

**RECEIVED**  
 Form 3160-3  
 (March 2012)  
**NOV 21 2013**

**RECEIVED**  
 NOV 25 2013  
 OCD Artesia  
**NMCOO ARTESIA**

**ATS-13-1030**  
 FORM APPROVED  
 OMB No. 1004-0137  
 Expires October 31, 2014

UNITED STATES  
 DEPARTMENT OF THE INTERIOR  
 BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

5. Lease Serial No. NMNM000503	
6. If Indian, Allottee or Tribe Name	
7. If Unit or CA Agreement, Name and No. Cotton Draw Unit - NM70928X	
8. Lease Name and Well No. Cotton Draw Unit 174H <b>&lt; 300635 &gt;</b>	
9. API Well No. <b>30-015-41822</b>	
10. Field and Pool, or Exploratory Paduca; Bone Spring (O) <b>&lt; 96641 &gt;</b>	
11. Sec., T. R. M. or Blk. and Survey or Area Sec 12, T25S-R31E	
12. County or Parish Eddy	13. State NM
14. Distance in miles and direction from nearest town or post office* Approximately 21 miles northeast of Malaga, NM	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 330'	16. No. of acres in lease 2360.80
17. Spacing Unit dedicated to this well W/2 W/2 of Sec 12, T25S-R31E = 160 acres	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>See attached map</b>	19. Proposed Depth 12848' MD 8200' TVD
20. BLM/BIA Bond No. on file CO-1104 & NMB-000801	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3452.2	22. Approximate date work will start* 07/30/2014
23. Estimated duration 45 days	
24. Attachments To be pad drilled with CDU 175H	

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

- |  |   |
|--|---|
| 1. Well plat certified by a registered surveyor.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification   |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM.             |

25. Signature <i>Patti Riechers</i>	Name (Printed/Typed) Patti Riechers	Date 07/18/2013
Title Regulatory Specialist		
Approved by (Signature) <b>/S/ STEPHEN J. CAFFEY</b>	Name (Printed/Typed)	Date <b>NOV 22 2013</b>
Title <b>FIELD MANAGER</b>	Office <b>CARLSBAD FIELD OFFICE</b>	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
 Conditions of approval, if any, are attached. **APPROVAL FOR TWO YEARS**

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2) \*(Instructions on page 2)  
**Carlsbad Controlled Water Basin**

**SEE ATTACHED FOR  
 CONDITIONS OF APPROVAL**

**Approval Subject to General Requirements  
 & Special Stipulations Attached**

**13. Bond Coverage:**

Bond Coverage is Nationwide; Bond # is CO-1104 & NMB-000801.

**Operators Representative:**

The Devon Energy Production Company, L.P. representatives responsible for ensuring compliance of the surface use plan are listed below.

Dan McCorkell - Operations Engineer  
Devon Energy Production Company, L.P.  
333 W. Sheridan  
Oklahoma City, OK 73102-5010  
(405) 228-7528 (office)  
(405) 443-8697 (Cellular)

Don Mayberry - Superintendent  
Devon Energy Production Company, L.P.  
Post Office Box 250  
Artesia, NM 88211-0250  
(575) 748-3371 (office)  
(575) 746-4945 (home)

**Certification**

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or Devon Energy Production Company, L.P. am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

I hereby also certify that I, or Devon Energy Production Company, L.P. have made a good faith effort to provide the surface owner with a copy of the Surface Use Plan of Operations and any Conditions of Approval that are attached to the APD.

Executed this 18th day of July, 2013.

Printed Name: Patti Riechers

Signed Name: Patti Riechers

Position Title: Regulatory Specialist

Address: 333 W. Sheridan, OKC OK 73102

Telephone: (405)-228-4248

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720  
District II  
311 S. First St., Artesia, NM 88216  
Phone: (575) 748-1283 Fax: (575) 748-0720  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 324-6178 Fax: (505) 324-6170  
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 & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office  
 AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number 36-015-41822	<sup>2</sup> Pool Code 96641	<sup>3</sup> Pool Name Paduca; Bone Spring (O)
<sup>4</sup> Property No. 3006375	<sup>5</sup> Property Name COTTON DRAW UNIT	
<sup>6</sup> OGRID No. 6137	<sup>7</sup> Operator Name DEVON ENERGY PRODUCTION COMPANY, L.P.	
		<sup>8</sup> Well Number 174H
		<sup>9</sup> Elevation 3452.2

<sup>10</sup> Surface Location

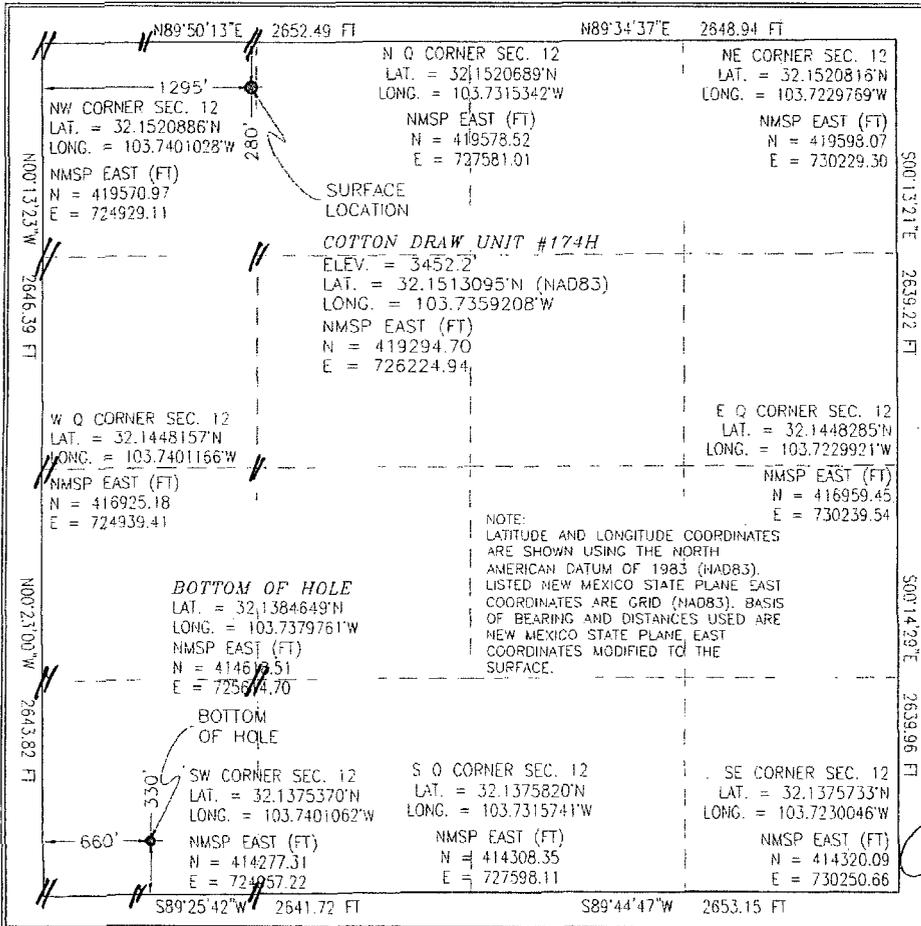
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	12	25 S	31 E		280	NORTH	1295	WEST	EDDY

<sup>11</sup> Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	12	25 S	31 E		330	SOUTH	660	WEST	EDDY

<sup>12</sup> Dedicated Acres 160	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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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. PP: 280' FNL & 1295' FWL, Sec 12, T25S-R31E



**<sup>17</sup> OPERATOR CERTIFICATION**  
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *Patti Riechers* Date: 07/18/2013  
Printed Name: Patti Riechers, Regulatory Specialist  
E-mail Address: patti.riechers@dvn.com

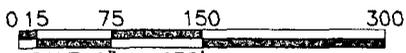
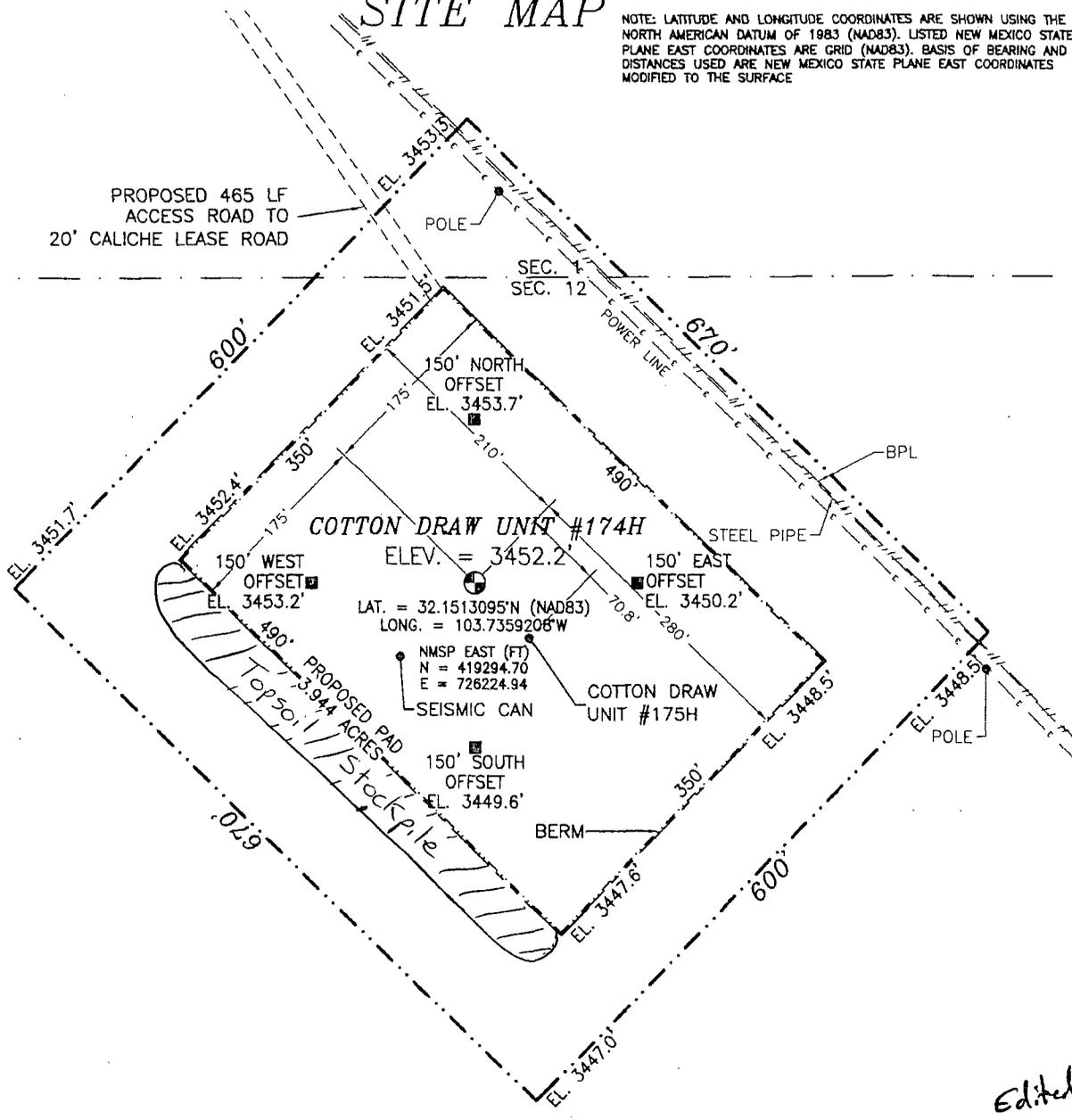
**<sup>18</sup> SURVEYOR CERTIFICATION**  
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date of Survey: JUNE 26, 2013  
Signature and Seal of Professional Surveyor: *Frank Jaramillo*  
Certificate Number: ELIZABETH JARAMILLO, PLS 12797  
SURVEY NO. 2099

SECTION 12, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE



SCALE 1" = 150'  
 DIRECTIONS TO LOCATION  
 FROM THE INTERSECTION OF SR 128 AND CR 1 (ORLA ROAD) GO SOUTH ON CR 1 6.3 MILES. MONSANTO ROAD A CALICHE LEASE ROAD ON RIGHT GO WEST FOLLOW LEASE ROAD 2.0 MILES. TURN RIGHT GO 0.8 MILES, TURN LEFT GO 2.0 MILES, TURN RIGHT GO 1.3 MILES, TURN RIGHT GO 0.2 MILES. SITE IS 0.1 MILES ON RIGHT (SOUTH).

DEVON ENERGY PRODUCTION COMPANY, L.P.  
**COTTON DRAW UNIT #174H**  
 LOCATED 280 FT. FROM THE NORTH LINE  
 AND 1295 FT. FROM THE WEST LINE OF  
 SECTION 12, TOWNSHIP 25 SOUTH,  
 RANGE 31 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

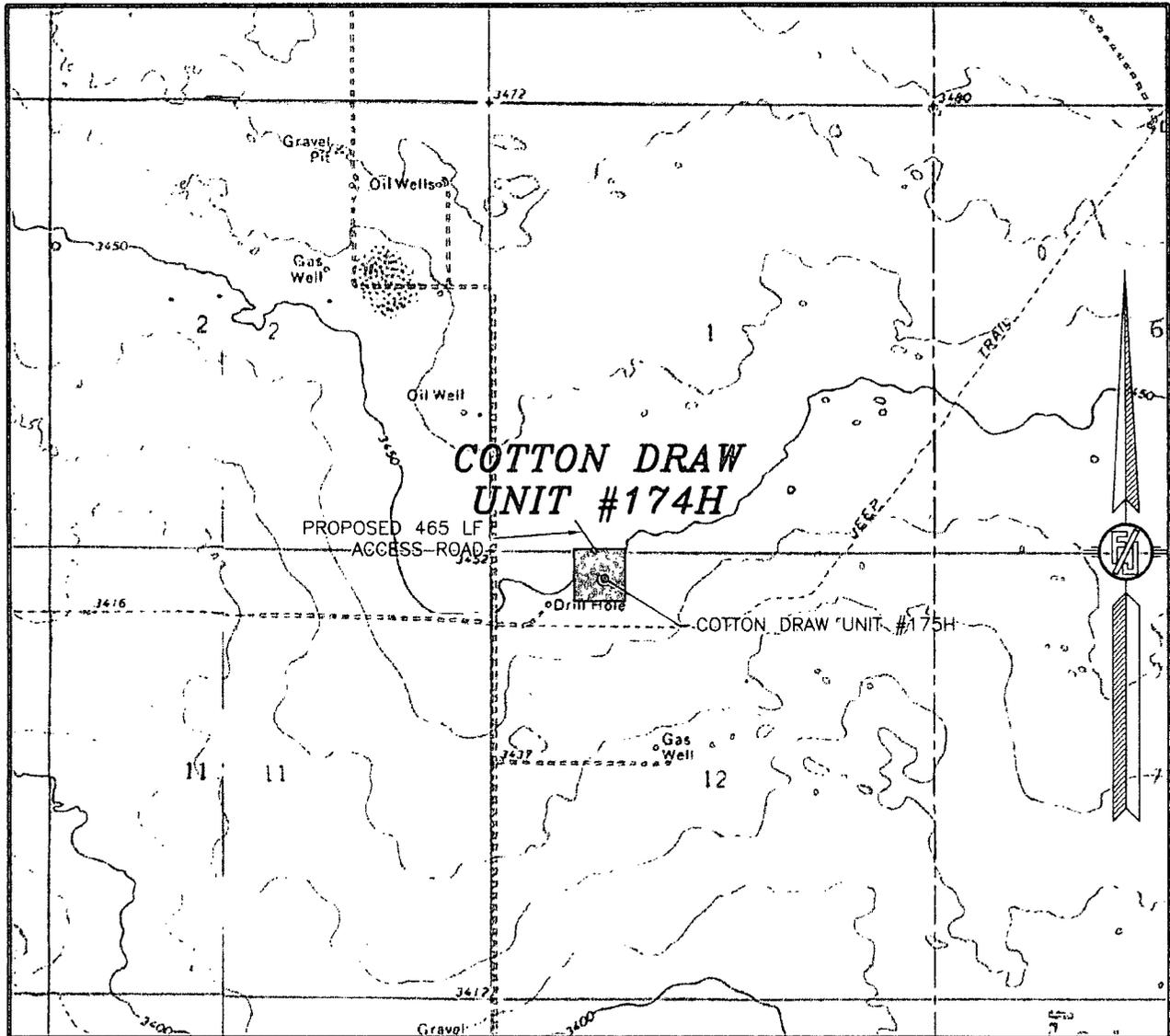
JUNE 26, 2013

SURVEY NO. 2099

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO  
 (575) 234-3341

Edited  
 TN 11/13/13

SECTION 12, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO  
 LOCATION VERIFICATION MAP



