface pressure 6,000 psi.**  
  
**40 BPM**  
**62,500 gals Spectra Frac 2500 (25# gel system)**  
**6,150 gals Slickwater**  
**39,000 lbs Super LC, 20/40**  
**87,000 lbs Sand, White, 20/40 20/40      4 - Frac tanks required**  
(Record average treating pressure, rates and job load along with ISIP, 5, 10 & 15 min readings)
11. RD BHI Services. Flow well back immediately at ½ bpm (30 bbls/hour) for a minimum of 12 hours and then gradually open up well to ~ 1-1/2 bpm (60 bbls/hour) until the well dies.
12. Once well dies, ND Frac valve and NU BOPE. Test BOPE to Devon specifications.
13. TIH with 2-jts 2-3/8", 4.7# L-80 tbg with bull plug on bottom, 2-3/8" x 24' wirewrap screen, SN, ~10 jts 2-3/8", 4.7#, L/80 tubing, 2-3/8" by 4-1/2", 11.6# TAC and 2-3/8", 4.7#, L/80 tubing. **Set SN @ ~ 5,100' KBM; TAC @ ~4,800' KBM.**
14. ND BOP; NU Rod rams.
15. TIH with existing rod string as follows (initial design for a 5,100' pump depth): 2" x 1-1/2" x 20' RHBC pump with 18' filter, 7/8" pony rod (Grade D), shear coupling, 44 (1,100') – 7/8" (Grade D), 80 (2,000') – ¾" (Grade D), 80 (2,000') – 7/8" (Grade D) and any 7/8" Grade D pony rods necessary for space out. Space and seat pump. Install PR with PR coupling. Well design listed is for 8.75 spm with a 1-1/2" pump to move ~ 220 btfpd. (see rod design attachment). Unit is an American 456-253-144. Put unit in middle hole (122.5 stroke)
16. Test downhole pump. Put well on and release to production.
17. RDMO WSU. Release all rentals.

Contact	Company	Office #	Mobile #
Ron Hays	Devon (engr)	405-552-8150	405-464-4214
Mike Sarabia	BHI Services (stim)		575-513-2293
Lloyd Warden	J-W Wireline	575-393-9200	575-706-0339

**DEVON ENERGY PRODUCTION COMPANY LP**

Well Name: <b>Oxy Pearl State #2</b>	Field: <b>Parkway West</b>	
Location: <b>Sec. 32-T19S-R29E; 860' FNL &amp; 660' FEL</b>	County: <b>Eddy</b>	State: <b>NM</b>
Elevation: <b>3280' GL (3297' KB)</b>	Spud Date: <b>12/9/99</b>	Compl Date: <b>4/12/00</b>
API#: <b>30-015-30851</b>	Prepared by: <b>SWJ</b>	Date: <b>10/5/11</b> Rev: <b>6/21/12 rkh</b>

As of 6/21/2012 Pumping Unit is an American 456-253-144

17-1/2" hole

**13-3/8" 48# H40 STC @ 400'**

Cmt'd w/ 929 sx; did not circulate to surface  
topped off cement down 1" tubing

11" hole

**8-5/8" 32# K55 STC @ 1305'**

Cmt'd w/ 1290 sx; circulated to surf

2-3/8" N80 production tubing

Note (5/10/12): Prior to  
perforating to raise cement  
top, 4-1/2" csg was tested  
with 4,000 psi at surface

1st BS Lime 5,293'-5,302' w/ 4 spf

1st BS Lime 6,615'-6,626' w/ 4 spf

**Rod Detail (6/21/2012):**  
1-1/4" x 26' polish rod,  
1 - 7/8" D rod sub (8'),  
103 - 7/8" D rods (2,575'),  
100 - 3/4" D rods (2,500'),  
60 - 7/8" D rods (1,500') and  
2" x 1-1/2" x 20' pump

**Tubing Detail (6/21/2012):**  
164 jts (5,198') 2-3/8", 4.7#, N-80 tbg, 1  
- (2') TAC,  
45 jts - (1,428') 2-3/8", 4.7#, N-80 tbg, 1  
- (1.0') SN,  
1 - (24') 2-3/8" tbg sand screen, and  
1 - (32.5') bull plugged MA

TOC @ 3,720' (JSI CBL 5/14/12)

BHI pumped  
1,000 sks Class C  
to raise TOC  
(5/11/12)

drilled out to 6,797' (5/15/12)

shoot 4 squeeze holes @ 6,900' (5/10/12)

TOC @ 8,510' (calculated)

Dump balled 35' cement on CIBP (5/10/12)  
CIBP @ 10,265' (11/22/05)

CIBP @ 11,208' w/ 48' cmt (4/6/00)

CIBP @ 11,360' w/ 40' cmt (2/8/00)

**Existing Perforations:**

**Strawn** 10,315-326' w/ 4 spf (TA'd)  
4/12/00: Acdz'd w/ 2500 gal 15% HCl + 1000 scf/bbl N2  
Tested 428 bbl oil, 8 bbl wr, 600 mcf

