District I 1625 N French Dr, Hobbs, NM 88240 District II 1301 W. Grand Avenue, Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr, Santa Fe, NM 87505

## State of New Mexico Energy Minerals and Natural Resources Department

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Form C-144 CLEZ July 21, 2008

For closed-loop systems that only use above ground steel tanks or haul-off bins and propose to implement waste removal for closure, submit to the appropriate NMOCD District Office.

# <u>Closed-Loop System Permit or Closure Plan Application</u> (that only use above ground steel tanks or haul-off bins and propose to implement waste removal for closure)

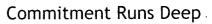
Type of action: Permit Closure Instructions: Please submit one application (Form C-144 CLEZ) per individual closed-loop system request. For any application request other than for a closed-loop system that only use above ground steel tanks or haul-off bins and propose to implement waste removal for closure, please submit a Form C-144. Please be advised that approval of this request does not relieve the operator of hability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances. Operator: \_\_\_\_\_Devon Energy Production Co., LP \_\_\_\_\_\_ OGRID #: \_\_\_\_\_6137 \_\_\_\_\_ Address: 333 W. Sheridan, OKC, OK 73102-8260 Facility or well name: \_\_\_\_Lone Tree Draw 13 State 2H\_\_\_\_\_ API Number 30-015-40372 OCD Permit Number: 213069 U/L or Qtr/Qtr \_\_D\_\_ Section \_\_\_13\_\_\_ Township \_\_\_21S\_\_\_ Range \_\_27E\_\_ County: \_\_Eddy County, NM\_\_\_\_ \_\_\_\_\_Longitude \_\_\_\_\_\_\_ NAD: 🔲 1927 🔲 1983 Center of Proposed Design: Latitude Surface Owner: ☐ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment **Closed-loop System:** Subsection H of 19.15.17.11 NMAC Operation: 🖂 Drilling a new well 🗌 Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent) 🔲 P&A Above Ground Steel Tanks or Haul-off Bins Signs: Subsection C of 19.15.17.11 NMAC JUN **07** 2012 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers ⊠ Signed in compliance with 19.15.3.103 NMAC NMOCD ARTESIA Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached. Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC 🔯 Closure Plan (Please complete Box 5) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC Previously Approved Design (attach copy of design) API Number: Previously Approved Operating and Maintenance Plan API Number: Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19.15.17.13.D NMAC) Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more than two facilities are required. Disposal Facility Name: Disposal Facility Permit Number: Will any of the proposed closed-loop system operations and associated activities occur on or in areas that will not be used for future service and operations?  $\square$  Yes (If yes, please provide the information below)  $\boxtimes$  No Required for impacted areas which will not be used for future service and operations: Soil Backfill and Cover Design Specifications - - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC Re-vegetation Plan - based upon the appropriate requirements of Subsection 1 of 19.15.17.13 NMAC Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC **Operator Application Certification:** I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief. Name (Print): Title: Regulatory Specialist Judy A. Barnett Signature: Date: 6/5/12\_\_\_\_

Judith.Barnett@dvn.com

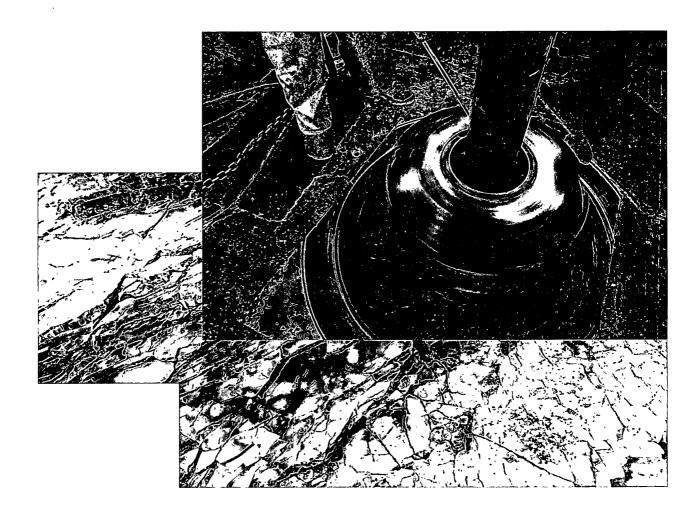
e-mail address:

Telephone: 405.228.8699

OCD Approval: Permit Application (including closure plan) Closure I	Plan (only)
OCD Representative Signature:	Approval Date: (م/ 13/ 2012
Title: D157 # Sepen	Approval Date: 06/13/2012  OCD Permit Number: 213069
8. Closure Report (required within 60 days of closure completion): Subsection Instructions: Operators are required to obtain an approved closure plan prior The closure report is required to be submitted to the division within 60 days of section of the form until an approved closure plan has been obtained and the complete the submitted to the division within 60 days of section of the form until an approved closure plan has been obtained and the complete the submitted to the division within 60 days of section of the form until an approved closure plan has been obtained and the complete the submitted to the division within 60 days of closure completion):	to implementing any closure activities and submitting the closure report. the completion of the closure activities. Please do not complete this
9.	
Closure Report Regarding Waste Removal Closure For Closed-loop System Instructions: Please indentify the facility or facilities for where the liquids, dr. two facilities were utilized.	
Disposal Facility Name:	Disposal Facility Permit Number:
Disposal Facility Name:	Disposal Facility Permit Number:
Were the closed-loop system operations and associated activities performed on convergence of Yes (If yes, please demonstrate compliance to the items below)	r in areas that will not be used for future service and operations?
Required for impacted areas which will not be used for future service and operation     Site Reclamation (Photo Documentation)   Soil Backfilling and Cover Installation   Re-vegetation Application Rates and Seeding Technique	tions:
10. Operator Closure Certification:	
I hereby certify that the information and attachments submitted with this closure belief. I also certify that the closure complies with all applicable closure require	
Name (Print):	Title:
Signature:	Date:
e-mail address:	Telephone:







Design Plan
Operation and Maintenance Plan
Closure Plan

SENM - Closed Loop Systems June 2010

### I. Design Plan

Devon uses MI SWACO closed loop system (CLS). The MI SWACO CLS is designed to maintain drill solids at or below 5%. The equipment is arranged to progressively remove solids from the largest to the smallest size. Drilling fluids can thus be reused and savings is realized on mud and disposal costs. Dewatering may be required with the centrifuges to insure removal of ultra fine solids.