USGS QUAD MAP:  
 PADUCA BREAKS NW

NOT TO SCALE

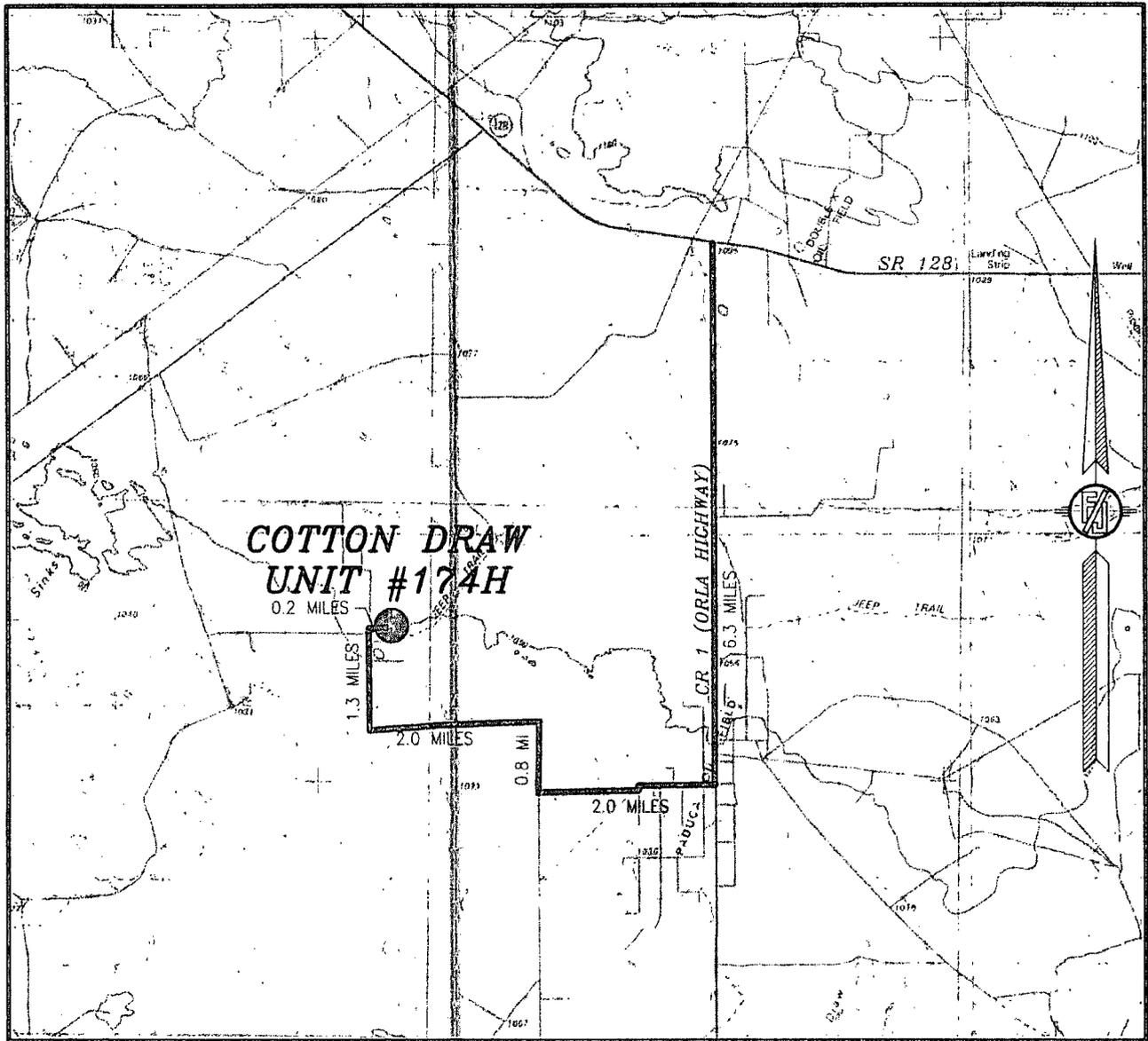
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 RANGE 31 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

JUNE 26, 2013

SURVEY NO. 2099

MADRON SURVEYING, INC. 301 SOUTH CAMAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 12, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO  
 VICINITY MAP



NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.  
**COTTON DRAW UNIT #174H**  
 LOCATED 280 FT. FROM THE NORTH LINE  
 AND 1295 FT. FROM THE WEST LINE OF  
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 RANGE 31 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

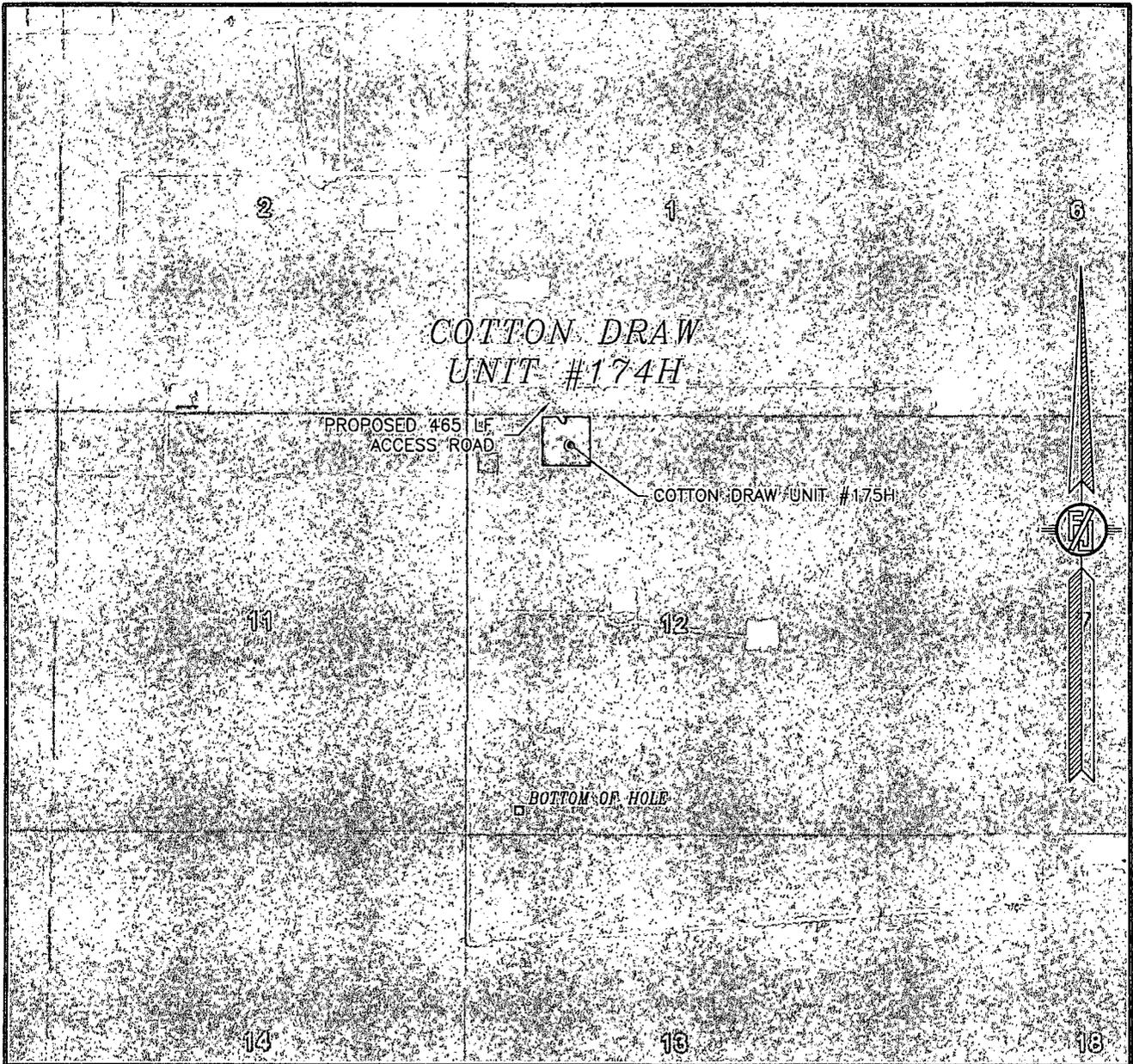
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 SOUTH ON CR 1 6.3 MILES, MONSANTO ROAD A CALICHE LEASE ROAD  
 ON RIGHT GO WEST FOLLOW LEASE ROAD 2.0 MILES, TURN RIGHT GO  
 0.8 MILES, TURN LEFT GO 2.0 MILES, TURN RIGHT GO 1.3 MILES,  
 TURN RIGHT GO 0.2 MILES. SITE IS 0.1 MILES ON RIGHT (SOUTH).

JUNE 26, 2013

SURVEY NO. 2099

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 12, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
AERIAL PHOTO



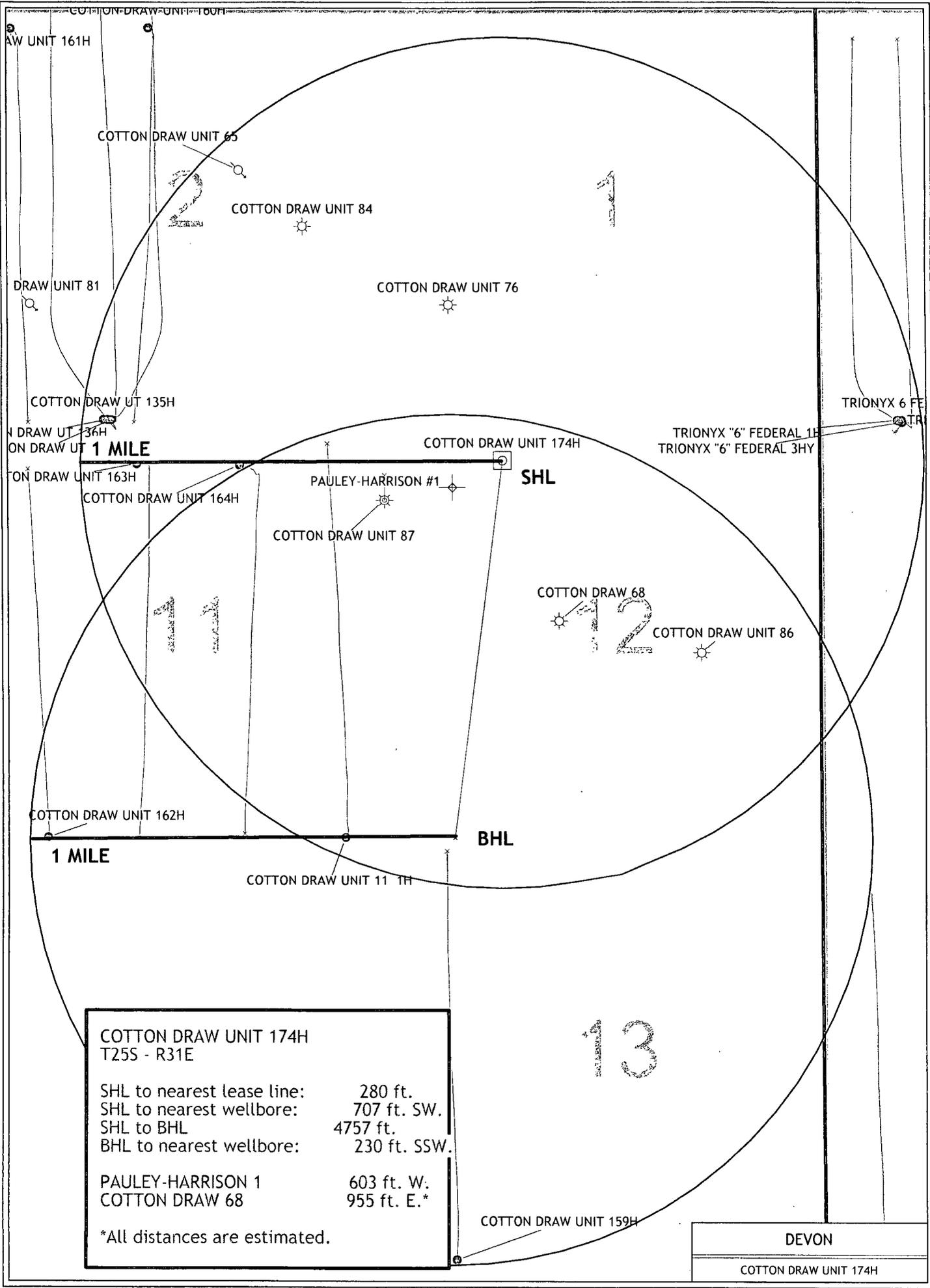
NOT TO SCALE  
AERIAL PHOTO:  
GOOGLE EARTH  
MARCH 2012

DEVON ENERGY PRODUCTION COMPANY, L.P.  
**COTTON DRAW UNIT #174H**  
LOCATED 280 FT. FROM THE NORTH LINE  
AND 1295 FT. FROM THE WEST LINE OF  
SECTION 12, TOWNSHIP 25 SOUTH,  
RANGE 31 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

JUNE 26, 2013

SURVEY NO. 2099.

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO



**COTTON DRAW UNIT 174H**  
 T25S - R31E

SHL to nearest lease line:	280 ft.
SHL to nearest wellbore:	707 ft. SW.
SHL to BHL	4757 ft.
BHL to nearest wellbore:	230 ft. SSW.

PAULEY-HARRISON 1	603 ft. W.
COTTON DRAW 68	955 ft. E.*

\*All distances are estimated.

**DEVON**  
 COTTON DRAW UNIT 174H

**DRILLING PROGRAM**

Devon Energy Production Company, LP  
Cotton Draw Unit 174H

Surface Location: 280' FNL & 1295' FWL, Unit D, Sec 12 T25S R31E, Eddy, NM  
Bottom Hole Location: 330' FSL & 660' FWL, Unit M, Sec 12 T25S R31E, Eddy, NM

**1. Geologic Name of Surface Formation**

a. Quaternary

**2. Estimated Tops of Geological Markers & Depths of Anticipated Fresh Water, Oil or Gas:**

a. Fresh Water	345'	Barren
b. Rustler	599'	Barren
c. Top of Salt	994'	Barren
d. Castile	2800'	Barren
e. Base of Salt	4109'	Barren
f. Bell Canyon	4407'	Oil & Gas
g. Cherry Canyon	5296'	Oil & Gas
h. Brushy Canyon	6621'	Oil & Gas
i. 1 <sup>st</sup> Bone Spring Lime	8203'	Oil & Gas
j. 1 <sup>st</sup> Bone Spring Sand	9334'	Oil & Gas
k. 2 <sup>nd</sup> Bone Spring Lime	9711'	Oil & Gas
l. 2 <sup>nd</sup> Bone Spring Sand	9890'	Oil & Gas

Total Depth                      12,848' MD                      8,200' TVD

**3. Casing Program: (All casing is new and API approved.)**

Hole Size	Hole Interval	Casing OD	Casing Interval	Weight	Collar	Grade
17-1/2"	0 - 750'	13-3/8"	0 - 750'	48#	STC	H-40
12-1/4"	750' - 4,350'	9-5/8"	0 - 4,350'	40#	LTC	HCK-55
8-3/4"	4,350' - 7,494'	5-1/2"	0 - 7,494'	17#	LTC	HCP-110
8-3/4"	7,494' - 12,848'	5-1/2"	7,494' - 12,848'	17#	BTC	HCP-110

Casing Size	Collapse Design Factor	Burst Design Factor	Tension Design Factor
13-3/8"	1.98	4.44	7.88
9-5/8"	1.87	1.75	3.99
5-1/2" LTC	2.13	3.03	4.28
5-1/2" BTC	1.95	2.78	2.5

**4. Cement Program: (cement volumes Surface 100%/ Intermediate 50% Production based on at least 25% excess):**

13-3/8" Surface      **Tail:** 800 sacks Class C Cement + 2% bwoc Calcium Chloride + 0.125 lbs/sack Poly-E-Flake + 63.1% Fresh Water, 14.8 ppg  
**Yield:** 1.35 cf/sk  
**TOC @ surface**

9-5/8" Intermediate      **Lead:** 965 sacks (65:35) Class C Cement:Poz (Fly Ash): + 5% bwoc Sodium Chloride + 0.125 lbs/sack Poly-E-Flake + 6% bwoc Bentonite + 70.9% Fresh Water, 12.9 ppg  
**Yield:** 1.85 cf/sk  
**TOC @ surface**

**Tail:** 375 sacks Class C Cement + 0.125 lbs/sack Poly-E-Flake + 63.5% Water, 14.8 ppg  
**Yield:** 1.33 cf/sk

5-1/2" Production      **1<sup>st</sup> Lead:** 230 sacks (50:50) Class H Cement:Poz (Fly Ash) + 10% bwoc Bentonite + 8 lb/sk Sodium Chloride + 0.125 lbs/sack Poly-E-Flake + 0.3% bwoc HR-601 + 0.3% bwoc Econolite + 77.2% Fresh Water, 11.8 ppg  
**Yield:** 2.52 cf/sk

**2<sup>nd</sup> Lead:** 390 sacks (65:35) Class H Cement:Poz (Fly Ash) + 6% bwoc Bentonite + 0.125 lbs/sack Poly-E-Flake + 0.1% bwoc HR-601 + 74.1% Fresh Water, 12.5 ppg  
**Yield:** 1.95 cf/sk

**Tail:** 1385 sacks (50:50) Class H Cement:Poz (Fly Ash) + 1 lb/sk Sodium Chloride + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.1% bwoc HR-601 + 2% bwoc Bentonite + 58.8% Fresh Water, 14.5 ppg  
**Yield:** 1.22 cf/sk  
**TOC @ 3850'**

**The above cement volumes could be revised pending the caliper measurement from the open hole logs.**

## 5. Pressure Control Equipment

A 3M 13-5/8" BOP system (Double Ram and Annular preventer) will be installed and tested prior to drilling out the surface casing shoe. The BOP system used to drill the intermediate hole will be tested per BLM Onshore Oil and Gas Order 2.