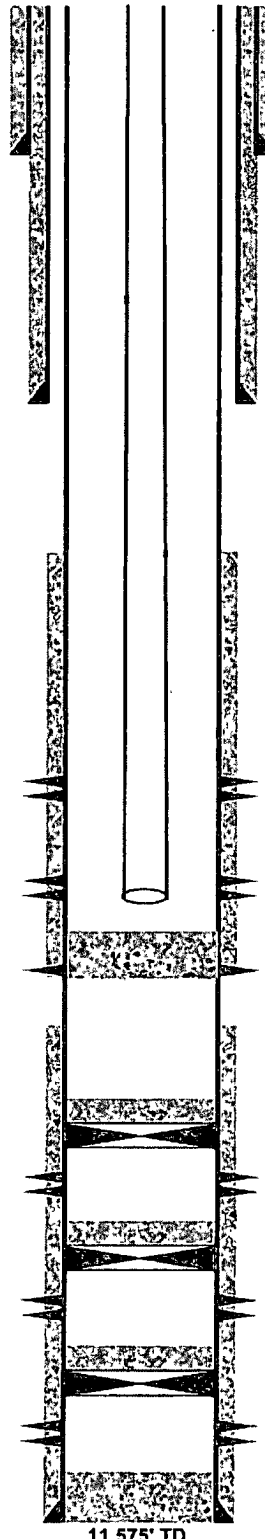
**Middle Morrow** 11,217-230' w/ 4 spf (TA'd)  
2/11/00: Acdz'd w/ 1200 gal 7.5% HCl + 1000 scf/bbl N2  
2/23/00: Frac'd w/ 17,250 gal 50Q foam + 24,000# 20/40 Interprop

**Lower Morrow** 11,378-385' w/ 4 spf (TA'd)  
11,388-394' w/ 4 spf (TA'd)  
11,400-404' w/ 4 spf (TA'd)  
2/4/00: Acdz'd w/ 1500 gal 7.5% HCl + 1000 scf/bbl N2

7-7/8" hole

**4-1/2" 11.6# N80 LTC @ 11,575'**

Cmt'd w/ 635 sx; TOC @ 8510' (calculated)



11,575' TD

# RODSTAR-V for Windows

Company: Devon Energy  
Well: Oxy Pearl State #2  
Disk file: Oxy Pearl State 2.rsvx  
Comment:

© Theta Enterprises, Inc.  
Tel: (714) 526-8878

Page 1 of 3  
User: Hays  
Date: 6/20/2012

INPUT DATA				CALCULATED RESULTS			
Strokes per minute:	8.8	Fluid level		Production rate (bfpd):	219	Peak pol. rod load (lbs):	17382
Run time (hrs/day):	24.0	(ft from surface):	5100	Oil production (BOPD):	66	Min. pol. rod load (lbs):	4905
Tubing pres. (psi):	200	(ft over pump):	0	Strokes per minute:	8.75	Polished rod HP:	16
Casing pres. (psi):	75	Stuf.box fr. (lbs):	100	System eff. (Motor->Pump):	34%	Unit struct. loading:	69%
				Permissible load HP:	49.6	PRHP / PLHP:	0.32
				Fluid load on pump (lbs):	3930	Buoyant rod weight (lbs):	8942
						N/No: .181 , Fo/SKr: .122	
Fluid properties		Motor & power meter					
Water cut:	70%	Power Meter	Detent				
Water sp. gravity:	1	Electr. cost:	\$0.06/KWH				
Oil API gravity:	38.0	Type:	NEMA D				
Fluid sp. gravity:	0.9504						
Pumping Unit: American (100"->168" stroke); WITH *							
API size: C-456-253-144 (unit ID: CAA27)							
Crank hole number #2 (out of 3)							
Calculated stroke length (in): 122.5							
Crank Rotation with well to right: CCW							
Max. CB moment (M in-lbs): Unknown							
Structural unbalance (lbs): 400							
Crank offset angle (deg): 0.0							
Tubing and pump information							
Tubing O.D. (ins): 2.375							
Tubing I.D. (ins): 1.995							
Upstr. rod-tbg fr. coeff: 0.790							
Dnstr. rod-tbg fr. coeff: 0.790							
Pump depth (ft): 5100							
Tub.anch.depth (ft): 4800							
Pump condition: Full							
Pump load adj. (lbs): 0.0							
Pump type: Insert							
Pump vol. efficiency: 85%							
Plunger size (ins) 1.5							
Pump friction (lbs): 200.0							
Rod string design							
Diameter (inches)	Rod Grade	Length (ft)	Min. Tensile Strength (psi)				
+ .875	D (API)	2000	115000				
.75	D (API)	2000	115000				
+ .875	D (API)	1100	115000				

+ Requires slimhole couplings  
NOTE Stress calculations do not include buoyancy effects.