The drilling location is constructed to allow storm water to flow to a central sump normally the cellar. This insures no contamination leaves the drilling pad in the event of a spill. Storm water is reused in the mud system or stored in a reserve fluid tank farm until it can be reused. All lubricants, oils, or chemicals are removed immediately from the ground to prevent the contamination of storm water. An oil trap is normally installed on the sump if an oil spill occurs during a storm.

A tank farm is utilized to store drilling fluids including fresh water and brine fluids. The tank farm is constructed on a 20 ml plastic lined, bermed pad to prevent the contamination of the drilling site during a spill. Fluids from other sites may be stored in these tanks for processing by the solids control equipment and reused in the mud system. At the end of the well the fluids are transported from the tank farm to an adjoining well or to the next well for the rig.

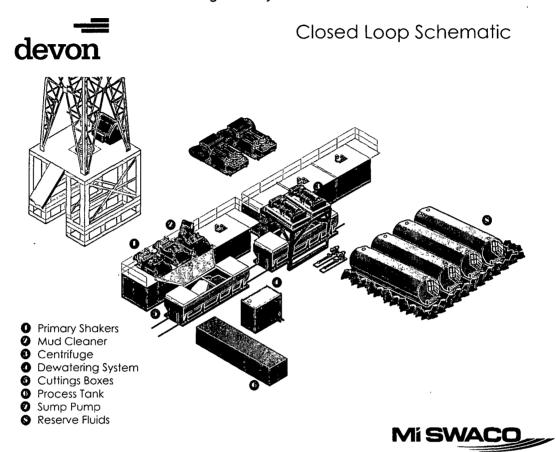
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

Signs will be posted on the fence surrounding the closed-loop system unless the closed-loop system is located on a site where there is an existing well, that is operated by Devon.

### II. Operations and Maintenance Plan

*Primary Shakers*: The primary shakers make the first removal of drill solids from the drilling mud as it leaves the well bore. The shakers are sized to handle maximum drilling rate at optimal screen size. The shakers normally remove solids down to 74 microns.

Mud Cleaner: The Mud Cleaner cleans the fluid after it leaves the shakers. A set of hydrocyclones are sized to handle 1.25 to 1.5 times the maximum circulating rate. This ensures all the fluid is being processed to an average cut point of 25 microns. The wet discharged is dewatered on a shaker equipped with ultra fine mesh screens and generally cut at 40 microns.



Centrifuges: The centrifuges can be one or two in number depending on the well geometry or depth of well. The centrifuges are sized to maintain low gravity solids at 5% or below. They may or may not need a dewatering system to enhance the removal rates. The centrifuges can make a cut point of 8-10 microns depending on bowl speed, feed rate, solids loading and other factors.

The centrifuge system is designed to work on the active system and be flexible to process incoming fluids from other locations. This set-up is also dependant on well factors.

Dewatering System: The dewatering system is a chemical mixing and dosing system designed to enhance the solids removal of the centrifuge. Not commonly used in shallow wells. It may contain pH adjustment, coagulant mixing and dosing, and polymer mixing and dosing. Chemical flocculation binds ultra fine solids into a mass that is within the centrifuge operating design. The

dewatering system improves the centrifuge cut point to infinity or allows for the return of clear water or brine fluid. This ability allows for the ultimate control of low gravity solids.

Cuttings Boxes: Cuttings boxes are utilized to capture drill solids that are discarded from the solids control equipment. These boxes are set upon a rail system that allows for the removal and replacement of a full box of cuttings with an empty one. They are equipped with a cover that insures no product is spilled into the environment during the transportation phase.

*Process Tank*: (Optional) The process tank allows for the holding and process of fluids that are being transferred into the mud system. Additionally, during times of lost circulation the process tank may hold active fluids that are removed for additional treatment. It can further be used as a mixing tank during well control conditions.

Sump and Sump Pump: The sump is used to collect storm water and the pump is used to transfer this fluid to the active system or to the tank for to hold in reserve. It can also be used to collect fluids that may escape during spills. The location contains drainage ditches that allow the location fluids to drain to the sump.

Reserve Fluids (Tank Farm): A series of frac tanks are used to replace the reserve pit. These are steel tanks that are equipped with a manifold system and a transfer pump. These tanks can contain any number of fluids used during the drilling process. These can include fresh water, cut brine, and saturated salt fluid. The fluid can be from the active well or reclaimed fluid from other locations. A 20 ml liner and berm system is employed to ensure the fluids do not migrate to the environment during a spill.

If a leak develops, the appropriate division district office will be notified within 48 hours of the discovery and the leak will be addressed. Spill prevention is accomplished by maintaining pump packing, hoses, and pipe fittings to insure no leaks are occurring. During an upset condition the source of the spill is isolated and repaired as soon as it is discovered. Free liquid is removed by a diaphragm pump and returned to the mud system. Loose topsoil may be used to stabilize the spill and the contaminated soil is excavated and placed in the cuttings boxes. After the well is finished and the rig has moved, the entire location is scrapped and testing will be performed to determine if a release has occurred.