A 3M 13-5/8" BOP system (Double Ram and Annular preventer) will be installed and tested prior to drilling out the intermediate casing shoe. The BOP system used to drill the production hole will be tested per BLM Onshore Oil and Gas Order 2.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line); **if an H&P rig drills this well. Otherwise no flex line is needed.** The line will be kept as straight as possible with minimal turns.

See  
COA

### Auxiliary Well Control and Monitoring Equipment:

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.

## 6. Proposed Mud Circulation System

<u>Depth</u>	<u>Mud Wt.</u>	<u>Visc</u>	<u>Fluid Loss</u>	<u>Type System</u>
0 - 750	8.4-9.6	32-34	NC	FW
750 - 4350	10.0	28	NC	Brine
4350 - 12848	8.4-10.0	28-30	N-12	FW

The necessary mud products for weight addition and fluid loss control will be on location at all times. Visual mud monitoring equipment will be in place to detect volume changes indicating loss or gain of circulating fluid volume. If abnormal pressures are encountered, electronic/mechanical mud monitoring equipment will be installed.

7. **Logging, Coring, and Testing Program:**

- a. Drill stem tests will be based on geological sample shows.
- b. If a drill stem test is anticipated; a procedure, equipment to be used and safety measures will be provided via sundry notice to the BLM.
- c. The open hole electrical logging program will be:
  - i. Total Depth to Intermediate Casing                      Dual Laterolog-Micro Laterolog with SP and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
  - ii. Total Depth to Surface                                      Compensated Neutron with Gamma Ray
  - iii. No coring program is planned
  - iv. Additional testing will be initiated subsequent to setting the 5 ½” production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

8. **Potential Hazards:**

- a. No abnormal pressures or temperatures are expected. There is no known presence of H2S in this area. If H2S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6 No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP 3,600 psi and Estimated BHT 145°. No H2S is anticipated to be encountered.
- b. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13 3/8” casing shoe until the 5 1/2” casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8” shoe until total depth is reached.

See  
COA

9. **Anticipated Starting Date and Duration of Operations:**

- a. Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 32 days. If production casing is run then an additional 30 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.



**Weatherford<sup>®</sup>**

**Drilling Services**

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**Proposal**

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**devon**

COTTON DRAW UNIT 174H

EDDY COUNTY, NM

WELL FILE: **PLAN 1**

JULY 19, 2013

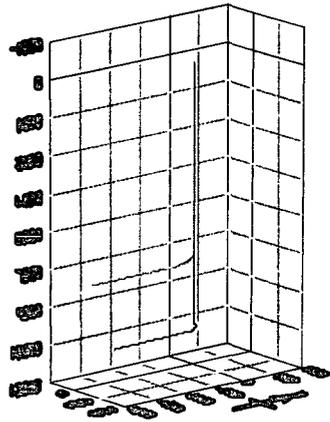
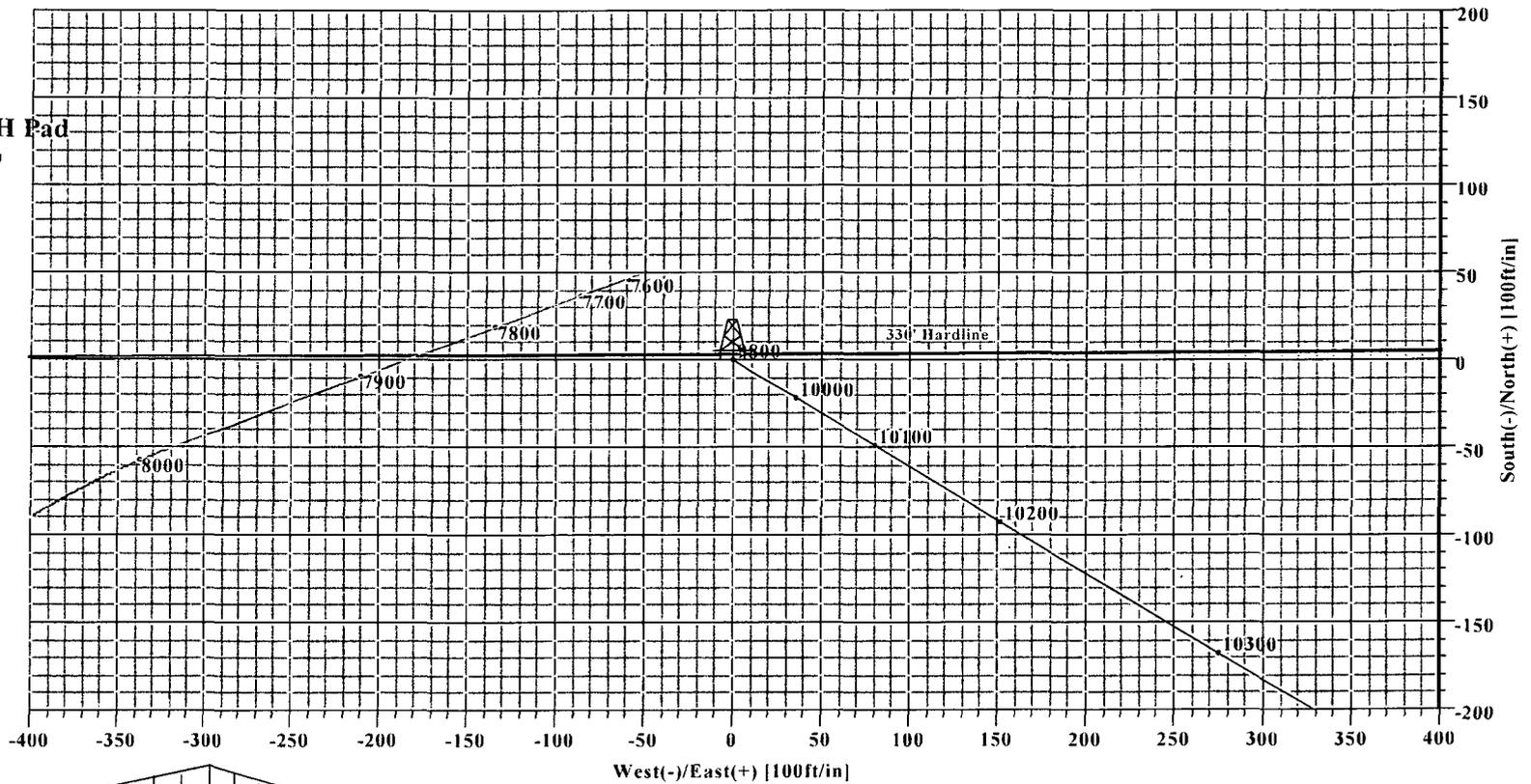
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**Weatherford International, Ltd.**

P.O. Box 61028  
Midland, TX 79711 USA  
+1.432.561.8892 Main  
+1.432.561.8895 Fax  
[www.weatherford.com](http://www.weatherford.com)



Cotton Draw #174 175H Pad  
Eddy Co., New Mexico



LEGEND

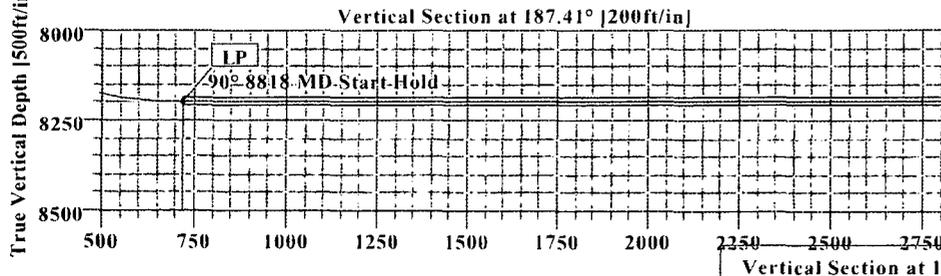
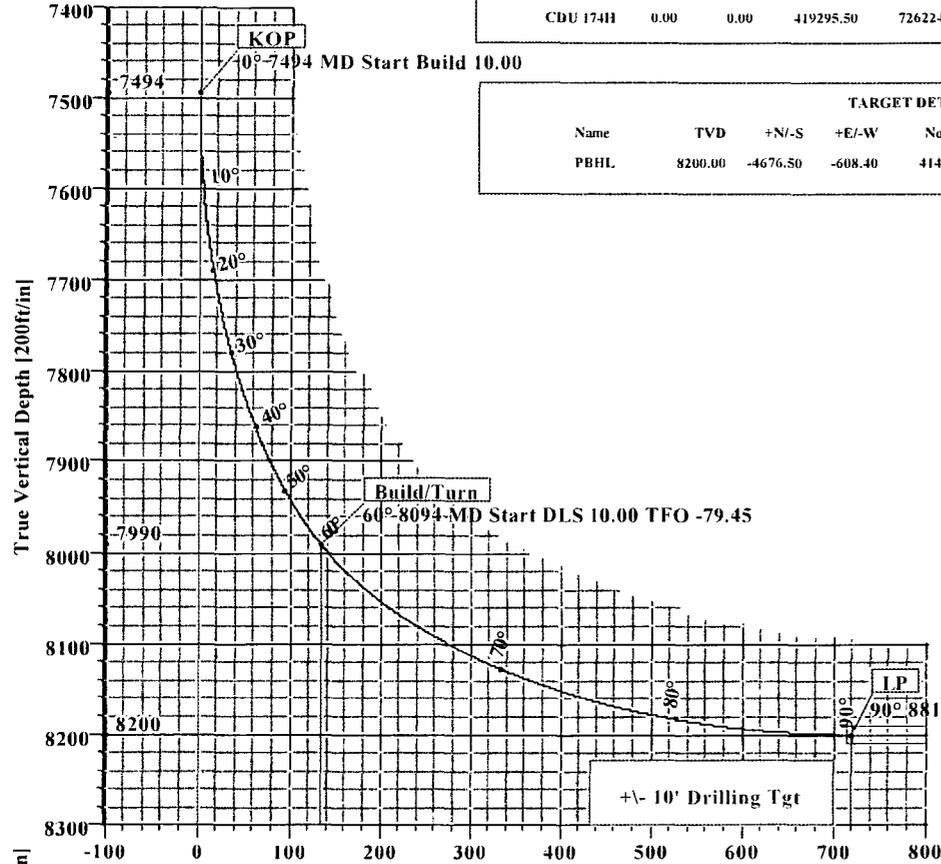
- CDU 174H (1)
- 1
- Plan #1





Cotton Draw #174H  
Eddy Co., New Mexico

KB ELEV: 3477  
GL ELEV: 3452



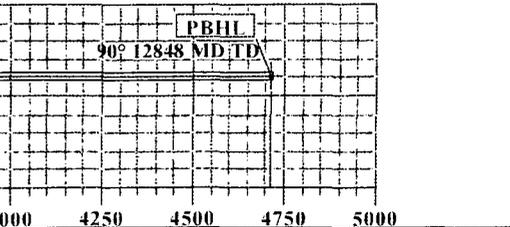
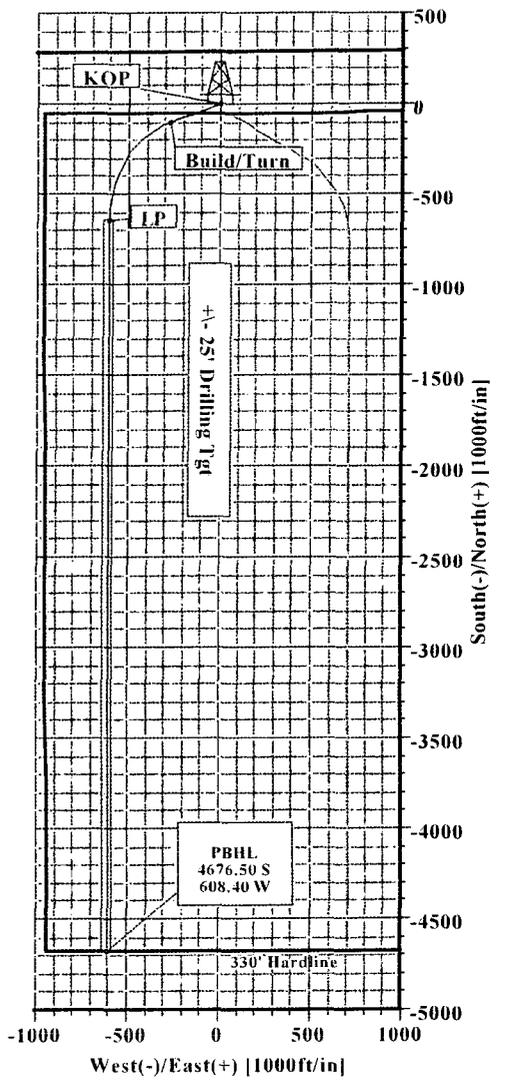
SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	7494.14	0.00	0.00	7494.14	0.00	0.00	0.00	0.00	0.00	
3	8094.14	60.00	249.56	7990.54	-100.05	-268.44	10.00	249.56	133.83	
4	8818.14	90.00	180.00	8200.00	-646.21	-608.70	10.00	-79.45	719.32	
5	12848.43	90.00	180.00	8200.00	-4676.50	-608.40	0.00	0.00	4715.91	PBHL

WELL DETAILS							
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
CDU 174H	0.00	0.00	419295.50	726224.60	32°09'04.714N	103°44'09.336W	N/A

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL	8200.00	-4676.50	-608.40	414619.00	725616.20	Rectangle (4030x50)

**SITE DETAILS**  
Cotton Draw Unit 174H  
Site Centre Northing: 419295.50  
Easting: 726224.60  
Ground Level: 3452.00  
Positional Uncertainty: 0.00  
Convergence: 0.32

**LEGEND**  
 CDU 175H (1)  
 Plan #1



Plan: Plan #1 (CDU 174H/1)  
Created By: Russell W. Joyner  
Date: 7/19/2013



# Weatherford

## Wft Plan Report X Y's.



**Weatherford**

<b>Company:</b> Devon Energy <b>Field:</b> Eddy Co., NM (NAD 83) <b>Site:</b> Cotton Draw Unit 174H <b>Well:</b> CDU 174H <b>Wellpath:</b> 1	<b>Date:</b> 7/19/2013 <b>Time:</b> 09:21:11 <b>Page:</b> 1 <b>Co-ordinate(NE) Reference:</b> Well: CDU 174H, Grid North <b>Vertical (TVD) Reference:</b> SITE 3477.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,187.41Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Sybase
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<b>Plan:</b> Plan #1  <b>Principal:</b> Yes	<b>Date Composed:</b> 6/11/2013 <b>Version:</b> 1 <b>Tied-to:</b> From Surface
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**Site:** Cotton Draw Unit 174H

<b>Site Position:</b>	<b>Northing:</b> 419295.50 ft	<b>Latitude:</b> 32 9 4.714 N
<b>From:</b> Map	<b>Easting:</b> 726224.60 ft	<b>Longitude:</b> 103 44 9.336 W
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid
<b>Ground Level:</b> 3452.00 ft		<b>Grid Convergence:</b> 0.32 deg

<b>Well:</b> CDU 174H	<b>Slot Name:</b>
<b>Well Position:</b> +N/-S 0.00 ft <b>Northing:</b> 419295.50 ft <b>Latitude:</b> 32 9 4.714 N	
+E/-W 0.00 ft <b>Easting:</b> 726224.60 ft <b>Longitude:</b> 103 44 9.336 W	
<b>Position Uncertainty:</b> 0.00 ft	

<b>Wellpath:</b> 1	<b>Drilled From:</b> Surface
<b>Current Datum:</b> SITE	<b>Tie-on Depth:</b> 0.00 ft
<b>Magnetic Data:</b> 8/30/2013	<b>Above System Datum:</b> Mean Sea Level
<b>Field Strength:</b> 48359 nT	<b>Declination:</b> 7.39 deg
<b>Vertical Section: Depth From (TVD)</b>	<b>Mag Dip Angle:</b> 60.04 deg
ft	ft
+N/-S	+E/-W
ft	ft
Direction	deg
0.00	187.41

Plan Section Information										
MD	Incl	Azim	TVD	+N/-S	+E/-W	DLS	Build	Turn	TFO	Target
ft	deg	deg	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	deg	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7494.14	0.00	0.00	7494.14	0.00	0.00	0.00	0.00	0.00	0.00	
8094.14	60.00	249.56	7990.34	-100.05	-268.44	10.00	10.00	0.00	249.56	
8818.14	90.00	180.00	8200.00	-646.21	-608.70	10.00	4.14	-9.61	-79.45	
12848.43	90.00	180.00	8200.00	-4676.50	-608.40	0.00	0.00	0.00	0.00	PBHL