All trash is kept in a wire mesh enclosure and removed to an approved landfill when full. All spent motor oils are kept in separate containers and they are removed and sent to an approved recycling center. Any spilled lubricants, pipe

dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

These operations are monitored by Mi Swaco service technicians. Daily logs are maintained to ensure optimal equipment operation and maintenance. Screen and chemical use is logged to maintain inventory control. Fluid properties are monitored and recorded and drilling mud volumes are accounted for in the mud storage farm. This data is kept for end of well review to insure performance goals are met. Lessons learned are logged and used to help with continuous improvement.

A MI SWACO field supervisor manages from 3-5 wells. They are responsible for training personnel, supervising installations, and inspecting sites for compliance of MI SWACO safety and operational policy.

### III. Closure Plan

A maximum 340' X 340' caliche pad is built per well. All of the trucks and steel tanks fit on this pad. All fluid cuttings go to the steel tanks to be hauled by various trucking companies to an agency approved disposal.

<u>District I</u>
1625 N. French Dr., Hobbs, NM 88240
<u>District II</u>
1301 W. Grand Avenue, Artesia, NM 88210
<u>District III</u>
1000 Rio Brazos Rd., Aztec, NM 87410
<u>District IV</u>
1220 S. St. Francis Dr., Santa Fe, NM 87505

# State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, NM 87505

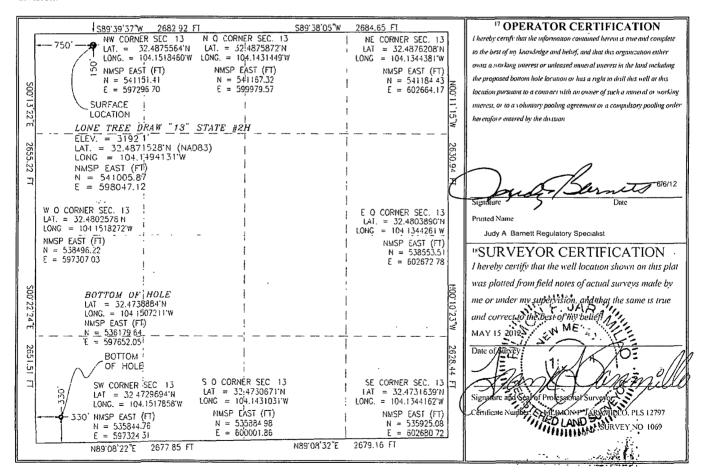
Form C-102 Revised October 15,2009 Submit one copy to appropriate District Office

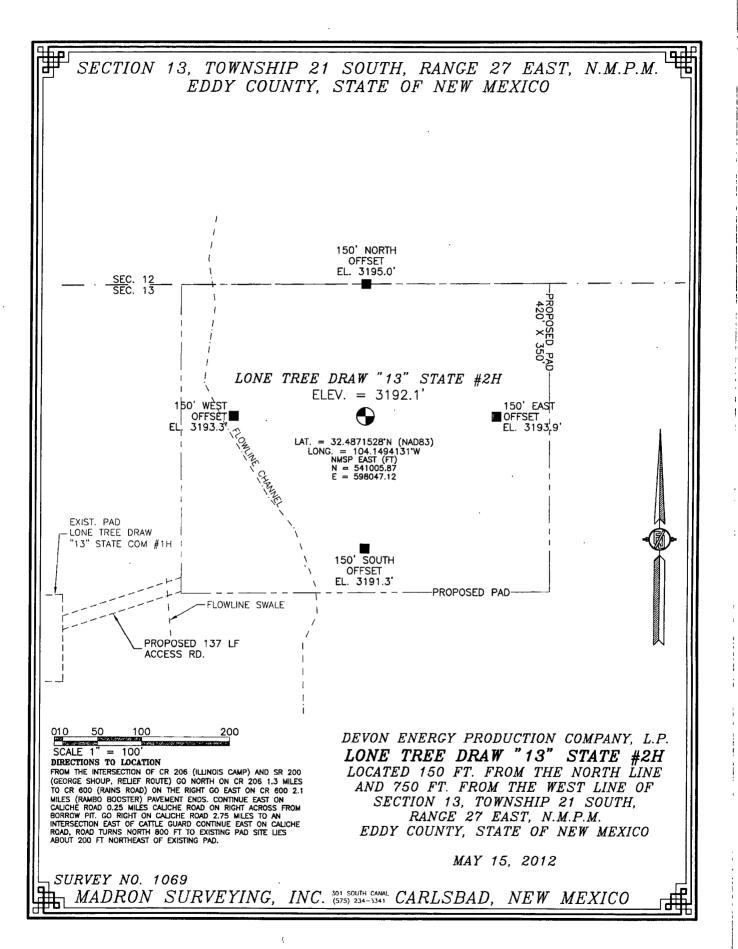
☐ AMENDED REPORT

### WELL LOCATION AND ACREAGE DEDICATION PLAT

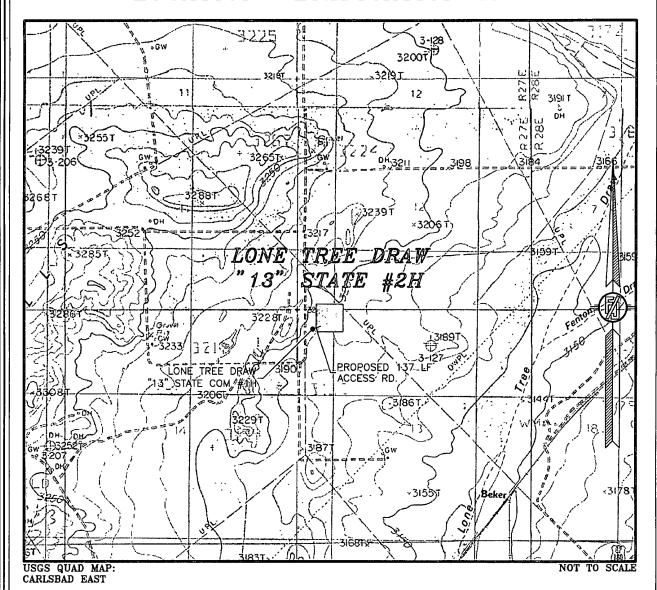
1	API Numbe	r		<sup>2</sup> Pool Code	:	Pool Name					
24330 FENTON DELAWARE; NO								ARE; NORTH	RTHWEST		
<sup>4</sup> Property Code					3 Property	Name			<sup>6</sup> Well Number		
				2H							
7OGRID	No.				Name			9 Elevation			
6137	'	DEVON ENERGY PRODUCTION COMPANY, L.P. 319							3192.1		
					" Surface	Location					
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County		
D	13	21 S	27 E		150	NORTH	750	WEST	EDDY		
***	•		" Bo	ttom Ho	le Location I	Different From	n Surface				
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County		
M	13	21 S	27 E		330	SOUTH	330	WEST	EDDY		
<sup>2</sup> Dedicated Acre	s 13 Joint o	r Infilt 14 C	onsolidation	Code 15 Or	der No.	<u> </u>	V-1018				
160											

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.





# SECTION 13, TOWNSHIP 21 SOUTH, RANGE 27 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO LOCATION VERIFICATION MAP



DEVON ENERGY PRODUCTION COMPANY, L.P.

LONE TREE DRAW "13" STATE #2H

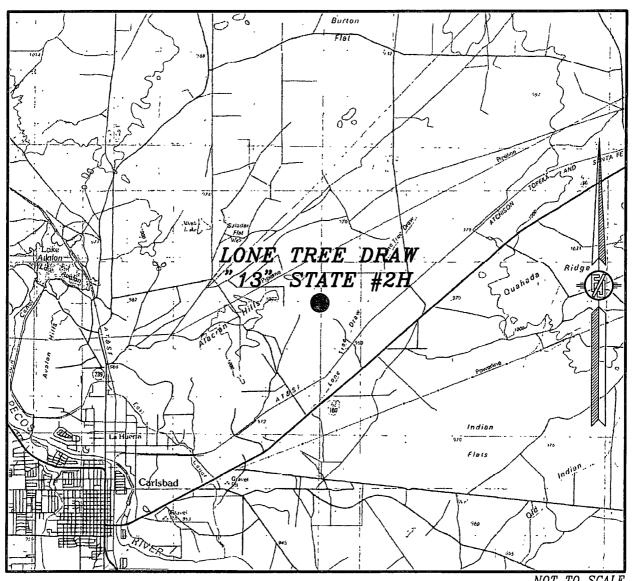
LOCATED 150 FT. FROM THE NORTH LINE
AND 750 FT. FROM THE WEST LINE OF
SECTION 13, TOWNSHIP 21 SOUTH,
RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 15, 2012

SURVEY NO. 1069

MADRON SURVEYING, INC. 301 SOUTH CAMAL CARLSBAD, NEW MEXICO

# SECTION 13, TOWNSHIP 21 SOUTH, RANGE 27 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO VICINITY MAP



NOT TO SCALE

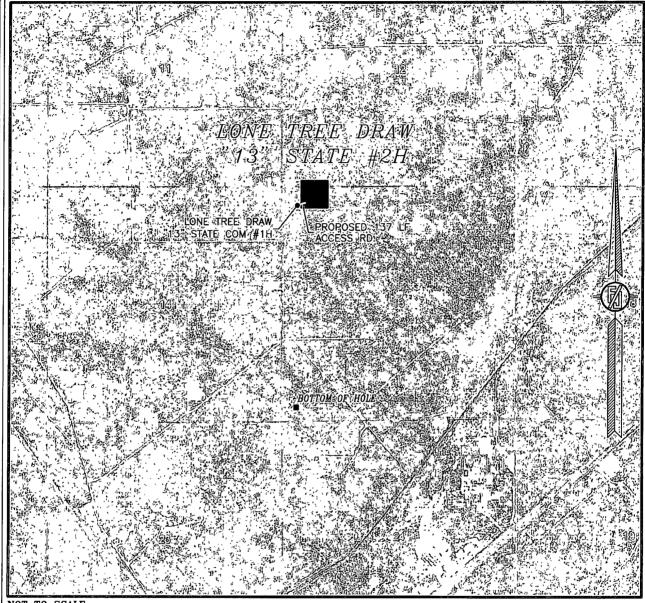
DEVON ENERGY PRODUCTION COMPANY, L.P. LONE TREE DRAW "13" STATE #2H LOCATED 150 FT. FROM THE NORTH LINE AND 750 FT. FROM THE WEST LINE OF SECTION 13, TOWNSHIP 21 SOUTH, RANGE 27 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

MAY 15, 2012

SURVEY NO. 1069

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO





NOT TO SCALE AERIAL PHOTO: GOOGLE EARTH JUNE, 2011

DEVON ENERGY PRODUCTION COMPANY, L.P.

LONE TREE DRAW "13" STATE #2H

LOCATED 150 FT. FROM THE NORTH LINE

AND 750 FT. FROM THE WEST LINE OF

SECTION 13, TOWNSHIP 21 SOUTH,

RANGE 27 EAST, N.M.P.M.