Survey											
MD	Incl	Azim	TVD	N/S	E/W	VS	DLS	MapN	MapE	Comments	
ft	deg	deg	ft	ft	ft	ft	deg/100ft	ft	ft		
7400.00	0.00	0.00	7400.00	0.00	0.00	0.00	0.00	419295.50	726224.60		
7494.14	0.00	0.00	7494.14	0.00	0.00	0.00	0.00	419295.50	726224.60	KOP	
7500.00	0.59	249.56	7500.00	-0.01	-0.03	0.01	10.00	419295.49	726224.57		
7600.00	10.59	249.56	7599.40	-3.41	-9.14	4.56	10.00	419292.09	726215.46		
7700.00	20.59	249.56	7695.60	-12.78	-34.28	17.09	10.00	419282.72	726190.32		
7800.00	30.59	249.56	7785.68	-27.84	-74.70	37.24	10.00	419267.66	726149.90		
7900.00	40.59	249.56	7866.90	-48.14	-129.16	64.39	10.00	419247.36	726095.44		
8000.00	50.59	249.56	7936.79	-73.05	-196.01	97.72	10.00	419222.45	726028.59		
8094.14	60.00	249.56	7990.34	-100.05	-268.44	133.83	10.00	419195.45	725956.16	Build/Turn	
8100.00	60.11	248.90	7993.26	-101.85	-273.19	136.23	10.00	419193.65	725951.41		
8200.00	62.46	237.81	8041.42	-141.18	-351.35	185.31	10.00	419154.32	725873.25		
8300.00	65.65	227.26	8085.26	-195.85	-422.50	248.70	10.00	419099.65	725802.10		
8400.00	69.53	217.29	8123.46	-264.20	-484.50	324.48	10.00	419031.30	725740.10		
8500.00	73.95	207.84	8154.85	-344.16	-535.44	410.35	10.00	418951.34	725689.16		
8600.00	78.76	198.81	8178.49	-433.30	-573.79	503.68	10.00	418862.20	725650.81		
8700.00	83.84	190.09	8193.64	-528.91	-598.38	601.66	10.00	418766.59	725626.22		
8800.00	89.05	181.54	8199.85	-628.08	-608.46	701.30	10.00	418667.42	725616.14		
8818.14	90.00	180.00	8200.00	-646.21	-608.70	719.32	10.00	418649.29	725615.90	LP	
8900.00	90.00	180.00	8200.00	-728.07	-608.70	800.50	0.00	418567.43	725615.90		
9000.00	90.00	180.00	8200.00	-828.07	-608.69	899.66	0.00	418467.43	725615.91		
9100.00	90.00	180.00	8200.00	-928.07	-608.68	998.82	0.00	418367.43	725615.92		
9200.00	90.00	180.00	8200.00	-1028.07	-608.67	1097.99	0.00	418267.43	725615.93		



# Weatherford

## Wft Plan Report X Y's.



<b>Company:</b> Devon Energy <b>Field:</b> Eddy Co., NM (NAD 83) <b>Site:</b> Cotton Draw Unit 174H <b>Well:</b> CDU 174H <b>Wellpath:</b> 1	<b>Date:</b> 7/19/2013 <b>Time:</b> 09:21:11 <b>Page:</b> 2 <b>Co-ordinate(NE) Reference:</b> Well: CDU 174H, Grid North <b>Vertical (TVD) Reference:</b> SITE 3477.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,187.41Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Sybase
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### Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Comments
9300.00	90.00	180.00	8200.00	-1128.07	-608.67	1197.15	0.00	418167.43	725615.93	
9400.00	90.00	180.00	8200.00	-1228.07	-608.66	1296.31	0.00	418067.43	725615.94	
9500.00	90.00	180.00	8200.00	-1328.07	-608.65	1395.48	0.00	417967.43	725615.95	
9600.00	90.00	180.00	8200.00	-1428.07	-608.64	1494.64	0.00	417867.43	725615.96	
9700.00	90.00	180.00	8200.00	-1528.07	-608.64	1593.81	0.00	417767.43	725615.96	
9800.00	90.00	180.00	8200.00	-1628.07	-608.63	1692.97	0.00	417667.43	725615.97	
9900.00	90.00	180.00	8200.00	-1728.07	-608.62	1792.13	0.00	417567.43	725615.98	
10000.00	90.00	180.00	8200.00	-1828.07	-608.61	1891.30	0.00	417467.43	725615.99	
10100.00	90.00	180.00	8200.00	-1928.07	-608.61	1990.46	0.00	417367.43	725615.99	
10200.00	90.00	180.00	8200.00	-2028.07	-608.60	2089.63	0.00	417267.43	725616.00	
10300.00	90.00	180.00	8200.00	-2128.07	-608.59	2188.79	0.00	417167.43	725616.01	
10400.00	90.00	180.00	8200.00	-2228.07	-608.58	2287.95	0.00	417067.43	725616.02	
10500.00	90.00	180.00	8200.00	-2328.07	-608.58	2387.12	0.00	416967.43	725616.02	
10600.00	90.00	180.00	8200.00	-2428.07	-608.57	2486.28	0.00	416867.43	725616.03	
10700.00	90.00	180.00	8200.00	-2528.07	-608.56	2585.45	0.00	416767.43	725616.04	
10800.00	90.00	180.00	8200.00	-2628.07	-608.55	2684.61	0.00	416667.43	725616.05	
10900.00	90.00	180.00	8200.00	-2728.07	-608.55	2783.77	0.00	416567.43	725616.05	
11000.00	90.00	180.00	8200.00	-2828.07	-608.54	2882.94	0.00	416467.43	725616.06	
11100.00	90.00	180.00	8200.00	-2928.07	-608.53	2982.10	0.00	416367.43	725616.07	
11200.00	90.00	180.00	8200.00	-3028.07	-608.52	3081.26	0.00	416267.43	725616.08	
11300.00	90.00	180.00	8200.00	-3128.07	-608.52	3180.43	0.00	416167.43	725616.08	
11400.00	90.00	180.00	8200.00	-3228.07	-608.51	3279.59	0.00	416067.43	725616.09	
11500.00	90.00	180.00	8200.00	-3328.07	-608.50	3378.76	0.00	415967.43	725616.10	
11600.00	90.00	180.00	8200.00	-3428.07	-608.49	3477.92	0.00	415867.43	725616.11	
11700.00	90.00	180.00	8200.00	-3528.07	-608.49	3577.08	0.00	415767.43	725616.11	
11800.00	90.00	180.00	8200.00	-3628.07	-608.48	3676.25	0.00	415667.43	725616.12	
11900.00	90.00	180.00	8200.00	-3728.07	-608.47	3775.41	0.00	415567.43	725616.13	
12000.00	90.00	180.00	8200.00	-3828.07	-608.46	3874.58	0.00	415467.43	725616.14	
12100.00	90.00	180.00	8200.00	-3928.07	-608.46	3973.74	0.00	415367.43	725616.14	
12200.00	90.00	180.00	8200.00	-4028.07	-608.45	4072.90	0.00	415267.43	725616.15	
12300.00	90.00	180.00	8200.00	-4128.07	-608.44	4172.07	0.00	415167.43	725616.16	
12400.00	90.00	180.00	8200.00	-4228.07	-608.43	4271.23	0.00	415067.43	725616.17	
12500.00	90.00	180.00	8200.00	-4328.07	-608.43	4370.40	0.00	414967.43	725616.17	
12600.00	90.00	180.00	8200.00	-4428.07	-608.42	4469.56	0.00	414867.43	725616.18	
12700.00	90.00	180.00	8200.00	-4528.07	-608.41	4568.72	0.00	414767.43	725616.19	
12800.00	90.00	180.00	8200.00	-4628.07	-608.40	4667.89	0.00	414667.43	725616.20	
12848.43	90.00	180.00	8200.00	-4676.50	-608.40	4715.91	0.00	414619.00	725616.20	PBHL

### Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude --->			<--- Longitude --->				
								Deg	Min	Sec	Deg	Min	Sec		
PBHL	-Rectangle (4030x50)		8200.00	-4676.50	-608.40	414619.00	725616.20	32	8	18.470	N	103	44	16.713	W

### Casing Points

MD	TVD	Diameter	Hole Size	Name



# Weatherford

## Wft Plan Report X Y's.



# Weatherford

<b>Company:</b> Devon Energy	<b>Date:</b> 7/19/2013	<b>Time:</b> 09:21:11	<b>Page:</b> 3
<b>Field:</b> Eddy Co., NM (NAD 83)	<b>Co-ordinate(NE) Reference:</b> Well: CDU 174H, Grid North		
<b>Site:</b> Cotton Draw Unit 174H	<b>Vertical (TVD) Reference:</b> SITE 3477.0		
<b>Well:</b> CDU 174H	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,187.41Azi)		
<b>Wellpath:</b> 1	<b>Survey Calculation Method:</b> Minimum Curvature		<b>Db:</b> Sybase

### Formations

MD	TVD	Formations	Lithology	Dip Angle	Dip Direction

### Annotation

MD ft	TVD ft	
7494.14	7494.14	KOP
8094.14	7990.34	Build/Turn
8818.14	8200.00	LP
12848.42	8200.00	PBHL



# Weatherford Anticollision Report



Company: Devon Energy	Date: 7/19/2013	Time: 09:22:10	Page: 1
Field: Eddy Co., NM (NAD 83)	Co-ordinate(NE) Reference: Well: CDU 174H, Grid North		
Reference Site: Cotton Draw Unit 174H	Vertical (TVD) Reference: SITE 3477.0		
Reference Well: CDU 174H	Db: Sybase		
<b>Reference Wellpath#:</b>			

NO GLOBAL SCAN: Using user defined selection & scan criteria	Reference: Plan: Plan #1
Interpolation Method: MD + Stations Interval: 100.00 ft	Error Model: ISCWSA Ellipse
Depth Range: 0.00 to 12848.43 ft	Scan Method: Closest Approach 3D
Maximum Radius: 0000.00 ft	Error Surface: Ellipse

Plan: Plan #1	Date Composed: 6/11/2013
Principal: Yes	Version: 1
	Tied-to: From Surface

**Summary**

Site	Offset Wellpath Well	Wellpath	Reference MD ft	Offset MD ft	Ctr-Ctr Distance ft	Edge Distance ft	Separation Factor	Warning
Cotton Draw Unit 175	CDU 175H	1 V0 Plan: Plan #1 V1	7500.00	7498.00	70.79	37.37	2.12	

Site: Cotton Draw Unit 175H  
 Well: CDU 175H  
 Wellpath: 1 V0 Plan: Plan #1 V1  
 Inter-Site Error: 0.00 ft

Reference MD ft	TVD ft	Offset		Semi-Major Axis			Offset Location		Ctr-Ctr Distance ft	Edge Distance ft	Separation Factor	Warning
		MD ft	TVD ft	Ref ft	Offset ft	TFO-HS deg	North ft	East ft				
0.00	0.00	2.00	-2.00	0.00	0.00	134.83	-49.90	50.20	70.78	70.78	41988.38	
100.00	100.00	98.00	98.00	0.08	0.08	134.83	-49.90	50.20	70.78	70.61	424.13	
200.00	200.00	198.00	198.00	0.31	0.30	134.83	-49.90	50.20	70.78	70.17	115.35	
300.00	300.00	298.00	298.00	0.53	0.53	134.83	-49.90	50.20	70.78	69.72	66.58	
400.00	400.00	398.00	398.00	0.76	0.75	134.83	-49.90	50.20	70.78	69.27	46.79	
500.00	500.00	498.00	498.00	0.98	0.98	134.83	-49.90	50.20	70.78	68.82	36.07	
600.00	600.00	598.00	598.00	1.21	1.20	134.83	-49.90	50.20	70.78	68.37	29.35	
700.00	700.00	698.00	698.00	1.43	1.43	134.83	-49.90	50.20	70.78	67.92	24.74	
800.00	800.00	798.00	798.00	1.66	1.65	134.83	-49.90	50.20	70.78	67.47	21.38	
900.00	900.00	898.00	898.00	1.88	1.88	134.83	-49.90	50.20	70.78	67.02	18.82	
1000.00	1000.00	998.00	998.00	2.11	2.10	134.83	-49.90	50.20	70.78	66.57	16.81	
1100.00	1100.00	1098.00	1098.00	2.33	2.33	134.83	-49.90	50.20	70.78	66.12	15.19	
1200.00	1200.00	1198.00	1198.00	2.56	2.55	134.83	-49.90	50.20	70.78	65.67	13.85	
1300.00	1300.00	1298.00	1298.00	2.78	2.78	134.83	-49.90	50.20	70.78	65.22	12.73	
1400.00	1400.00	1398.00	1398.00	3.01	3.00	134.83	-49.90	50.20	70.78	64.77	11.78	
1500.00	1500.00	1498.00	1498.00	3.23	3.23	134.83	-49.90	50.20	70.78	64.32	10.96	
1600.00	1600.00	1598.00	1598.00	3.46	3.45	134.83	-49.90	50.20	70.78	63.87	10.25	
1700.00	1700.00	1698.00	1698.00	3.68	3.68	134.83	-49.90	50.20	70.78	63.43	9.62	
1800.00	1800.00	1798.00	1798.00	3.91	3.90	134.83	-49.90	50.20	70.78	62.98	9.07	
1900.00	1900.00	1898.00	1898.00	4.13	4.13	134.83	-49.90	50.20	70.78	62.53	8.57	
2000.00	2000.00	1998.00	1998.00	4.35	4.35	134.83	-49.90	50.20	70.78	62.08	8.13	
2100.00	2100.00	2098.00	2098.00	4.58	4.58	134.83	-49.90	50.20	70.78	61.63	7.73	
2200.00	2200.00	2198.00	2198.00	4.80	4.80	134.83	-49.90	50.20	70.78	61.18	7.37	
2300.00	2300.00	2298.00	2298.00	5.03	5.02	134.83	-49.90	50.20	70.78	60.73	7.04	
2400.00	2400.00	2398.00	2398.00	5.25	5.25	134.83	-49.90	50.20	70.78	60.28	6.74	
2500.00	2500.00	2498.00	2498.00	5.48	5.47	134.83	-49.90	50.20	70.78	59.83	6.46	
2600.00	2600.00	2598.00	2598.00	5.70	5.70	134.83	-49.90	50.20	70.78	59.38	6.21	
2700.00	2700.00	2698.00	2698.00	5.93	5.92	134.83	-49.90	50.20	70.78	58.93	5.97	
2800.00	2800.00	2798.00	2798.00	6.15	6.15	134.83	-49.90	50.20	70.78	58.48	5.75	
2900.00	2900.00	2898.00	2898.00	6.38	6.37	134.83	-49.90	50.20	70.78	58.03	5.55	
3000.00	3000.00	2998.00	2998.00	6.60	6.60	134.83	-49.90	50.20	70.78	57.58	5.36	
3100.00	3100.00	3098.00	3098.00	6.83	6.82	134.83	-49.90	50.20	70.78	57.13	5.19	
3200.00	3200.00	3198.00	3198.00	7.05	7.05	134.83	-49.90	50.20	70.78	56.68	5.02	
3300.00	3300.00	3298.00	3298.00	7.28	7.27	134.83	-49.90	50.20	70.78	56.23	4.87	
3400.00	3400.00	3398.00	3398.00	7.50	7.50	134.83	-49.90	50.20	70.78	55.78	4.72	
3500.00	3500.00	3498.00	3498.00	7.73	7.72	134.83	-49.90	50.20	70.78	55.33	4.58	



# Weatherford Anticollision Report



**Weatherford**

<b>Company:</b> Devon Energy	<b>Date:</b> 7/19/2013	<b>Time:</b> 09:22:10	<b>Page:</b> 2
<b>Field:</b> Eddy Co., NM (NAD 83)			
<b>Reference Site:</b> Cotton Draw Unit 174H	<b>Co-ordinate(NE) Reference:</b> Well: CDU 174H, Grid North		
<b>Reference Well:</b> CDU 174H	<b>Vertical (TVD) Reference:</b> SITE 3477.0		
<b>Reference Wellpath:</b>	<b>Db:</b> Sybase		