EDDY COUNTY, STATE OF NEW MEXICO

MAY 15, 2012

SURVEY NO. 1069

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO

# **Devon Energy Corporation**

HALLIBURTON | Sperry Drilling

Project: Eddy County, NM (NAD 83) Site: Lone Tree Draw "13" State Well #2H Well: Lone Tree Draw "13" State #2H Wellbore: Wellbore #1

Wellbore: Wellbore #1 Plan: Plan #1 Rig: H & P 223

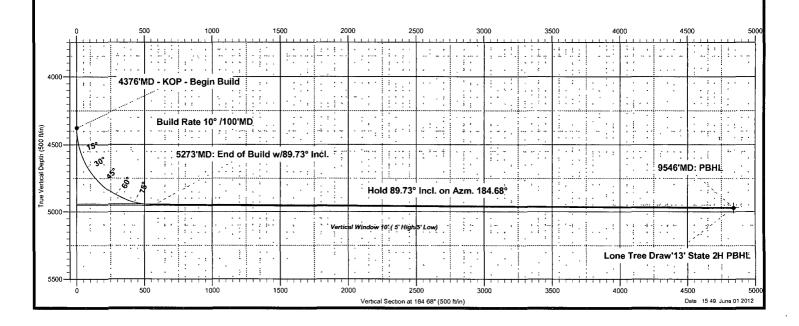


#### SURFACE LOCATION

US State Plane 1983
New Mexico Eastern Zone
Elevation GL 3192 1° + 25° @ 3217 10ft (H & P 223)
Northing Easting Lattude Longitude
541005 87 598047 12 32° 29′ 13 750 N 104° 8′ 57 887 W

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)										
Name TVD Lone Tree Draw'13' State 2H PBHL 4969 00	+N/-S	+E/-W	Northing	Easting	Shape					
	-4826 23	-395 07	536179 64	597652 05	Rectangle (Sides L4842 37 W50 00)					

SECTION DETAILS										
MD 0 00	Inc 0 00	<b>Azi</b> 0 00	TVD 0 00	+N/-S 0 00	+E/-W 0 00	DLeg 0 00	TFace 0 00	VSec 0 00	Annotation	
4376 05	0 00	0 00	4376 05	0 00	0 00	0 00	0 00	0 00	4376'MD - KOP - Begin Build	
5273 37	89 73	184 68	4949 00	-568 37	-46 53	10 00	184 68	570 28	5273'MD End of Build w/89 73° Ir	
9545.51	89 73	184 68	4969 00	-4826 23	-395 07	0.00	0.00	4842 37	9546'MD PRHI	



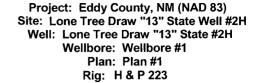
# **Devon Energy Corporation**

West(-)/East(+) (750 ft/in)

Lone Tree Draw "13" State #2H

HALLIBURTON |

Sperry Drilling

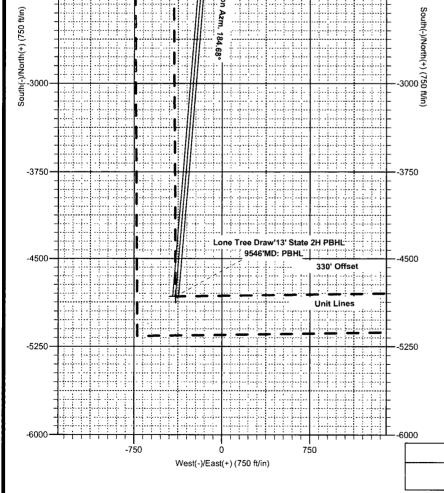




#### **SURFACE LOCATION**

US State Plane 1983
New Mexico Eastern Zone
Elevation GL 3192 1' + 25' @ 3217 10ft (H & P 223)
Northing Easting Latitude Longitude
541005 87 598047 12 32° 29' 13 750 N 104° 8' 57 887 W

-1500



Target Window 50': 25' Left/25' Right



To convert a Magnetic Direction to a Grid Direction, Add 7 74°

Magnetic Model BGGM2011 Date 01-Jun-12 Azimuths to Grid North

# **Devon Energy Corporation**

Eddy County, NM (NAD 83) Lone Tree Draw "13" State Well #2H Lone Tree Draw "13" State #2H

Wellbore #1

Plan: Plan #1

# **Sperry Drilling Services**Proposal Report

01 June, 2012

Well Coordinates 541,005 87 N, 598,047 12 E (32° 29' 13 75" N, 104° 08' 57 89" W)

Ground Level 3,192.10 ft

Local Coordinate Origin.

Viewing Datum

GL 3192.1' + 25' @ 3217 10ft (H & P 223)

TVDs to System

North Reference:

Unit System

API - US Survey Feet

Version: 2003 16 Build: 431

**HALLIBURTON** 

## **HALLIBURTON**

# Plan Report for Lone Tree Draw "13" State #2H - Plan #1

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
0 00	. 0.00	0 00	0 00	0 00	0.00	0.00	0 00	0 00	0.00	0.00
100.00	0.00	0 00	100.00	0 00	0.00	0.00	0 00	0 00	0.00	0.00
200 00	0.00	0 00	200.00	0.00	0 00	0.00	0 00	0 00	0.00	0 00
300 00	0.00	0.00	300 00	0 00	0 00	0.00	0 00	0.00	0.00	0 00
400 00	0.00	0 00	400 00	0 00	0 00	0.00	0 00	0 00	0.00	0 00
500 00	0 00	0 00	500 00	0 00	0 00	0 00	0.00	0 00	0 00	0 00
600.00	0 00	0 00	600.00	0 00	0.00	0 00 ·	0 00	0 00	0 00	0 00
700.00	0.00	0 00	700.00	0 00	0.00	. 0 00	0 00	0 00	0 00	0 00
800 00	0.00	0.00	800.00	0 00	0.00	0.00	0 00	0 00	0 00	0.00
900 00	0.00	0.00	900 00	0.00	0.00	0.00	0.00	0 00	0 00	0 00
1,000 00	0 00	0 00	1,000.00	0 00	0.00	0.00	0 00	0 00	0 00	0.00
1,100.00	0 00	0 00	1,100.00	0 00	0 00	0.00	0 00	0 00	0 00	0.00
1,200.00	0 00	0.00	1,200.00	0 00	0 00	0.00	0 00	0 00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0 00	0.00	0 00	0 00	0 00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0 00	0.00	0 00	0 00	0 00	0.00
1,500 00	0.00	0 00	1,500 00	0 00	0 00	0 00	0 00	0 00	0.00	0 00
1,600 00	0.00	0 00	1,600 00	0 00	0 00	0 00	0 00	0 00	0.00	0.00
1,700 00	0.00	0 00	1,700 00	0 00	0 00	0 00	0 00	0 00	0.00	0 00
1,800.00	0.00	0 00	1,800 00	0 00	0.00	0 00	0 00	0 00	0.00	0 00
1,900 00	0.00	0.00	1,900.00	0 00	0.00	0 00	0 00	0 00	0.00	0 00
2,000.00	0 00	0.00	2,000.00	0 00	0 00	0.00	0.00	0 00	0 00	0 00
2,100.00	0 00	0.00	2,100.00	0.00	0 00	0.00	0.00	0 00	0 00	0 00
2,200 00	0.00	0.00	2,200.00	0.00	0 00	0.00	0.00	0 00	0 00	0.00
2,300 00	0 00	0.00	2,300.00	0.00	0 00	0.00	0.00	0 00	0 00	0.00
2,400.00	0.00	0.00	2,400.00	0 00	0 00	0.00	0.00	0 00	0 00	0.00
2,500.00	0 00	0 00	2,500 00	0 00	0 00	0.00	0.00	0 00	0.00	0 00
2,600 00	0 00	0 00	2,600 00	0 00	0.00	0.00	0.00	0 00	0 00	0 00
2,700 00	0 00	0 00	2,700 00	0.00	0.00	0.00	0.00	0.00	0 00	0 00
2,800 00	0.00	0 00	2,800 00	0.00	0.00	0.00	0.00	0 00	0 00	0 00
2,900.00	0 00	0 00	2,900 00	0 00	0.00	0.00	0.00	0 00	0 00	0.00
3,000.00	0 00	0.00	3,000.00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
3,100 00	0 00	0 00	3,100 00	0 00	0.00	0.00	0.00	0 00	0.00	0 00
3,200 00	0 00	0.00	3,200.00	0.00	0 00	0.00	0 00	0 00	0 00	0 00
3,300.00	0 00	0 00	3,300 00	0 00	0.00	0.00	0.00	0.00	0 00	0 00
3,400 00	0.00	0 00	3,400 00	0.00	0 00	0.00	0.00	0 00	0.00	0 00
3,500 00	0.00	.000	3,500 00	0 00	0 00	0 00	0.00	0 00	0.00	0 00
3,600 00	0 00	000	3,600 00	0 00	0.00	0 00	0 00	0 00	0.00	0 00
3,700 00	0 00	000	3,700 00	0.00	0 00	0.00	0.00	0 00	0.00	0 00
3,800.00	0.00	000	3,800.00	0.00	0.00	0 00	0 00	0.00	0.00	0 00
3,900.00	. 0 00	000	3,900.00	0.00	0.00	0.00	0 00	0.00	0.00	0 00
4,000 00 4,100 00 4,200 00 4,300.00 4,376 05 <b>4376'MD</b> -	0 00 0.00 0.00 0.00 0.00 KOP - Begin	0 00 0 00 0.00 0 00 0.00 Build	4,000.00 4,100.00 4,200 00 4,300 00 4,376 05	0.00 0.00 0.00 0.00 0.00	0.00 0 00 0 00 0 00 0 00	0.00 0.00 0.00 0.00 0.00	0.00 0 00 0 00 0 00 0.00	0.00 0 00 0 00 0 00 0 00	0 00 0 00 0 00 0 00 0 00	0 00 0 00 0.00 0 00 0 00
4,386 00 Build Rate	1 00 1 100'MD	184 68	4,386 00	-0.09	-0 01	0 09	10 00	10.00	0 00	184.68
4,400 00	2 40	184 68	4,399.99	-0.50	-0 04	0.50	10.00	10 00	0.00	0 00
4,500 00	12 40	184 68	4,499 04	-13.31	-1.09	13.36	10 00	10 00	0 00	0 00
4,600.00	22.40	184 68	4,594 34	-43 07	-3 53	43.21	10 00	10.00	0 00	0 00
4,700 00	32.40	184 68	4,683 01	-88 87	-7.27	89.17	10 00	10 00	0.00	0 00
4,800.00	42.40	184 68	4,762.36	-149.32	-12.22	149.82	10.00	10 00	0 00	0 00
4,900.00	52.40	184 68	4,829 97	-222 59	-18.22	223.33	10 00	10 00	0 00	0.00
5,000 00	62.40	184 68	4,883 78	-306 44	-25.08	307.46	10 00	10 00	0 00	0 00
5,100 00	72.40	184 68	4,922 17	-398 33	-32 61	399.66	10.00	10 00	0 00	0 00
5,200 00	82.40	184 68	4,943 97	-495 47	-40 56	497 13	10.00	10 00	0 00	0 00
5,273.37	89 73	184 68	4,949 00	-568.37	-46 53	570 28	10 00	10.00	0.00	0 00