**Site:** Cotton Draw Unit 175H  
**Well:** CDU 175H  
**Wellpath:** 1 V0 Plan: Plan #1 V1

**Inter-Site Error:** 0.00 ft

Reference		Offset		Semi-Major Axis			Offset Location		Ctr-Ctr Edge		Separation	Warning
MD	TVD	MD	TVD	Ref	Offset	TFO-HS	North	East	Distance	Distance	Factor	
ft	ft	ft	ft	ft	ft	deg	ft	ft	ft	ft		
3600.00	3600.00	3598.00	3598.00	7.95	7.95	134.83	-49.90	50.20	70.78	54.88	4.45	
3700.00	3700.00	3698.00	3698.00	8.18	8.17	134.83	-49.90	50.20	70.78	54.43	4.33	
3800.00	3800.00	3798.00	3798.00	8.40	8.40	134.83	-49.90	50.20	70.78	53.98	4.21	
3900.00	3900.00	3898.00	3898.00	8.63	8.62	134.83	-49.90	50.20	70.78	53.54	4.10	
4000.00	4000.00	3998.00	3998.00	8.85	8.85	134.83	-49.90	50.20	70.78	53.09	4.00	
4100.00	4100.00	4098.00	4098.00	9.07	9.07	134.83	-49.90	50.20	70.78	52.64	3.90	
4200.00	4200.00	4198.00	4198.00	9.30	9.30	134.83	-49.90	50.20	70.78	52.19	3.81	
4300.00	4300.00	4298.00	4298.00	9.52	9.52	134.83	-49.90	50.20	70.78	51.74	3.72	
4400.00	4400.00	4398.00	4398.00	9.75	9.74	134.83	-49.90	50.20	70.78	51.29	3.63	
4500.00	4500.00	4498.00	4498.00	9.97	9.97	134.83	-49.90	50.20	70.78	50.84	3.55	
4600.00	4600.00	4598.00	4598.00	10.20	10.19	134.83	-49.90	50.20	70.78	50.39	3.47	
4700.00	4700.00	4698.00	4698.00	10.42	10.42	134.83	-49.90	50.20	70.78	49.94	3.40	
4800.00	4800.00	4798.00	4798.00	10.65	10.64	134.83	-49.90	50.20	70.78	49.49	3.32	
4900.00	4900.00	4898.00	4898.00	10.87	10.87	134.83	-49.90	50.20	70.78	49.04	3.26	
5000.00	5000.00	4998.00	4998.00	11.10	11.09	134.83	-49.90	50.20	70.78	48.59	3.19	
5100.00	5100.00	5098.00	5098.00	11.32	11.32	134.83	-49.90	50.20	70.78	48.14	3.13	
5200.00	5200.00	5198.00	5198.00	11.55	11.54	134.83	-49.90	50.20	70.78	47.69	3.07	
5300.00	5300.00	5298.00	5298.00	11.77	11.77	134.83	-49.90	50.20	70.78	47.24	3.01	
5400.00	5400.00	5398.00	5398.00	12.00	11.99	134.83	-49.90	50.20	70.78	46.79	2.95	
5500.00	5500.00	5498.00	5498.00	12.22	12.22	134.83	-49.90	50.20	70.78	46.34	2.90	
5600.00	5600.00	5598.00	5598.00	12.45	12.44	134.83	-49.90	50.20	70.78	45.89	2.84	
5700.00	5700.00	5698.00	5698.00	12.67	12.67	134.83	-49.90	50.20	70.78	45.44	2.79	
5800.00	5800.00	5798.00	5798.00	12.90	12.89	134.83	-49.90	50.20	70.78	44.99	2.74	
5900.00	5900.00	5898.00	5898.00	13.12	13.12	134.83	-49.90	50.20	70.78	44.54	2.70	
6000.00	6000.00	5998.00	5998.00	13.35	13.34	134.83	-49.90	50.20	70.78	44.10	2.65	
6100.00	6100.00	6098.00	6098.00	13.57	13.57	134.83	-49.90	50.20	70.78	43.65	2.61	
6200.00	6200.00	6198.00	6198.00	13.80	13.79	134.83	-49.90	50.20	70.78	43.20	2.57	
6300.00	6300.00	6298.00	6298.00	14.02	14.02	134.83	-49.90	50.20	70.78	42.75	2.52	
6400.00	6400.00	6398.00	6398.00	14.24	14.24	134.83	-49.90	50.20	70.78	42.30	2.48	
6500.00	6500.00	6498.00	6498.00	14.47	14.46	134.83	-49.90	50.20	70.78	41.85	2.45	
6600.00	6600.00	6598.00	6598.00	14.69	14.69	134.83	-49.90	50.20	70.78	41.40	2.41	
6700.00	6700.00	6698.00	6698.00	14.92	14.91	134.83	-49.90	50.20	70.78	40.95	2.37	
6800.00	6800.00	6798.00	6798.00	15.14	15.14	134.83	-49.90	50.20	70.78	40.50	2.34	
6900.00	6900.00	6898.00	6898.00	15.37	15.36	134.83	-49.90	50.20	70.78	40.05	2.30	
7000.00	7000.00	6998.00	6998.00	15.59	15.59	134.83	-49.90	50.20	70.78	39.60	2.27	
7100.00	7100.00	7098.00	7098.00	15.82	15.81	134.83	-49.90	50.20	70.78	39.15	2.24	
7200.00	7200.00	7198.00	7198.00	16.04	16.04	134.83	-49.90	50.20	70.78	38.70	2.21	
7300.00	7300.00	7298.00	7298.00	16.27	16.26	134.83	-49.90	50.20	70.78	38.25	2.18	
7400.00	7400.00	7398.00	7398.00	16.49	16.49	134.83	-49.90	50.20	70.78	37.80	2.15	
7494.14	7494.14	7492.14	7492.14	16.70	16.70	134.83	-49.90	50.20	70.78	37.38	2.12	
7500.00	7500.00	7498.00	7498.00	16.72	16.71	245.25	-49.90	50.20	70.79	37.37	2.12	
7550.00	7549.91	7547.91	7547.91	16.81	16.82	243.41	-49.90	50.20	71.96	38.34	2.14	
7600.00	7599.40	7597.40	7597.40	16.90	16.94	238.96	-49.90	50.20	75.38	41.60	2.23	
7650.00	7648.08	7646.08	7646.08	17.00	17.05	232.79	-49.90	50.20	81.86	47.99	2.42	
7700.00	7695.60	7693.60	7693.60	17.10	17.15	226.05	-49.90	50.20	92.28	58.42	2.73	
7750.00	7741.58	7739.58	7739.58	17.22	17.26	219.72	-49.90	50.20	107.21	73.48	3.18	
7800.00	7785.68	7783.68	7783.68	17.34	17.35	214.34	-49.90	50.20	126.83	93.35	3.79	
7850.00	7827.56	7825.56	7825.56	17.49	17.45	210.06	-49.90	50.20	150.99	117.84	4.56	
7900.00	7866.90	7864.90	7864.90	17.66	17.54	206.82	-49.90	50.20	179.37	146.62	5.48	
7950.00	7903.40	7901.40	7901.40	17.87	17.62	204.50	-49.90	50.20	211.60	179.30	6.55	
8000.00	7936.79	7934.79	7934.79	18.12	17.69	202.98	-49.90	50.20	247.29	215.45	7.77	



# Weatherford Anticollision Report



## Weatherford

Company: Devon Energy  
 Field: Eddy Co., NM (NAD 83)  
 Reference Site: Cotton Draw Unit 174H  
 Reference Well: CDU 174H  
 Reference Wellpath:

Date: 7/19/2013 Time: 09:22:10 Page: 3  
 Co-ordinate(NE) Reference: Well: CDU 174H, Grid North  
 Vertical (TVD) Reference: SITE 3477.0

Db: Sybase

Site: Cotton Draw Unit 175H  
 Well: CDU 175H  
 Wellpath: 1 VO Plan: Plan #1 V1

Inter-Site Error: 0.00 ft

Reference MD	TVD	Offset MD	TVD	Semi-Major Axis Ref	Offset	TFO-HS	North	East	Ctr-Ctr Distance	Edge Distance	Separation Factor	Warning
ft	ft	ft	ft	ft	ft	deg	ft	ft	ft	ft		
8050.00	7966.82	7964.82	7964.82	18.43	17.76	202.20	-49.90	50.20	286.07	254.66	9.11	
8094.14	7990.34	7988.34	7988.34	18.76	17.81	202.14	-49.90	50.20	322.56	291.48	10.38	
8100.00	7993.26	7991.26	7991.26	18.80	17.82	203.06	-49.90	50.20	327.53	296.36	10.51	
8150.00	8017.79	8015.79	8015.79	19.15	17.88	210.51	-49.90	50.20	369.81	337.77	11.54	
8200.00	8041.42	8039.42	8039.42	19.51	17.93	217.27	-49.90	50.20	411.79	378.83	12.49	
8250.00	8063.97	8061.97	8061.97	19.87	17.98	223.49	-49.90	50.20	453.44	419.52	13.37	
8300.00	8085.26	8083.26	8083.26	20.22	18.03	229.26	-49.90	50.20	494.72	459.84	14.18	
8350.00	8105.14	8103.14	8103.14	20.55	18.07	234.64	-49.90	50.20	535.60	499.79	14.96	
8400.00	8123.46	8121.46	8121.46	20.84	18.11	239.67	-49.90	50.20	576.04	539.35	15.70	
8450.00	8140.07	8138.07	8138.07	21.11	18.15	244.39	-49.90	50.20	616.00	578.49	16.42	
8500.00	8154.85	8152.85	8152.85	21.33	18.18	248.80	-49.90	50.20	655.41	617.18	17.14	
8550.00	8167.69	8165.69	8165.69	21.51	18.21	252.92	-49.90	50.20	694.23	655.38	17.87	
8600.00	8178.49	8176.49	8176.49	21.64	18.24	256.75	-49.90	50.20	732.37	693.02	18.61	
8650.00	8187.16	8185.16	8185.16	21.74	18.26	260.29	-49.90	50.20	769.75	730.04	19.38	
8700.00	8193.64	8191.64	8191.64	21.79	18.27	263.53	-49.90	50.20	806.29	766.34	20.18	
8750.00	8197.88	8195.88	8195.88	21.80	18.28	266.48	-49.90	50.20	841.88	801.82	21.01	
8800.00	8199.85	8197.85	8197.85	21.78	18.29	269.12	-49.90	50.20	876.42	836.36	21.88	
8818.14	8200.00	8198.00	8198.00	21.77	18.29	270.00	-49.90	50.20	888.67	848.63	22.20	
8900.00	8200.00	8198.00	8198.00	22.51	18.29	270.00	-49.90	50.20	945.55	904.77	23.19	
9000.00	8200.00	8198.00	8198.00	23.48	18.29	270.00	-49.90	50.20	1019.65	977.91	24.43	
9100.00	8200.00	8198.00	8198.00	24.54	18.29	270.00	-49.90	50.20	1097.87	1055.06	25.65	
9200.00	8200.00	8198.00	8198.00	25.69	18.29	270.00	-49.90	50.20	1179.38	1135.42	26.83	
9300.00	8200.00	8198.00	8198.00	26.92	18.29	270.00	-49.90	50.20	1263.55	1218.37	27.96	
9400.00	8200.00	8198.00	8198.00	28.21	18.29	270.00	-49.90	50.20	1349.88	1303.41	29.05	
9500.00	8200.00	8198.00	8198.00	29.56	18.29	270.00	-49.90	50.20	1437.99	1390.17	30.07	
9600.00	8200.00	8198.00	8198.00	30.95	18.29	270.00	-49.90	50.20	1527.56	1478.34	31.04	
9700.00	8200.00	8198.00	8198.00	32.39	18.29	270.00	-49.90	50.20	1618.35	1567.69	31.95	
9800.00	8200.00	8198.00	8198.00	33.87	18.29	270.00	-49.90	50.20	1710.17	1658.04	32.80	
9900.00	8200.00	8198.00	8198.00	35.37	18.29	270.00	-49.90	50.20	1802.86	1749.22	33.61	
10000.00	8200.00	8198.00	8198.00	36.91	18.29	270.00	-49.90	50.20	1896.30	1841.12	34.37	
10100.00	8200.00	8198.00	8198.00	38.47	18.29	270.00	-49.90	50.20	1990.37	1933.62	35.08	
10200.00	8200.00	8198.00	8198.00	40.06	18.29	270.00	-49.90	50.20	2084.99	2026.66	35.75	
10300.00	8200.00	8198.00	8198.00	41.66	18.29	270.00	-49.90	50.20	2180.09	2120.16	36.38	
10400.00	8200.00	8198.00	8198.00	43.28	18.29	270.00	-49.90	50.20	2275.62	2214.06	36.97	
10500.00	8200.00	8198.00	8198.00	44.92	18.29	270.00	-49.90	50.20	2371.51	2308.32	37.53	
10600.00	8200.00	8198.00	8198.00	46.57	18.29	270.00	-49.90	50.20	2467.73	2402.89	38.06	
10700.00	8200.00	8198.00	8198.00	48.23	18.29	270.00	-49.90	50.20	2564.24	2497.73	38.56	
10800.00	8200.00	12977.51	10442.15	49.91	52.05	210.47	-2596.75	711.51	2603.80	2537.32	39.17	
10900.00	8200.00	13077.50	10443.55	51.60	53.66	210.45	-2696.73	711.51	2605.00	2536.56	38.06	
11000.00	8200.00	13177.49	10444.95	53.29	55.29	210.43	-2796.71	711.50	2606.19	2535.78	37.01	
11100.00	8200.00	13277.48	10446.34	54.99	56.94	210.42	-2896.69	711.50	2607.39	2534.99	36.01	
11200.00	8200.00	13377.47	10447.74	56.70	58.59	210.40	-2996.67	711.50	2608.59	2534.18	35.06	
11300.00	8200.00	13477.46	10449.13	58.42	60.25	210.39	-3096.65	711.50	2609.80	2533.37	34.15	
11400.00	8200.00	13577.45	10450.53	60.14	61.92	210.37	-3196.63	711.50	2611.00	2532.55	33.28	
11500.00	8200.00	13677.44	10451.92	61.87	63.60	210.36	-3296.61	711.50	2612.20	2531.72	32.46	
11600.00	8200.00	13777.43	10453.32	63.61	65.29	210.34	-3396.59	711.50	2613.40	2530.88	31.67	
11700.00	8200.00	13877.42	10454.72	65.35	66.99	210.32	-3496.57	711.50	2614.60	2530.03	30.92	
11800.00	8200.00	13977.41	10456.11	67.09	68.69	210.31	-3596.55	711.50	2615.80	2529.17	30.20	
11900.00	8200.00	14077.40	10457.51	68.84	70.40	210.29	-3696.53	711.50	2617.00	2528.31	29.51	
12000.00	8200.00	14177.39	10458.90	70.59	72.11	210.28	-3796.51	711.50	2618.20	2527.44	28.85	
12100.00	8200.00	14277.38	10460.30	72.35	73.83	210.26	-3896.49	711.50	2619.40	2526.57	28.22	



# Weatherford Anticollision Report



## Weatherford

**Company:** Devon Energy **Date:** 7/19/2013 **Time:** 09:22:10 **Page:** 4  
**Field:** Eddy Co., NM (NAD 83)  
**Reference Site:** Cotton Draw Unit 174H **Co-ordinate(NE) Reference:** Well: CDU 174H, Grid North  
**Reference Well:** CDU 174H **Vertical (TVD) Reference:** SITE 3477.0  
**Reference Wellpath:** **Db:** Sybase

**Site:** Cotton Draw Unit 175H  
**Well:** CDU 175H  
**Wellpath:** 1 V0 Plan: Plan #1 V1

**Inter-Site Error:** 0.00 ft

Reference		Offset		Semi-Major Axis			Offset Location		Ctr-Ctr Edge		Separation	Warning
MD	TVD	MD	TVD	Ref	Offset	TFO-IIS	North	East	Distance	Distance	Factor	
ft	ft	ft	ft	ft	ft	deg	ft	ft	ft	ft		
12200.00	8200.00	14377.37	10461.69	74.11	75.56	210.25	-3996.47	711.50	2620.61	2525.69	27.61	
12300.00	8200.00	14477.36	10463.09	75.87	77.28	210.23	-4096.45	711.50	2621.81	2524.81	27.03	
12400.00	8200.00	14577.35	10464.49	77.64	79.02	210.22	-4196.43	711.50	2623.01	2523.93	26.47	
12500.00	8200.00	14677.34	10465.88	79.41	80.76	210.20	-4296.41	711.50	2624.21	2523.04	25.94	
12600.00	8200.00	14777.34	10467.28	81.18	82.50	210.18	-4396.40	711.50	2625.42	2522.14	25.42	
12700.00	8200.00	14877.33	10468.67	82.95	84.24	210.17	-4496.38	711.50	2626.62	2521.25	24.93	
12800.00	8200.00	14977.32	10470.07	84.73	85.99	210.15	-4596.36	711.50	2627.82	2520.35	24.45	
12848.43	8200.00	15025.74	10470.75	85.59	86.84	210.15	-4644.77	711.50	2628.41	2519.91	24.23	



**Weatherford**

**Weatherford Drilling Services**

GeoDec v5.03

Report Date: June 11, 2013  
 Job Number: \_\_\_\_\_  
 Customer: Devon Energy  
 Well Name: Cotton Draw Unit 174H  
 API Number: \_\_\_\_\_  
 Rig Name: \_\_\_\_\_  
 Location: Eddy Co., NM  
 Block: \_\_\_\_\_  
 Engineer: RWJ

US State Plane 1983	Geodetic Latitude / Longitude
System: New Mexico Eastern Zone	System: Latitude / Longitude
Projection: Transverse Mercator/Gauss Kruger	Projection: Geodetic Latitude and Longitude
Datum: North American Datum 1983	Datum: North American Datum 1983
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
North/South 419295.500 USFT	Latitude 32.1513117 DEG
East/West 726224.600 USFT	Longitude -103.7359219 DEG
Grid Convergence: .32°	
<b>Total Correction: +7.17°</b>	