## Eddy County, NM (NAD 83)

## Plan Report for Lone Tree Draw "13" State #2H - Plan #1

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
5273'MD:	End of Build v	v/89.73° Incl.								
5,290 00 Hold 89.73	89 73 3° Incl. on Azn	184 68 n. <b>184.68</b> °	4,949 08	-584.95	-47.88	586 91	0.00	0 00	0.00	0
5,300 00 5,400 00 5,500 00	89 73 89 73 89.73	184 68 184.68 184 68	4,949 13 4,949.59 4,950.06	-594 92 -694.58 -794 25	-48 70 -56 86 -65.02	596.91 696.91 796.91	0 00 0 00 0.00	0 00 0 00 0 00	0 00 0.00 0 00	0 0 0
5,600 00 5,700 00 5,800 00 5,900.00 6,000.00	89.73 89.73 89.73 89.73 89.73	184.68 184.68 184.68 184.68	4,950.53 4,951.00 4,951.47 4,951.93 4,952.40	-893.91 -993 58 -1,093 25 -1,192.91 -1,292.58	-73.17 -81.33 -89 49 -97.65 -105.81	896.90 996.90 1,096.90 1,196.90 1,296.90	0.00 0 00 0 00 0.00 0.00	0.00 0 00 0 00 0 00 0 00	0.00 0.00 0.00 0.00 0.00	0 0 0 0
6,100.00 6,200 00 6,300.00 6,400.00 6,500 00	89.73 89.73 89.73 89.73 89.73	184.68 184.68 184.68 184.68 184.68	4,952 87 4,953 34 4,953.81 4,954.28 4,954 74	-1,392 24 -1,491 91 -1,591 57 -1,691.24 -1,790.90	-113 97 -122 13 -130 28 -138 44 -146.60	1,396 90 1,496.90 1,596.90 1,696.90 1,796.89	0 00 0 00 0 00 0.00 0.00	0.00 0 00 0 00 0 00 0.00	0.00 0 00 0.00 0.00 0.00	0 0 0 0
6,600.00 6,700 00 6,800 00 6,900 00 7,000 00	89.73 89.73 89.73 89.73 89.73	184.68 184.68 184.68 184.68	4,955.21 4,955.68 4,956.15 4,956.62 4,957.08	-1,890.57 -1,990.24 -2,089 90 -2,189.57 -2,289 23	-154.76 -162 92 -171 08 -179 24 -187 39	1,896 89 1,996 89 2,096 89 2,196 89 2,296 89	0 00 0.00 0 00 0 00 0 00	0 00 0 00 0 00 0 00 0 00	0 00 0.00 0.00 0.00 0.00	0 0 0 0
7,100 00 7,200 00 7,300.00 7,400.00 7,500 00	89 73 89 73 89 73 89.73 89 73	184.68 184.68 184.68 184.68 184.68	4,957.55 4,958.02 4,958.49 4,958.96 4,959.42	-2,388 90 -2,488.56 -2,588 23 -2,687 89 -2,787.56	-195 55 -203 71 -211.87 -220 03 -228 19	2,396 89 2,496 89 2,596.89 2,696 88 2,796 88	0 00 0.00 0.00 0 00 0 00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0 0 0 0
7,600.00 7,700 00 7,800.00 7,900.00 8,000.00	89 73 89.73 89.73 89 73 89.73	184 68 184 68 184 68 184.68 184.68	4,959 89 4,960 36 4,960 83 4,961 30 4,961.77	-2,887 22 -2,986.89 -3,086.56 -3,186.22 -3,285.89	-236 35 -244.50 -252.66 -260.82 -268.98	2,896 88 2,996.88 3,096.88 3,196.88 3,296.88	0 00 0 00 0 00 0 00 0 00	0 00 0 00 0 00 0 00 0 00	0 00 0.00 0.00 0.00 0.00	0 0 0 0
8,100.00 8,200 00 8,300.00 8,400 00 8,500.00	89.73 89 73 89.73 89.73	184.68 184 68 184 68 184 68 184.68	4,962.23 4,962.70 4,963 17 4,963 64 4,964.11	-3,385.55 -3,485 22 -3,584 88 -3,684 55 -3,784.21	-277 14 -285 30 -293 45 -301 61 -309 77	3,396.88 3,496.88 3,596.87 3,696.87 3,796.87	0 00 0 00 0.00 0.00 0.00	0 00 0 00 0.00 0.00 0 00	0 00 0 00 0 00 0 00 0.00	0 0 0 0
8,600.00 8,700 00 8,800.00 8,900.00 9,000 00	89 73 89.73 89 73 89 73 89 73	184 68 184 68 184 68 184 68 184 68	4,964 57 4,965.04 4,965 51 4,965 98 4,966 45	-3,883 88 -3,983.55 -4,083.21 -4,182.88 -4,282 54	-317 93 -326 09 -334 25 -342 41 -350.56	3,896 87 3,996 87 4,096.87 4,196 87 4,296 87	0.00 0.00 0.00 0.00 0.00	0 00 0 00 0.00 0 00 0.00	0.00 0 00 0 00 0 00 0 00	0 0 0 0
9,100.00 9,200 00 9,300.00 9,400 00 9,500 00	89.73 89.73 89.73 89.73 89.73	184 68 184 68 184.68 184 68 184 68	4,966 91 4,967.38 4,967 85 4,968 32 4,968.79	-4,382 21 -4,481 87 -4,581 54 -4,681.20 -4,780 87	-358 72 -366.88 -375.04 -383.20 -391.36	4,396 87 4,496.86 4,596 86 4,696.86 4,796 86	0.00 0 00 0.00 0.00 0 00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0 0 0 0
9,545 51	89 73 PBHL - Lone	184 68	4,969.00	-4,826.23	-395.07	4,842.37	0 00	0.00	0.00	0