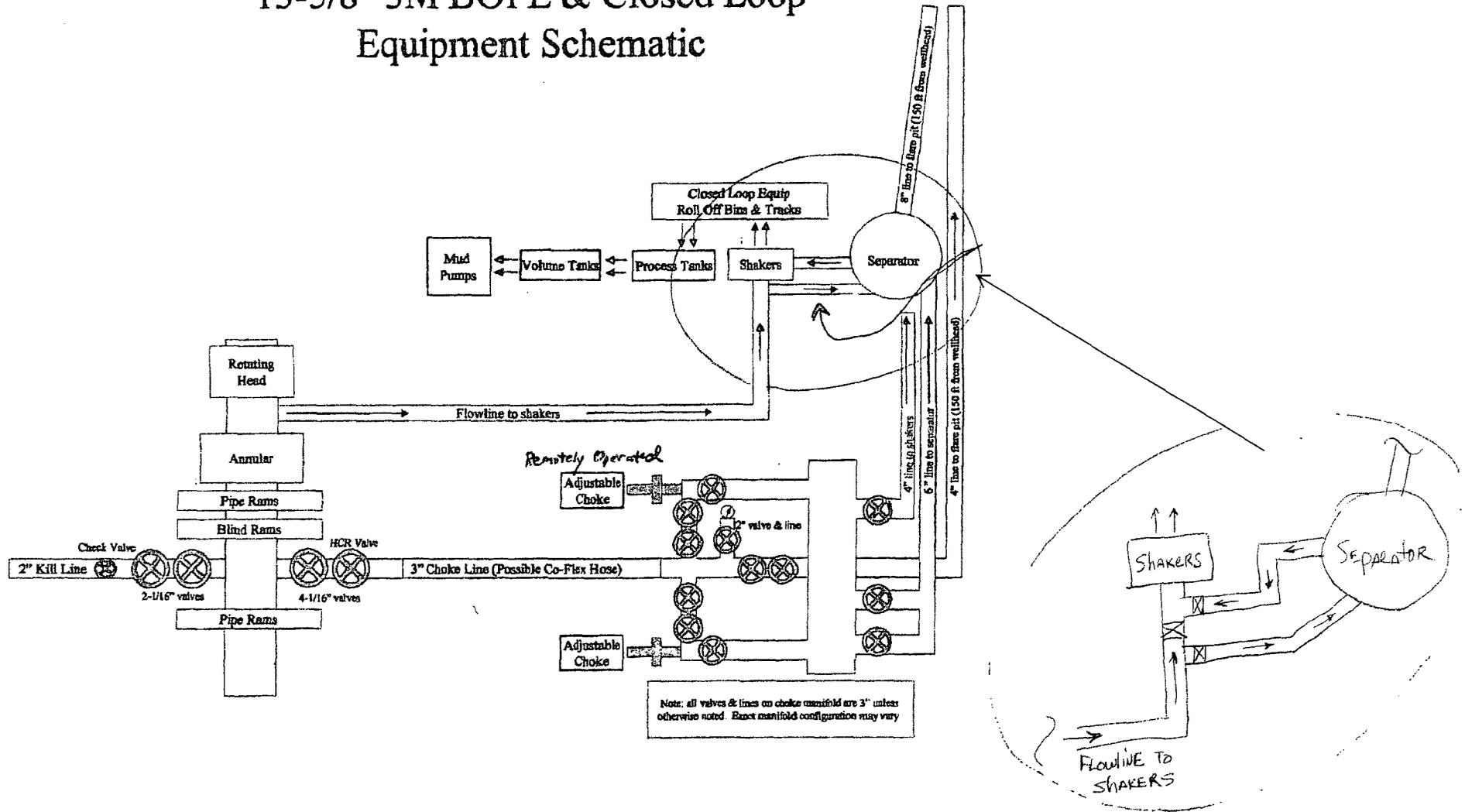
Geodetic Location WGS84      Elevation =      0.0 Meters  
 Latitude =      32.15131° N      32° 9 min 4.722 sec  
 Longitude =      103.73592° W      103° 44 min 9.319 sec

Magnetic Declination =	7.49°	[True North Offset]	
Local Gravity =	.9988 g	Checksum =	6519
Local Field Strength =	48346 nT	Magnetic Vector X =	23950 nT
Magnetic Dip =	60.02°	Magnetic Vector Y =	3150 nT
Magnetic Model =	bggm2013	Magnetic Vector Z =	41879 nT
Spud Date =	Aug 30, 2013	Magnetic Vector H =	24156 nT

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

# 13-5/8" 3M BOPE & Closed Loop Equipment Schematic



## NOTES REGARDING BLOWOUT PREVENTERS

Devon Energy Production Company, LP  
**Cotton Draw Unit 174H**

Surface Location: 280' FNL & 1295' FWL, Unit D, Sec 12 T25S R31E, Eddy, NM  
Bottom Hole Location: 330' FSL & 660' FWL, Unit M, Sec 12 T25S R31E, Eddy, NM

1. Drilling nipple will be constructed so it can be removed mechanically without the aid of a welder. The minimum internal diameter will equal BOP bore.
2. Wear ring will be properly installed in head.
3. Blowout preventer and all associated fittings will be in operable condition to withstand a minimum 3000 psi working pressure.
4. All fittings will be flanged.
5. A full bore safety valve tested to a minimum 3000 psi WP with proper thread connections will be available on the rotary rig floor at all times.
6. All choke lines will be anchored to prevent movement.
7. All BOP equipment will be equal to or larger in bore than the internal diameter of the last casing string.
8. Will maintain a kelly cock attached to the kelly.
9. Hand wheels and wrenches will be properly installed and tested for safe operation.
10. Hydraulic floor control for blowout preventer will be located as near in proximity to driller's controls as possible.
11. All BOP equipment will meet API standards and include a minimum 40 gallon accumulator having two independent means of power to initiate closing operation.

<b>QUALITY CONTROL INSPECTION AND TEST CERTIFICATE</b>				CERT. N°: 504	
PURCHASER: ContiTech Beattie Co.				P.O. N°: 005975	
CONTITECH ORDER N°: 530273		HOSE TYPE: 3" ID		Choke and Kill Hose	
HOSE SERIAL N°: 62838		NOMINAL / ACTUAL LENGTH: 10,67 m / 10,72 m			
W.P. 68,9 MPa 10000 psi		T.P. 103,4 MPa 15000 psi		Duration: 60 min.	
Pressure test with water at ambient temperature					
See attachment. ( 1 page )					
↑ 10 mm = 10 Min. → 10 mm = 20 MPa					
COUPLINGS Type		Serial N°		Quality	
3" coupling with		616 611		AISI 4130	
4 1/16" 10K API Flange end				AISI 4130	
<b>NOT DESIGNED FOR WELL TESTING</b>				<b>API Spec 16 C</b>	
				<b>Temperature rate:"B"</b>	
All metal parts are flawless					
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.					
COUNTRY OF ORIGIN HUNGARY/EU					
Date:  22. March 2012.		Inspector		Quality Control  ContiTech Rubber Industrial Kft. Quality Control Dept. <i>[Signature]</i>	

ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE

No: 502, 504

Page: 1 / 1

*[Signature]*  
 ContTech Rubber  
 Industrial Kit.  
 Quality Control Dept.  
 (1)

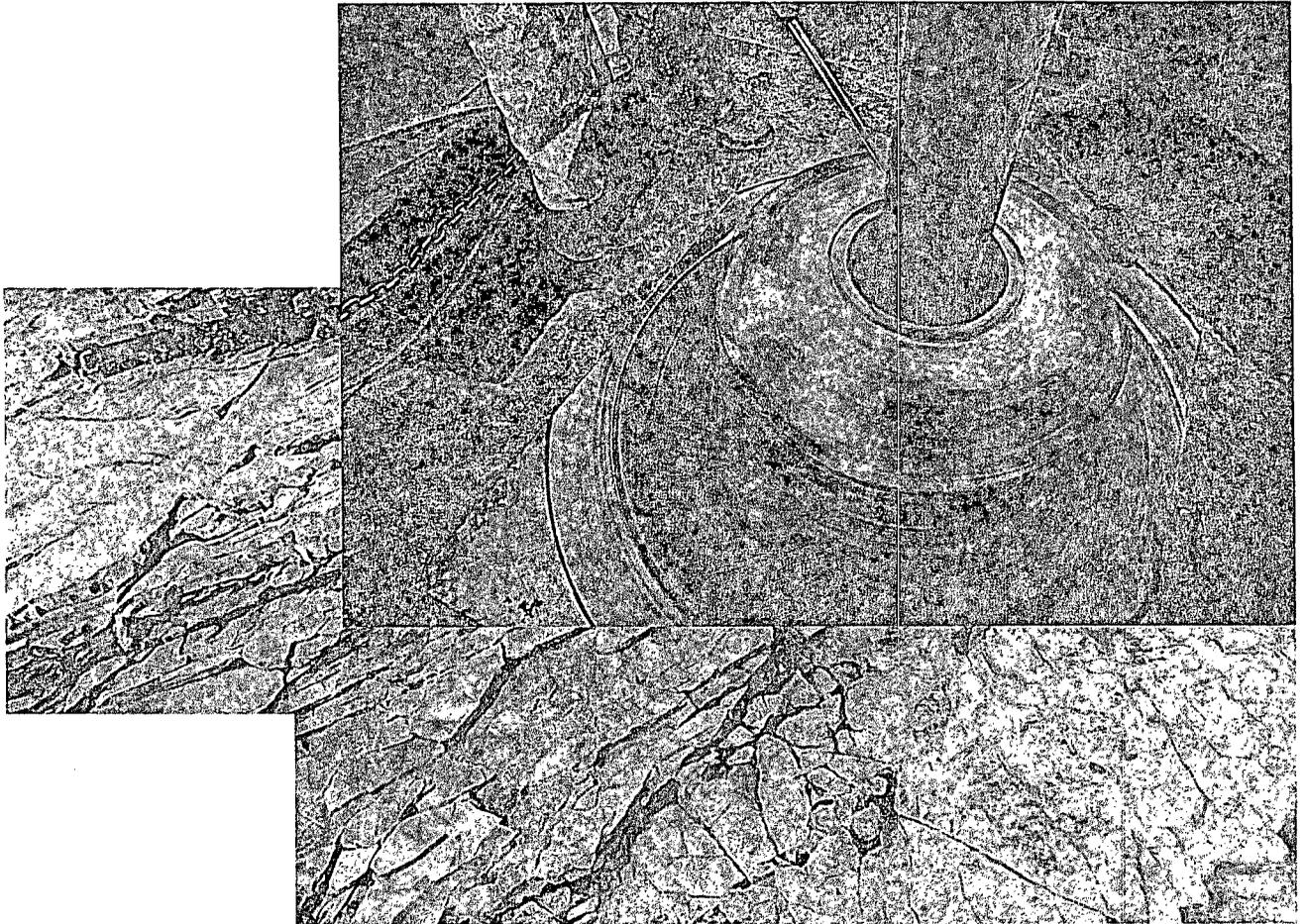
Lot No.	Part No.	Material	Spec.	Q.C. No.	Q.C. Date	Q.C. Time	Q.C. Result	Q.C. Remarks
10	16m-a-10,5	16m-a-10,5						
11	16m-a-10,5	16m-a-10,5						
12	16m-a-10,5	16m-a-10,5						
13	16m-a-10,5	16m-a-10,5						
14	16m-a-10,5	16m-a-10,5						
15	16m-a-10,5	16m-a-10,5						
16	16m-a-10,5	16m-a-10,5						
17	16m-a-10,5	16m-a-10,5						
18	16m-a-10,5	16m-a-10,5						
19	16m-a-10,5	16m-a-10,5						
20	16m-a-10,5	16m-a-10,5						
21	16m-a-10,5	16m-a-10,5						
22	16m-a-10,5	16m-a-10,5						
23	16m-a-10,5	16m-a-10,5						
24	16m-a-10,5	16m-a-10,5						
25	16m-a-10,5	16m-a-10,5						
26	16m-a-10,5	16m-a-10,5						
27	16m-a-10,5	16m-a-10,5						
28	16m-a-10,5	16m-a-10,5						
29	16m-a-10,5	16m-a-10,5						
30	16m-a-10,5	16m-a-10,5						

0044N140487808 1L

16m-a-10,5  
 ContTech Rubber  
 Industrial Kit.  
 Quality Control Dept.



Commitment Runs Deep



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.

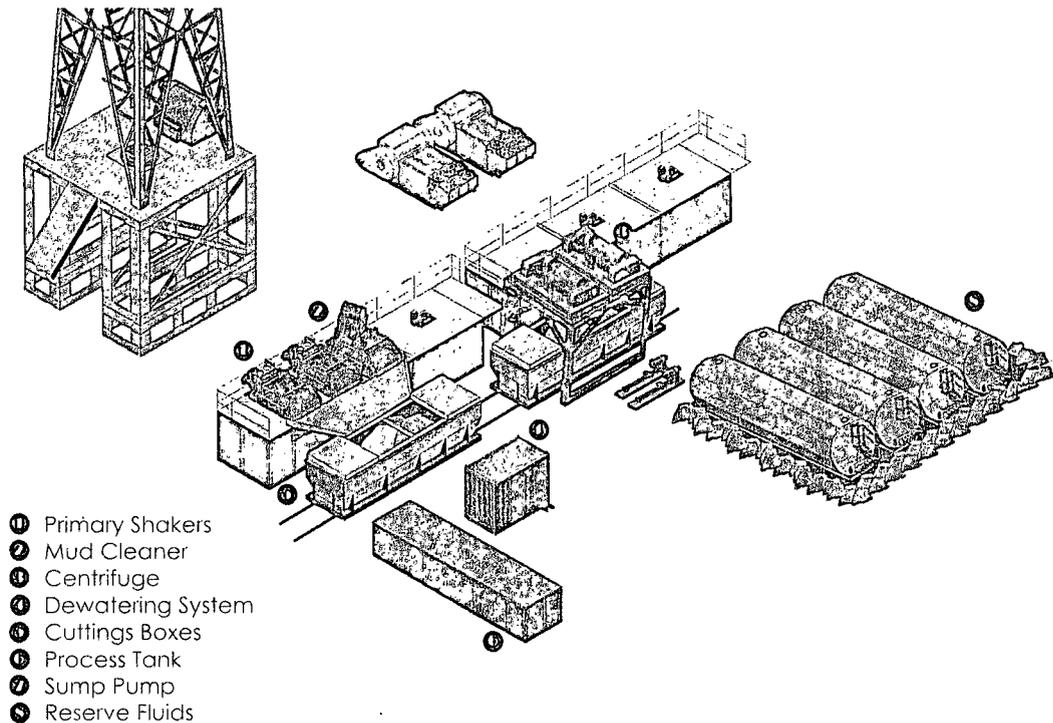
## II. Operations and Maintenance Plan

*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.



## Closed Loop Schematic



**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.

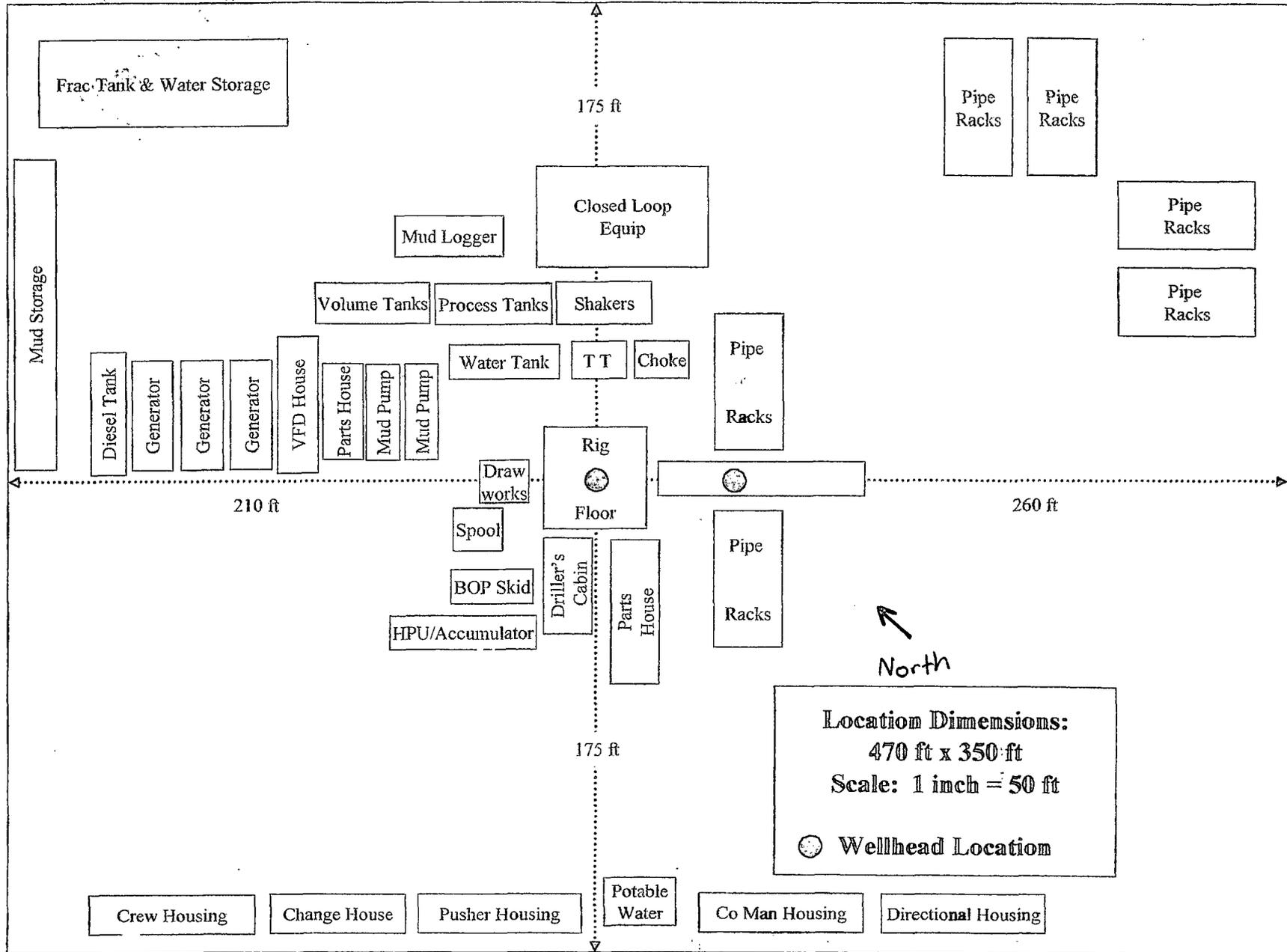
A MI SWACO field supervisor manages from 3-5 wells. They are responsible for training personnel, supervising installations, and inspecting sites for compliance of MI SWACO safety and operational policy.