# Plan Report for Lone Tree Draw "13" State #2H - Plan #1

## Plan Annotations

Measured	Vertical	Local Coor	dinates	
Depth (ft)	Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
4,376 05	4,376.05	0.00	0 00	4376'MD - KOP - Begin Build
4,386 00	4,386.00	-0 09	-0 01	Build Rate 10° /100'MD
5,273 37	4,949 00	-568 37	-46.53	5273'MD: End of Build w/89 73° Incl
5,290.00	4,949.08	-584 95	-47 88	Hold 89.73° Incl. on Azm. 184.68°
0 5/15 51	4 969 00	-4 826 23	-395 N7	9546'MD: PRHI

## **Vertical Section Information**

Angle			Origin	Orig	jin .	Start
Туре	Target	Azimuth (°)	Type	+N/_S (ft)	+E/-W (ft)	TVD (ft)
TD	No Target (Freehand)	184.68	Slot	0 00	0 00	0 00

### Survey tool program

From	То		Survey/Plan	Survey Tool
(ft)	(ft)			•
0.00	9,545 46	Plan #1		MWD

### Targets associated with this wellbore

	TVD	+N/-S	+E/-W	
Target Name	(ft)	(ft)	(ft)	Shape
Lone Tree Draw'13' State 2H PBHL	4,969.00	-4,826.23	-395 07	Rectangle

# North Reference Sheet for Lone Tree Draw "13" State Well #2H - Lone Tree Draw "13" State #2H - Wellbore #1

All data is in US Feet unless otherwise stated Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to GL 3192.1' + 25' @ 3217 10ft (H & P 223). Northing and Easting are relative to Lone Tree Draw "13" State #2H Coordinate System is US State Plane 1983, New Mexico Eastern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -104.33°, Longitude Origin 0° 0' 0.000 E°, Latitude Origin 0° 0' 0 000 N°

False Easting 541,337.50ft, False Northing: 0 00ft, Scale Reduction: 0 99991277

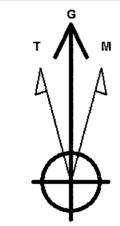
Grid Coordinates of Well 541,005 87 ft N, 598,047.12 ft E

Geographical Coordinates of Well: 32° 29' 13.75" N, 104° 08' 57.89" W

Grid Convergence at Surface is: 0 10°

Based upon Minimum Curvature type calculations, at a Measured Depth of 9,545.51ft the Bottom Hole Displacement is 4,842.37ft in the Direction of 184.68° (Grid).

Magnetic Convergence at surface is: -7 74° ( 1 June 2012, , BGGM2011)



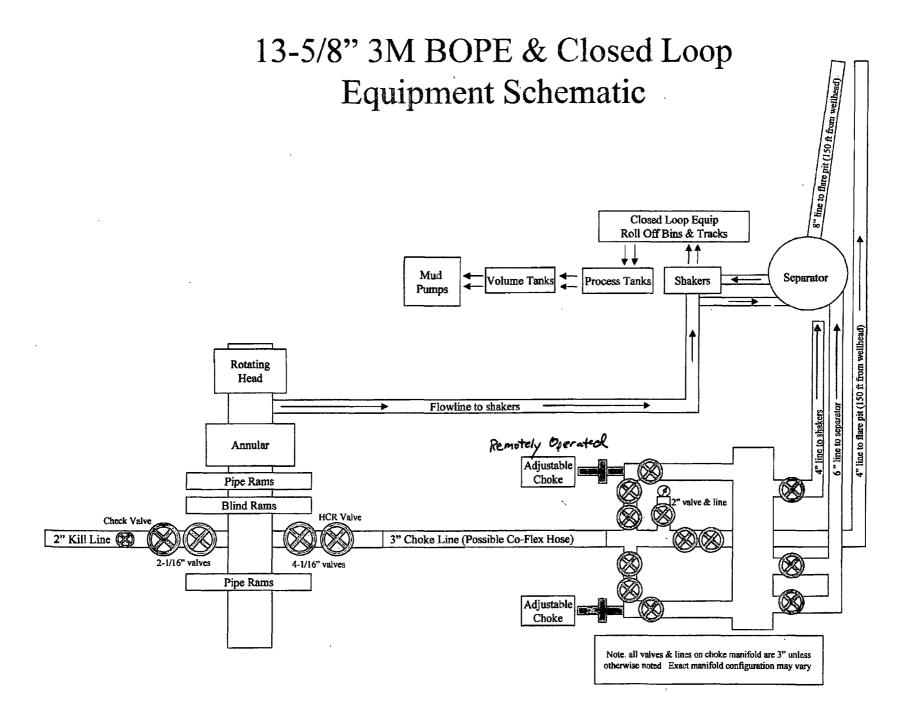
Magnetic Model: BGGM 2011

Date: 01-Jun-12 Declination: 7.84°, Inclination/Dip: 60.26°

Inclination/Dip: 60.26° Field Strength: 48610

Grid North is 0.10° E ast of True North (Grid Convergence)
Magnetic North is 7.84° East of True North (Magnetic Declination)
Magnetic North is 7.74° East of Grid North (Magnetic Convergence)

To convert a True Direction to a Grid Direction, Subtract 0.19°
To convert a M agnetic Direction to a True Direction, Add 7.84° East
To convert a M agnetic Direction to a Grid Direction, Add 7.74°



# 13-5/8" x 3,000 psi BOP Stack