### **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.

# H&P Flex Rig Location Layout

## 2 Well Pad "Exhibit D"





**Devon Energy Center  
333 West Sheridan Avenue  
Oklahoma City, Oklahoma 73102-5015**

# **Hydrogen Sulfide (H<sub>2</sub>S) Contingency Plan**

**For**

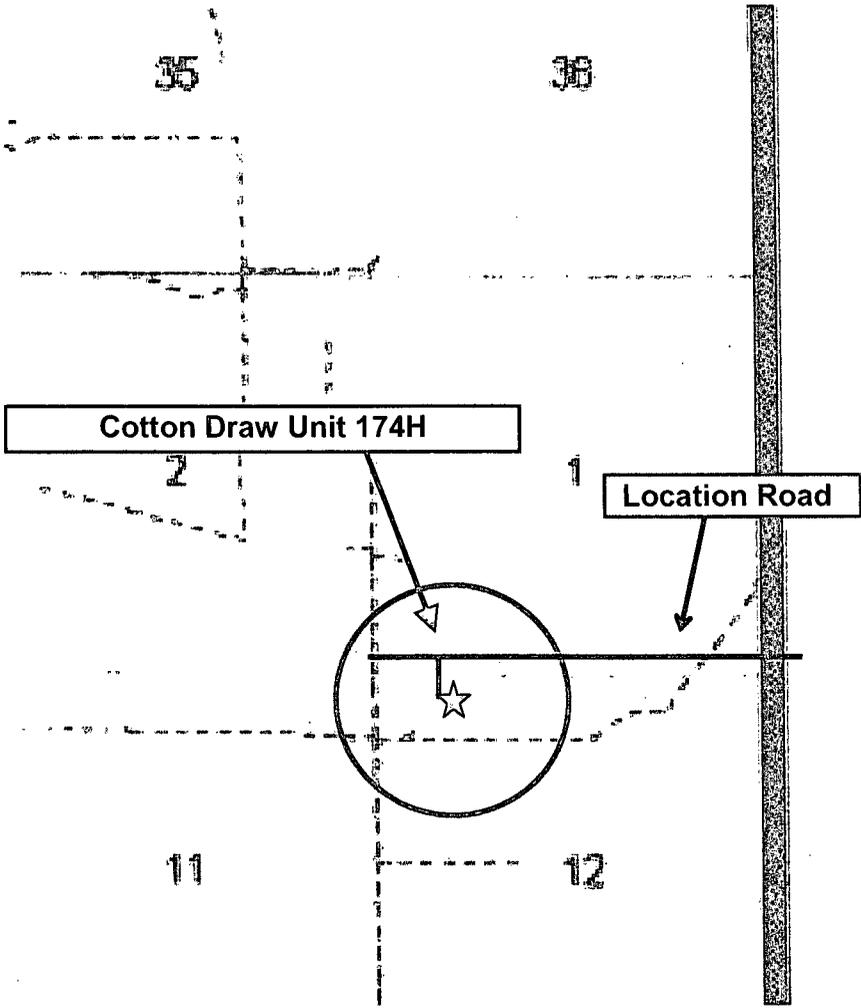
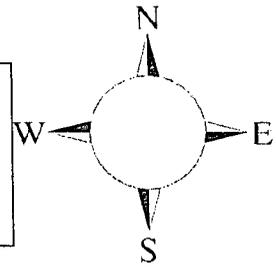
**Cotton Draw Unit 174H**

**Sec-12, T-25S R-31E  
280' FNL & 1295' FWL,  
LAT. = 32.09.07.72'N (NAD83)  
LONG = 103.44.09.32'W**

**Eddy County NM**

**Cotton Draw Unit 174H**

This is an open drilling site. H<sub>2</sub>S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H<sub>2</sub>S, including warning signs, wind indicators and H<sub>2</sub>S monitor.



Assumed 100 ppm      3000' (      )  
 100 ppm H<sub>2</sub>S concentration shall trigger activation of this plan.

**Escape**

Crews shall escape upwind of escaping gas in the event of an emergency release of gas. Escape can be facilitated from the location entrance road, West then Northwest on lease road. Crews should then block entrance to the location from the lease road so as not to allow anyone traversing into a hazardous area. The blockade should be at a safe distance outside of the ROE. There are no homes or buildings in or near the ROE.

**Assumed 100 ppm ROE = 3000'**

**100 ppm H<sub>2</sub>S concentration shall trigger activation of this plan.**

**Emergency Procedures**

**In the event of a release of gas containing H<sub>2</sub>S, the first responder(s) must**

- **Isolate the area and prevent entry by other persons into the 100 ppm ROE.**
- **Evacuate any public places encompassed by the 100 ppm ROE.**
- **Be equipped with H<sub>2</sub>S monitors and air packs in order to control the release.**
- **Use the “buddy system” to ensure no injuries occur during the response**
- **Take precautions to avoid personal injury during this operation.**
- **Contact operator and/or local officials to aid in operation. See list of phone numbers attached.**
- **Have received training in the**
  - **Detection of H<sub>2</sub>S, and**
  - **Measures for protection against the gas,**
  - **Equipment used for protection and emergency response.**

**Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO<sub>2</sub>). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

**Characteristics of H<sub>2</sub>S and SO<sub>2</sub>**

<b>Common Name</b>	<b>Chemical Formula</b>	<b>Specific Gravity</b>	<b>Threshold Limit</b>	<b>Hazardous Limit</b>	<b>Lethal Concentration</b>
<b>Hydrogen Sulfide</b>	<b>H<sub>2</sub>S</b>	<b>1.189 Air = 1</b>	<b>10 ppm</b>	<b>100 ppm/hr</b>	<b>600 ppm</b>
<b>Sulfur Dioxide</b>	<b>SO<sub>2</sub></b>	<b>2.21 Air = 1</b>	<b>2 ppm</b>	<b>N/A</b>	<b>1000 ppm</b>

## **Contacting Authorities**

Devon Energy Corp. personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available. The following call list of essential and potential responders has been prepared for use during a release. Devon Energy Corp. Company response must be in coordination with the State of New Mexico's 'Hazardous Materials Emergency Response Plan' (HMER)

## **Hydrogen Sulfide Drilling Operation Plan**

### **I. HYDROGEN SULFIDE (H<sub>2</sub>S) TRAINING**

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H<sub>2</sub>S metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan.

## **II. HYDROGEN SULFIDE TRAINING**

Note: All H<sub>2</sub>S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H<sub>2</sub>S.

### **1. Well Control Equipment**

- A. Flare line
- B. Choke manifold – Remotely Operated Choke
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit
- D. Auxiliary equipment may include if applicable: annular preventer and rotating head.

### **2. Protective equipment for essential personnel:**

- A. 30-minute SCBA units located in the doghouse and at briefing areas, as indicated on well site diagram. As it may be difficult to communicate audibly while wearing these units, hand signals shall be utilized.

### **3. H<sub>2</sub>S detection and monitoring equipment:**

- A. Portable H<sub>2</sub>S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H<sub>2</sub>S levels of 20 PPM are reached. These units are usually capable of detecting SO<sub>2</sub>, which is a byproduct of burning H<sub>2</sub>S.

### **4. Visual warning systems:**

- A. Wind direction indicators as shown on well site diagram

- B. Caution/ Danger signs shall be posted on roads providing direct access to locations. Signs will be painted a high visibility yellow with black lettering of sufficient size to be reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

**5. Mud program:**

- A. The mud program has been designed to minimize the volume of H<sub>2</sub>S circulated to surface. Proper mud weight, safe drilling practices and the use of H<sub>2</sub>S scavengers will minimize hazards when penetrating H<sub>2</sub>S bearing zones.

**6. Metallurgy:**

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H<sub>2</sub>S trim.
- B. All elastomers used for packing and seals shall be H<sub>2</sub>S trim.

**7. Communication:**

- A. Radio communications in company vehicles including cellular telephones and 2-way radio
- B. Land line (telephone) communications at Office

**8. Well testing:**

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safety and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H<sub>2</sub>S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

**Devon Energy Corp. Company Call List**

<b>Artesia (575)</b>	<b>Cellular</b>	<b>Office</b>	<b>Home</b>
Foreman – Robert Bell.....	748-7448 .....	748-0178 .....	746-2991
Asst. Foreman –Tommy Polly.....	748-5290 .....	748-0165 .....	748-2846
Don Mayberry .....	748-5235 .....	748-0164 .....	746-4945
Montral Walker .....	390-5182 .....	748-0193 .....	(936) 414-6246
Engineer – Marcos Ortiz.....	(405) 317-0666.....	(405) 552-8152.....	(405) 381-4350

**Agency Call List**

<b><u>Lea County (575)</u></b>	<b>Hobbs</b>	
	Lea County Communication Authority .....	393-3981
	State Police .....	392-5588
	City Police .....	397-9265
	Sheriff's Office .....	393-2515
	Ambulance.....	911
	Fire Department.....	397-9308
	LEPC (Local Emergency Planning Committee).....	393-2870
	NMOCD.....	393-6161
	US Bureau of Land Management.....	393-3612

<b><u>Eddy County (575)</u></b>	<b>Carlsbad</b>	
	State Police .....	885-3137
	City Police .....	885-2111
	Sheriff's Office .....	887-7551
	Ambulance .....	911
	Fire Department.....	885-2111
	LEPC (Local Emergency Planning Committee).....	887-3798
	US Bureau of Land Management.....	887-6544
	NM Emergency Response Commission (Santa Fe) .....	(505) 476-9600
	24 HR .....	(505) 827-9126
	National Emergency Response Center (Washington, DC) .....	(800) 424-8802

**Emergency Services**

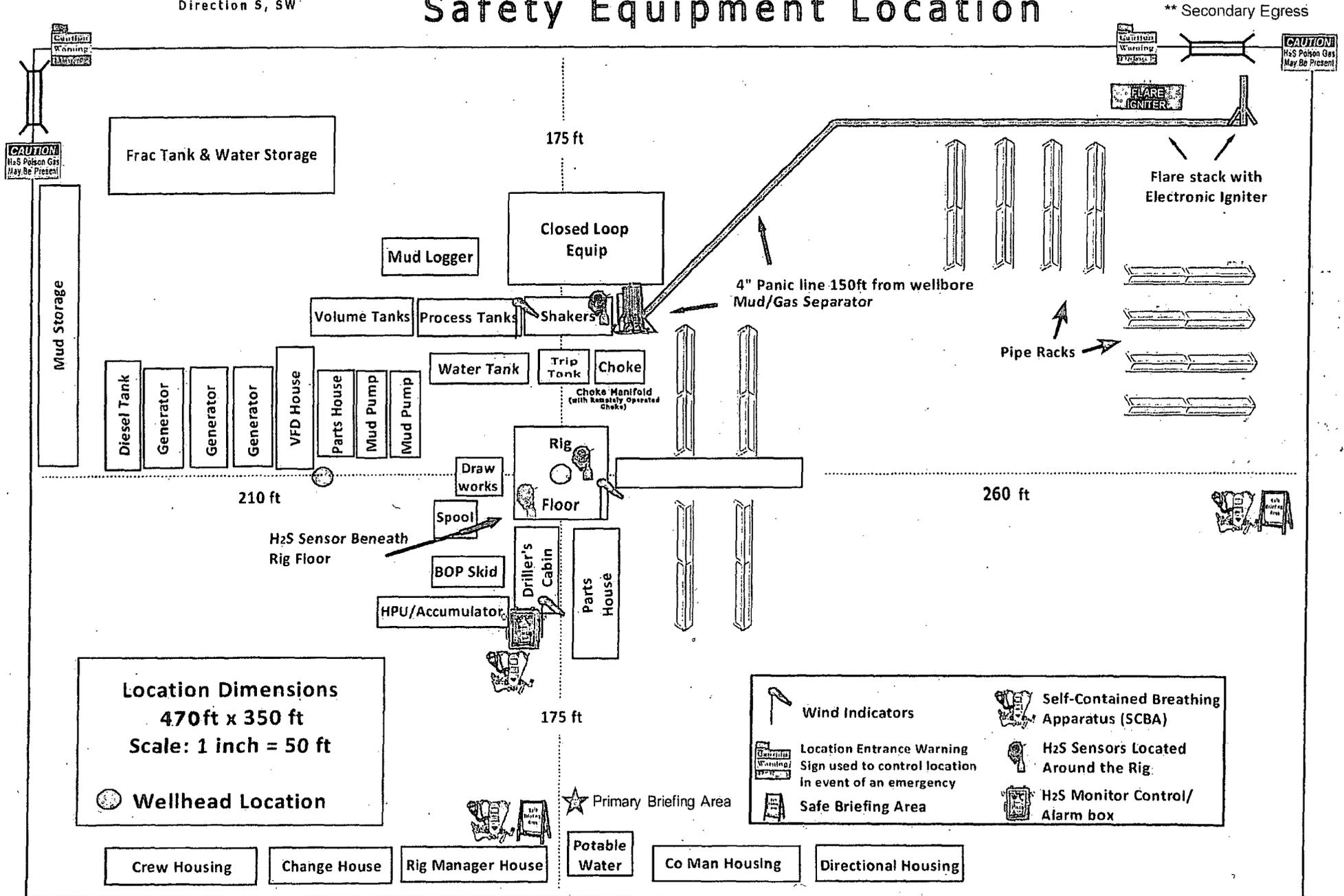
	Boots & Coots IWC .....	(800)-256-9688 or (281) 931-8884
	Cudd Pressure Control.....	(915) 699-0139 or (915) 563-3356
	Halliburton .....	(575) 746-2757
	B. J. Services.....	(575) 746-3569
<i>Give</i>	Native Air – Emergency Helicopter – Hobbs.....	(575) 392-6429
<i>GPS</i>	Flight For Life - Lubbock, TX .....	(806) 743-9911
<i>position:</i>	Aerocare - Lubbock, TX .....	(806) 747-8923
	Med Flight Air Amb - Albuquerque, NM .....	(575) 842-4433
	Lifeguard Air Med Svc. Albuquerque, NM .....	(575) 272-3115

Prepared in conjunction with  
Dave Small



# Devon Energy - 2 Well Pad Rig Location Layout Safety Equipment Location

Prevailing Wind  
Direction S, SW



\*\* Secondary egress is in excess of 200ft. from actual flair location



### Proposed Interim Site Reclamation

Devon Energy Production Co.  
Cotton Draw Unit 174H  
280' FNL & 1295' FWL  
Sec. 12-T25S-R31E  
Eddy County, NM

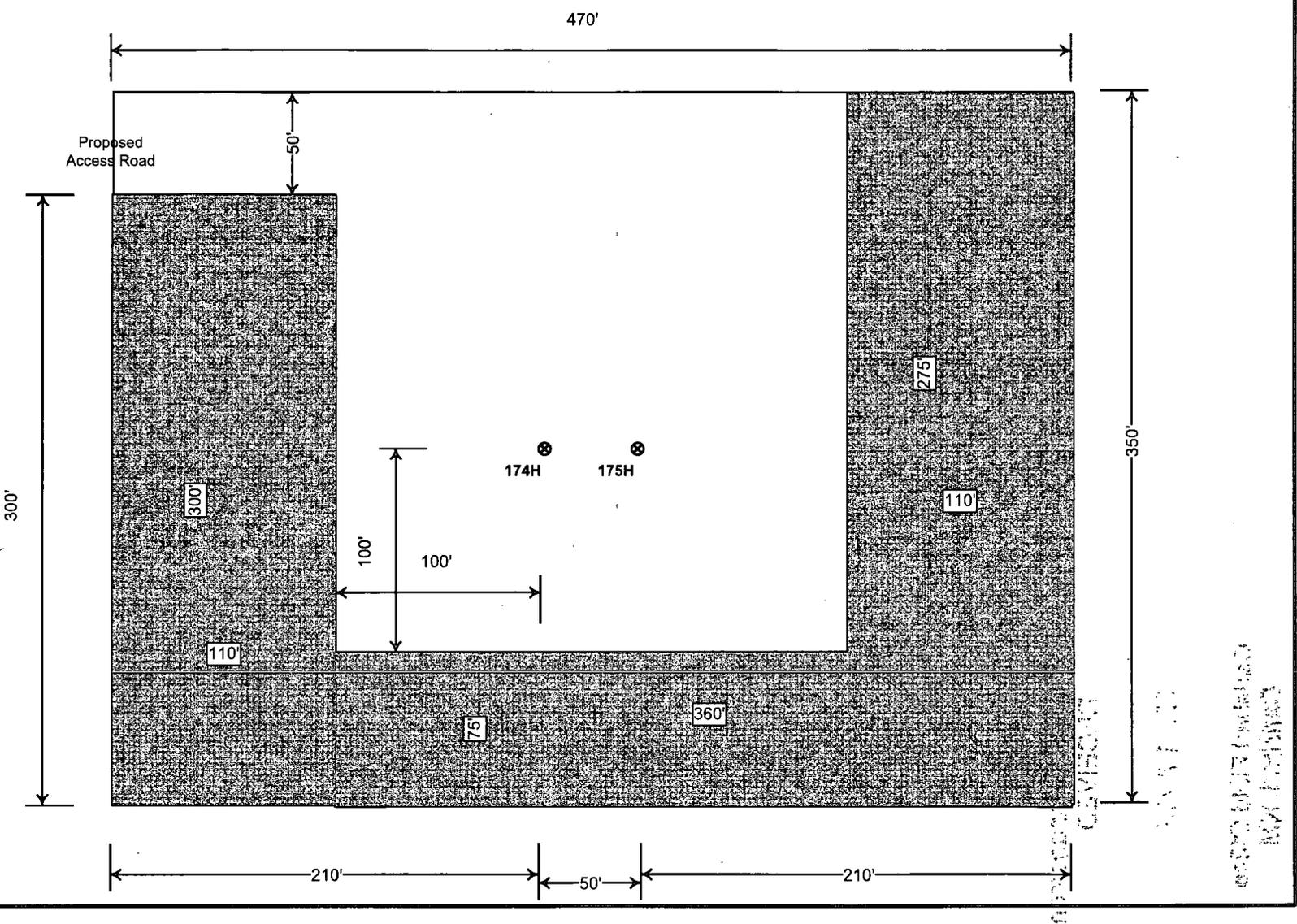


Note 35 degree offset



Proposed Reclamation Area

Scale: 1in = 60ft.



MINOR REVISIONS  
CARRIED OVER  
FROM PREVIOUS  
EDITION

**SURFACE USE PLAN**  
Devon Energy Production Company, LP  
**Cotton Draw Unit 174H**

Surface Location: 280' FNL & 1295' FWL, Unit D, Sec 12 T25S R31E, Eddy, NM  
Bottom Hole Location: 330' FSL & 660' FWL, Unit M, Sec 12 T25S R31E, Eddy, NM

**1. Existing Roads:**

- a. The well site and elevation plat for the proposed well are reflected on the well site layout; Form C-102. The well was staked by Madron Surveying, Inc.
- b. All roads into the location are depicted on page two of the Form C-102 packet. The operator will repair pot holes, clear ditches, repair the crown, etc. All existing structures on the entire access route such as cattle guards, culverts, etc. will be properly repaired or replaced if they are damaged or have deteriorated beyond practical use. BLM written approval will be acquired before application of surfactants, binding agents, or other dust suppression chemicals on roadways.
- c. Directions to Location: From the intersection of NM State Highway 128 and County Road 1. Go south on CR 1 for 6.3 miles to lease road right. Go west following lease road for 2.0 miles and turn right. Go 0.8 miles and turn left. Go 2.0 miles and turn right. Go 1.3 miles and turn right. Go 0.2 miles and the location is 0.1 miles to the south.

**2. New or Reconstructed Access Roads:**

- a. The well site layout, page 2 of Form C-102 packet, shows new constructed access road, which will be approximately 465 LF from the existing Lease road.
- b. The maximum driving width of the access road will be 14 feet. The maximum width of surface disturbance when constructing the access road will not exceed 25 feet. The road will be crowned and ditched with 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 3 feet wide with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.
- c. No cattle guards, grates or fence cuts will be required. No turnouts are planned.

**3. Location of Existing Wells:**

One Mile Radius Plat shows all existing and proposed wells within a one-mile radius of the proposed location. See attached plat.

**4. Location of Existing and/or Proposed Production Facilities:**

- a. In the event the well is found productive, this well's production would be taken to the CDU 219H & 220H facility and battery. The location of the existing facility is as follows: NE/4 of Sec. 2, T25S-R31E. Flow lines will be set alongside of the access road, where applicable. When said flow lines are needed, a plat and a sundry notice will be filed with your office.
- b. See interim reclamation diagram.
- c. If necessary, the well will be operated by means of an electric prime mover. Electric power poles will be set alongside of the access road, where applicable. If said power poles are needed, a plat and a sundry notice will be filed with your office.
- d. All flow lines will adhere to API standards.

e. If the well is productive, rehabilitation plans are as follows:

- i. A closed loop system will be utilized.
- ii. The original topsoil from the well site will be returned to the location. The drill site will then be contoured as close as possible to the original state.

**5. Location and Types of Water Supply:**

This location will be drilled using a combination of water mud systems (outlined in the Drilling Program). The water will be obtained from commercial water stations in the area and hauled to location by transport truck using the existing and proposed roads shown in the C-102. On occasion, water will be obtained from a pre-existing water well, running a pump directly to the drill rig. In these cases where a poly pipeline is used to transport water for drilling purposes, proper authorizations will be secured. If a poly pipeline is used, the size, distance, and map showing route will be provided to the BLM via sundry notice.

**6. Construction Materials:**

Obtaining caliche: One primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well site. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

- a. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.
- b. Subsoil is removed and stockpiled within the surveyed well pad.
- c. When caliche is found, material will be stock piled within the pad site to build the location and road.
- d. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.
- e. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced.
- f. Neither caliche, nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in the Well Site Layout or survey plat.

In the event that no caliche is found onsite, caliche will be hauled in from a BLM approved caliche pit or other established mineral pit. A BLM mineral material permit will be acquired prior to obtaining any mineral material from BLM pits or land.

**7. Methods of Handling Waste Material:**

- a. Drill cuttings will be disposed.
- b. All trash, junk and other waste material will be contained in trash cages or trash bins to prevent scattering. When the job is completed all contents will be removed and disposed of in an approved sanitary landfill.
- c. The supplier, including broken sacks, will pick up salts remaining after completion of well.
- d. A Porto-john will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
- e. Remaining drilling fluids will be sent to a closed loop system. Water produced during completion will be put into a closed loop system. Oil and condensate produced will be put into a storage tank and sold.
- f. Disposal of fluids to be transported by the following companies:

- i. American Production Service Inc, Odessa TX
- ii. Gandy Corporation, Lovington NM
- iii. I & W Inc, Loco Hill NM
- iv. Jims Water Service of Co Inc, Denver CO

8. **Ancillary Facilities:** No campsite or other facilities will be constructed as a result of this well.

9. **Well Site Layout**

- a. Exhibit D shows the proposed well site layout with dimensions of the pad layout.
- b. This exhibit indicated proposed location of sump pits and living facilities.
- c. Mud pits in the active circulating system will be steel pits.
- d. A closed loop system will be utilized.
- e. If a pit or closed loop system is utilized, Devon will provide a copy of the Design Plan to the BLM.

10. **Plans for Surface Reclamation:**

- a. After concluding the drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The original top soil will again be returned to the pad and contoured, as close as possible, to the original topography.
- b. The location and road will be rehabilitated as recommended by the BLM.
- c. If the well is deemed commercially productive, caliche from areas of the pad site not required for operations will be reclaimed. The original top soil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography.
- d. All disturbed areas not needed for active support of production operations will undergo interim reclamation. The portions of the cleared well site not needed for operational and safety purposes will be recontoured to a final or intermediate contour that blends with the surrounding topography as much as possible. Topsoil will be respread over areas not needed for all-weather operations.

11. **Surface Ownership**

- a. The surface is owned by the US Government and is administered by the Bureau of Land Management. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas.
- b. The proposed road routes and the surface location will be restored as directed by the BLM.

**12. Other Information:**

- a. The area surrounding the well site is grassland. The topsoil is very sandy in nature. The vegetation is moderately sparse with native prairie grass, sage bush, yucca and miscellaneous weeds. No wildlife was observed but it is likely that deer, rabbits, coyotes, and rodents traverse the area.
- b. There is no permanent or live water in the general proximity of the location.
- c. There are no dwellings within 2 miles of location.
- d. A Cultural Resources Examination will be completed by the Permian Basin Cultural Resource Fund in lieu of being required to conduct a Class III Survey for cultural resources associated with their project within the BLM office in Carlsbad, New Mexico.

## PECOS DISTRICT CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>Devon Energy Production Company, L.P.</b>
<b>LEASE NO.:</b>	<b>NMNM-0503</b>
<b>WELL NAME &amp; NO.:</b>	<b>Cotton Draw Unit 174H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>0280' FNL &amp; 1295' FWL</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>0330' FSL &amp; 0660' FWL</b>
<b>LOCATION:</b>	<b>Section 12, T. 25 S., R 31 E., NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
  - Production Pipeline
  - Lesser Prairie-Chicken Timing Stipulations
  - Ground-level Abandoned Well Marker
  - Commercial Well Determination
  - Unit Well Sign Specs
- Construction**
  - Notification
  - Topsoil
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  - Federal Mineral Material Pits
  - Well Pads
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- Road Section Diagram**
- Drilling**
  - Cement Requirements
  - Logging Requirements
  - Waste Material and Fluids
- Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines – \*Not approved with APD
- Interim Reclamation**
- Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **IV. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## V. SPECIAL REQUIREMENT(S)

### **Production Pipeline:**

Prior to installing a production pipeline, the operator must submit a Sundry Notice for approval of the production pipeline.

### **Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:**

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

**Ground-level Abandoned Well Marker to avoid raptor perching:** Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

### **Commercial Well Determination**

A commercial well determination shall be submitted after production has been established for at least six months.

### **Unit Wells**

The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

### **B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

### **D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## **F. EXCLOSURE FENCING (CELLARS & PITS)**

### **Exclosure Fencing**

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

## **G. ON LEASE ACCESS ROADS**

### **Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

### **Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

### **Crowning**

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **Ditching**

Ditching shall be required on both sides of the road.

### **Turnouts**

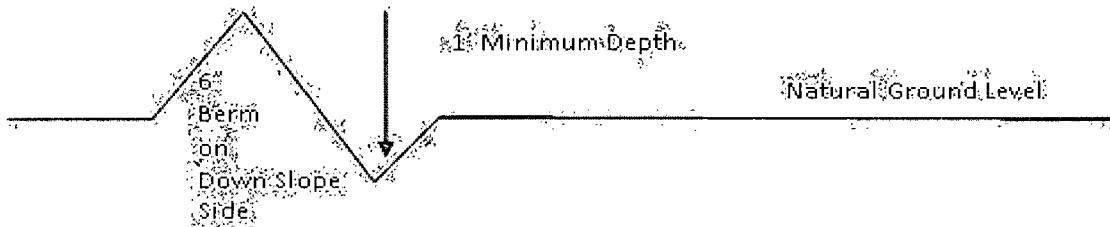
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

## Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill out sloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

### Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

### Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

## Cattleguards

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings.

Any existing cattleguards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguards that are in place and are utilized during lease operations.

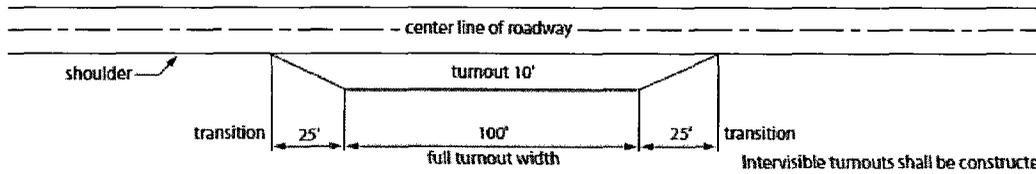
## Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

**Construction Steps**

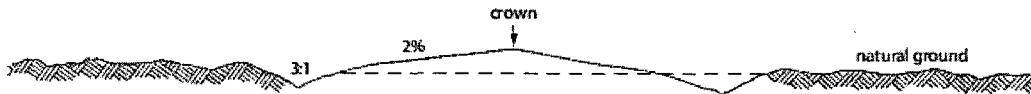
1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

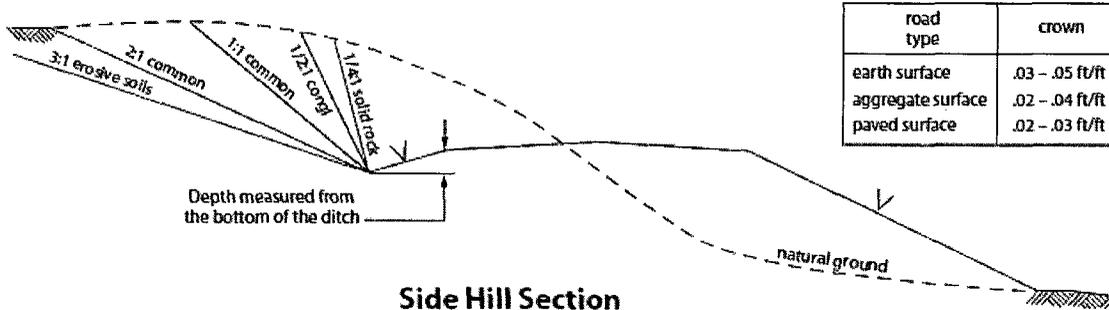


**Typical Turnout Plan**

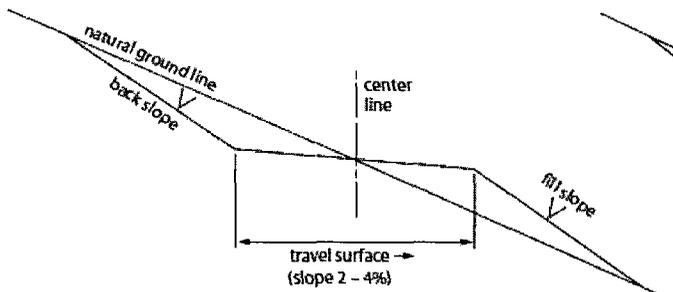
Intervisible turnouts shall be constructed on all single lane roads on all blind curves with additional turnouts as needed to keep spacing below 1000 feet.



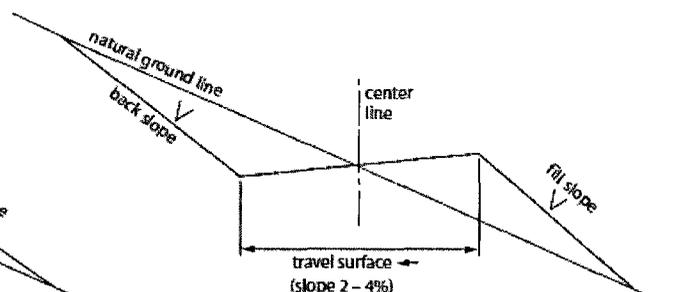
**Level Ground Section**



**Side Hill Section**



**Typical Outsloped Section**



**Typical Insloped Section**

Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## VII. DRILLING

### A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

**Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,  
(575) 361-2822

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. Operator has stated that they will have monitoring equipment in place prior to drilling out of the surface shoe. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

### B. CASING

**Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**Possibility of water flows in the Salado, Castile, and Delaware.**

**Possibility of lost circulation in the Red Bed, Rustler, Delaware, and Bone Spring.**

**High pressures may be encountered within the 2<sup>nd</sup> Bone Spring.**

1. The **13-3/8** inch surface casing shall be set at approximately **750** feet (**in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt**) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
  - Cement to surface. If cement does not circulate see B.1.a, c-d above.

**Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.**

3. The minimum required fill of cement behind the 5-1/2 inch production casing is:
  - Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification.
4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

### C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M) psi**.
  - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin

after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.
- d. The results of the test shall be reported to the appropriate BLM office.
- e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

#### **D. DRILL STEM TEST**

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

#### **E. WASTE MATERIAL AND FLUIDS**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**JAM 111313**

## VIII. PRODUCTION (POST DRILLING)

### A. WELL STRUCTURES & FACILITIES

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Exclosure Netting (Open-top Tanks)**

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### **Open-Vent Exhaust Stack Exclosures**

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

#### **Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

## **B. PIPELINES**

**Not approved through the APD.**

## **IX. INTERIM RECLAMATION**

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## **X. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory

revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

#### Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.0
Sand love grass ( <i>Eragrostis trichodes</i> )	1.0
Plains bristlegrass ( <i>Setaria macrostachya</i> )	2.0

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed