

OCD-ARTESIA

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MAY 24 2010

NMOCD ARTESIA

Form 3160-3  
(April 2004)UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM-89057	
1b. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator Devon Energy Production Company, LP		7. If Unit or CA Agreement, Name and No.	
3a. Address 20 North Broadway Oklahoma City, Oklahoma City 73102-8260		8. Lease Name and Well No. Snapping 10 Federal 1H (38187)	
3b. Phone No. (include area code) 405-228-8699		9. API Well No. 30-015-37899	
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface NW/4 NE /4 330 FNL & 1980 FEL At proposed prod zone SW/4 SE/4 330 FSL & 1980 FEL PP: 330 FNL & 1980 FEL		10. Field and Pool or Exploratory Big Sink Southeast, Bone Springs (96035)	
11. Sec, T R. M. or Blk and Survey or Area SEC 10 T26S R31E		12. County or Parish Eddy County	
13. State NM		14. Distance in miles and direction from nearest town or post office* Approximately 24 miles southeast of Loving, 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 2160 Acres	17. Spacing Unit dedicated to this well W/2 E/2 160 Acres	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft See Attached Map	19. Proposed Depth 8470' TUD MD 8790' 12,897' TD 9910' Pilot Hole	20. BLM/BIA Bond No on file CO-1104	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3244' GL	22. Approximate date work will start*	23. Estimated duration 45 days	

## 24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, shall 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 shall be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature 	Name (Printed/Typed) Judy A. Barnett	Date 04/16/2010
Title Regulatory Analyst		

Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed) /s/ Don Peterson	Date MAY 20 2010
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

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.

\*(Instructions on page 2)

CARLSBAD CONTROLLED WATER BASIN

APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS  
AND SPECIAL STIPULATIONS  
ATTACHEDSEE ATTACHED FOR  
CONDITIONS OF APPROVAL

DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240

DISTRICT II  
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-102  
Revised October 15, 2009

Submit one copy to appropriate  
District Office

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number <b>30-015-37899</b>	Pool Code <b>96035</b>	Pool Name <b>W: 1220 St. Francis Dr. Group 4 BONE SPRINGS</b>
Property Code <b>38187</b>	Property Name <b>SNAPPING "10" FEDERAL</b>	Well Number <b>1H</b>
OGRIID No. <b>6137</b>	Operator Name <b>DEVON ENERGY PRODUCTION COMPANY, L.P.</b>	Elevation <b>3244'</b>

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	10	26 S	31 E		330	NORTH	1980	EAST	EDDY

Bottom Hole Location If Different From Surface

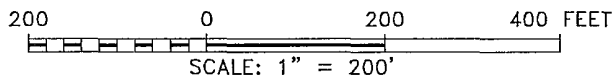
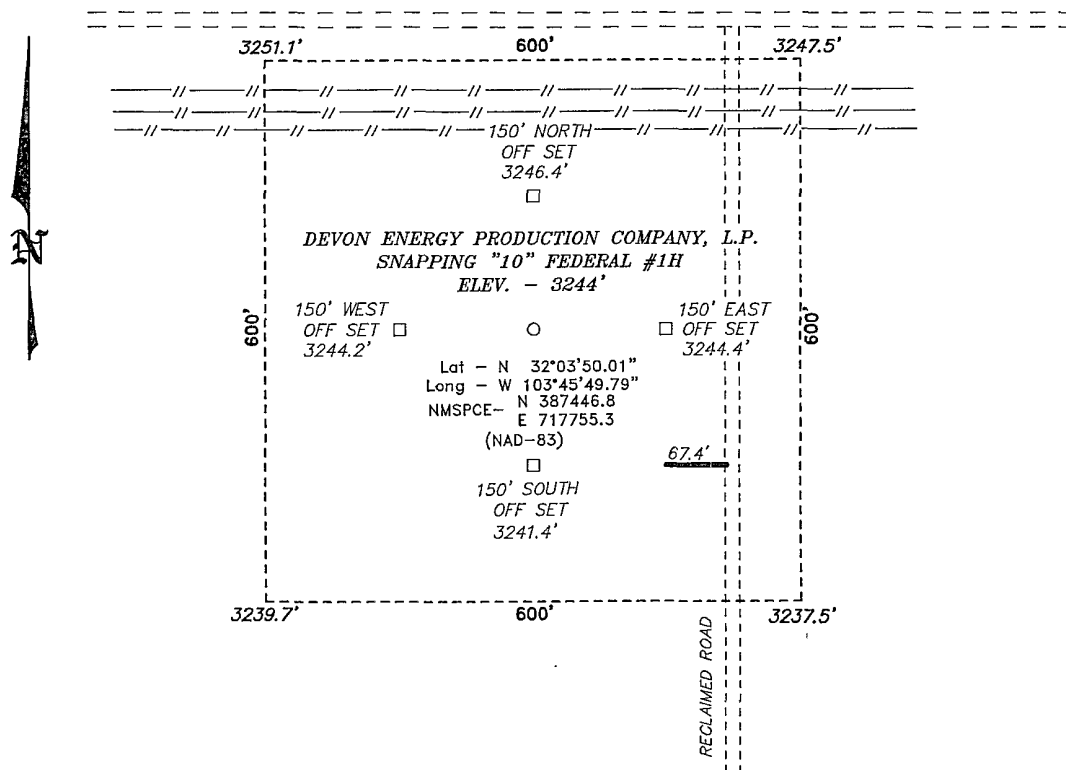
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	10	26 S	31 E		330	SOUTH	1980	EAST	EDDY

Dedicated Acres <b>160</b>	Joint or Infill	Consolidation Code	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

<p>ARTISIA OPERATOR: Please do not report production under this pool code until you have checked with the OCD District II, Jacueta Reeves, and she confirms where your perfs are producing from and gives you the correct pool code.</p>	<p><b>SURFACE LOCATION</b> Lot - N 32°03'50.01" Long - W 103°45'49.79" NMSPCE- N 387446.8 E 717755.3 (NAD-83)</p>	<p><b>PROPOSED BOTTOM HOLE LOCATION</b> Lot - N 32°03'03.77" Long - W 103°45'49.72" NMSPCE- N 382774.44 E 717786.34 (NAD-83)</p>	<p><b>OPERATOR CERTIFICATION</b> 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: <u>Judy A. Barnett</u> Date: <u>4/15/2010</u> Printed Name: <u>Judy A. Barnett Regulatory Analyst</u></p>
	<p><b>SURVEYOR CERTIFICATION</b> 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.</p>		
	<p>Date Surveyed: <u>4/15/2010</u> Signature &amp; Seal of Professional Surveyor: <u>GARY L. JONES</u> Certificate No. <u>Gary L. Jones 7977</u></p>		
	<p>BASIN SURVEYS</p>		

SECTION 10, TOWNSHIP 26 SOUTH, RANGE 31 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.



Directions to Location:

FROM THE JUNCTION OF HWY 128 AND ORLA, GO SOUTH 10.6 MILES TO ROSS RANCH, GO WEST ON ROSS RANCH FOR 5.3 MILES TO RECLAIMED LEASE ROAD, ON RECLAIMED LEASE ROAD GO SOUTH 0.1 MILES TO PROPOSED LEASE ROAD.

**DEVON ENERGY PRODUCTION COMPANY, L.P.**

REF: SNAPPING "10" FEDERAL #1H / WELL PAD TOPO

THE SNAPPING "10" FEDERAL #1H LOCATED 330'  
FROM THE NORTH LINE AND 1980' FROM THE EAST LINE OF  
SECTION 10, TOWNSHIP 26 SOUTH, RANGE 31 EAST,  
N.M.P.M., EDDY COUNTY, NEW MEXICO.

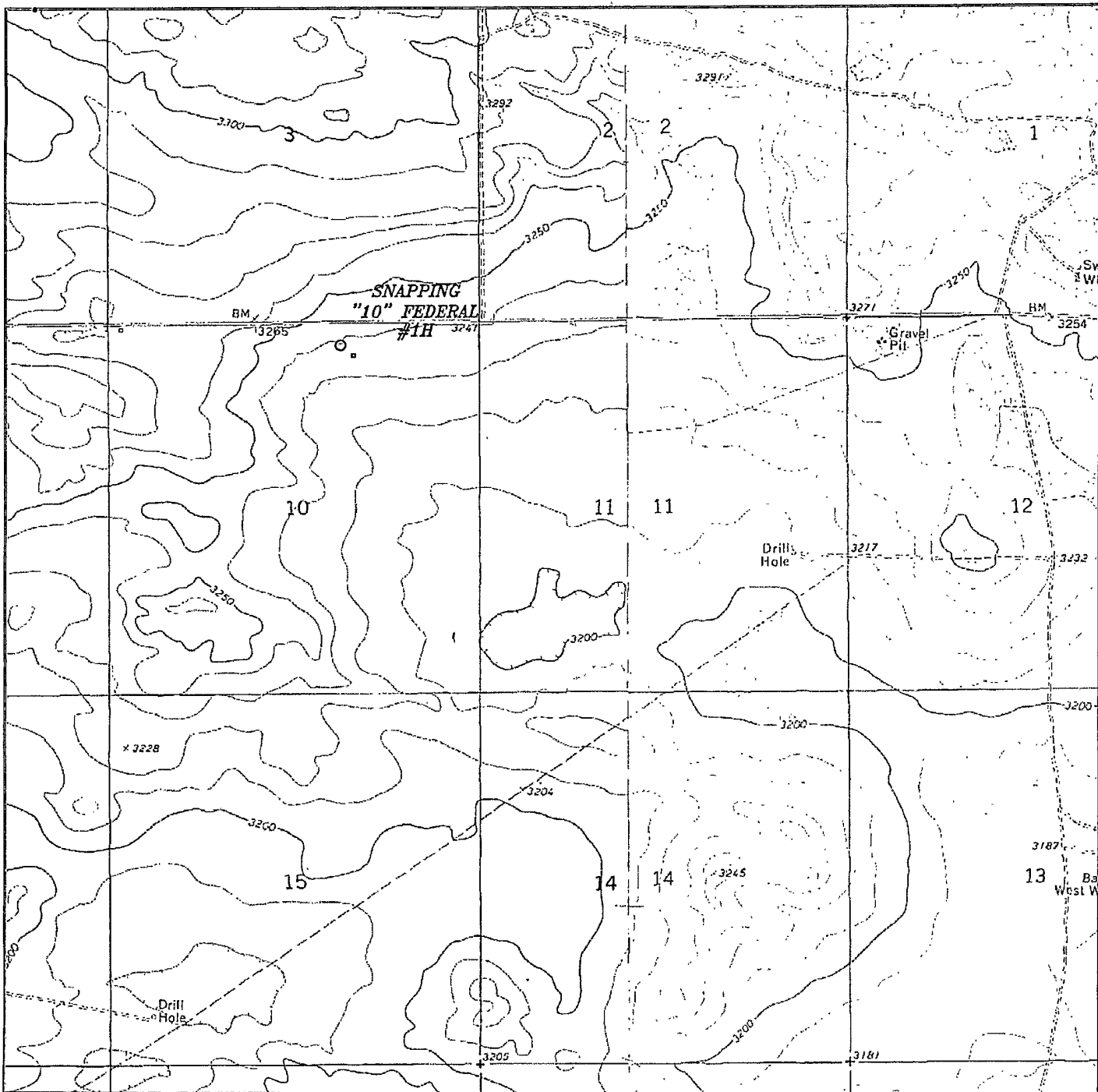
**BASIN SURVEYS** P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number: 22528 Drawn By: J. SMALL

Date: 03-22-2010 Disk: JMS 22528

Survey Date: 03-19-2010

Sheet 1 of 1 Sheets



# SNAPPING "10" FEDERAL #1H

Located 330' FNL and 1980' FEL

Section 10, Township 26 South, Range 31 East,  
N.M.P.M., Eddy County, New Mexico.



P.O. Box 1786  
1120 N. West County Rd.  
Hobbs, New Mexico 88241  
(575) 393-7316 - Office  
(575) 392-2206 - Fax  
basinsurveys.com

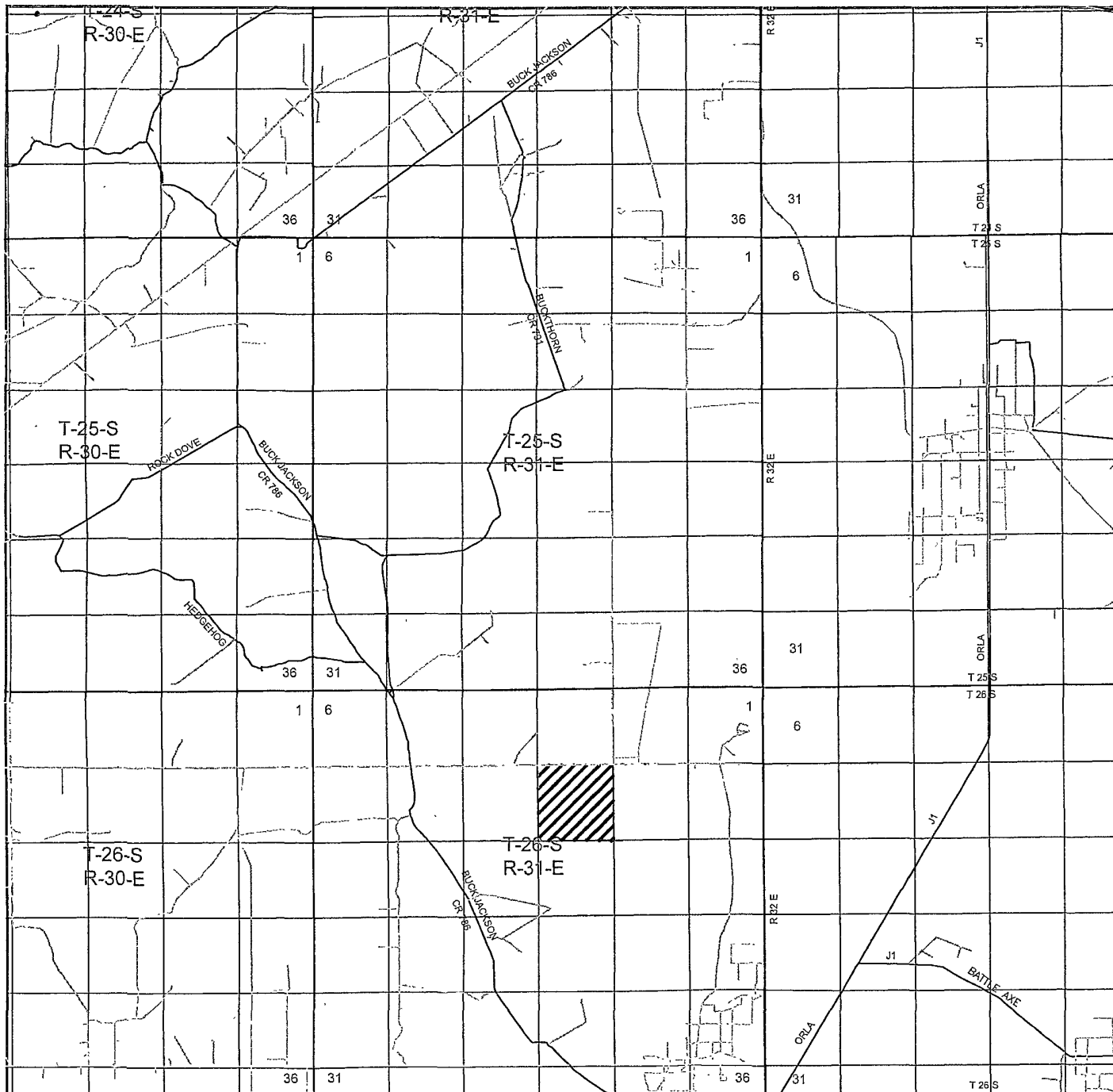
W.O. Number: JMS 22528

Survey Date: 03-19-2010

Scale: 1" = 2000'

Date: 03-22-2010

DEVON ENERGY  
PRODUCTION  
COMPANY, L.P.



**SNAPPING "10" FEDERAL #1H**  
 Located 330' FNL and 1980' FEL  
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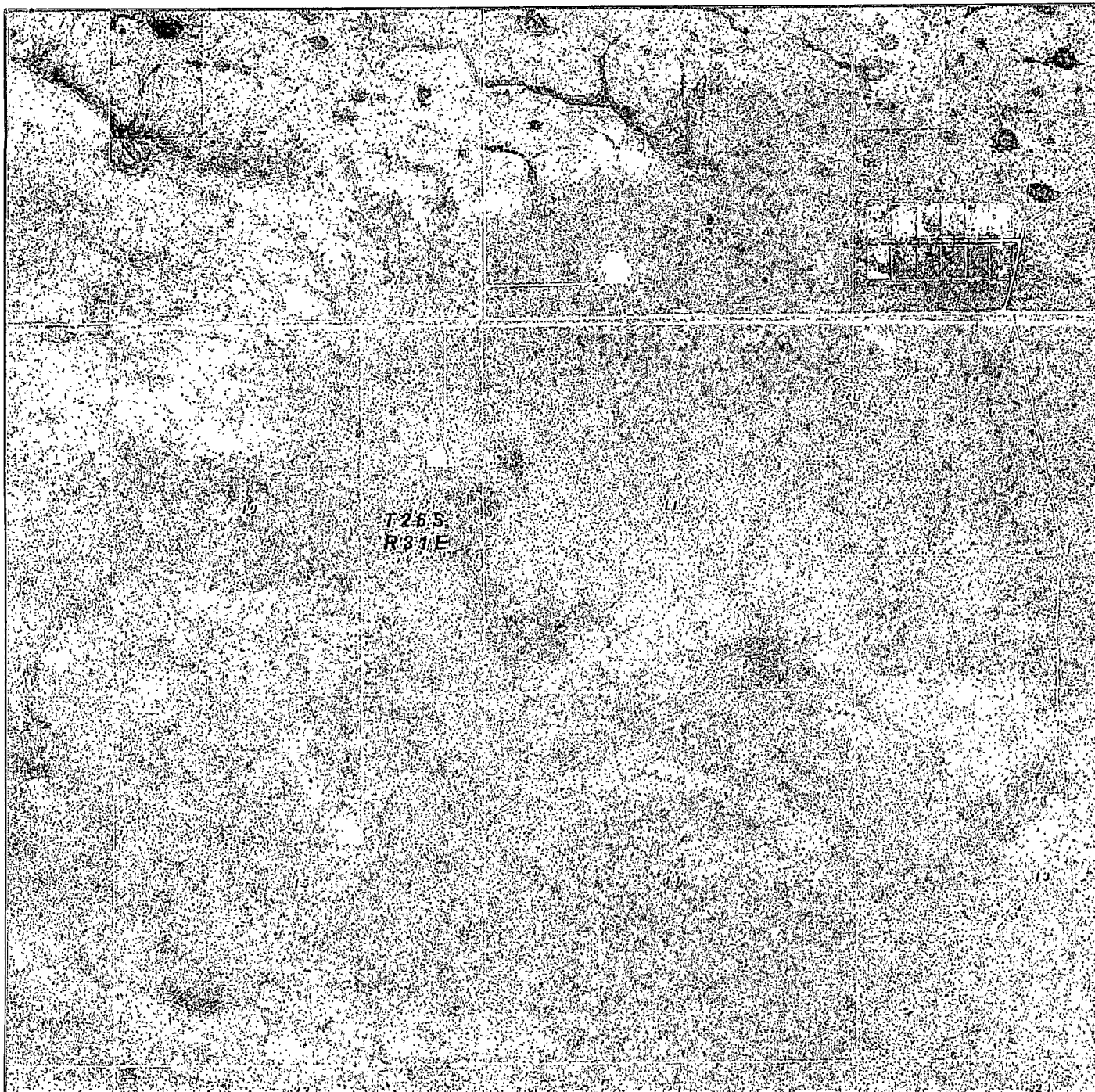
W.O. Number: JMS 22528

Survey Date: 03-19-2010

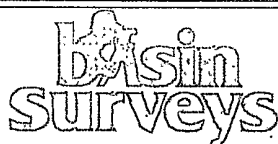
Scale: 1" = 2 Miles

Date: 03-22-2010

**DEVON ENERGY  
 PRODUCTION  
 COMPANY, L.P.**



SNAPPING "10" FEDERAL #1H  
Located 330' FNL and 1980' FEL  
Section 10, Township 26 South, Range 31 East,  
N.M.P.M., Eddy County, New Mexico.



focused on excellence  
in the oilfield

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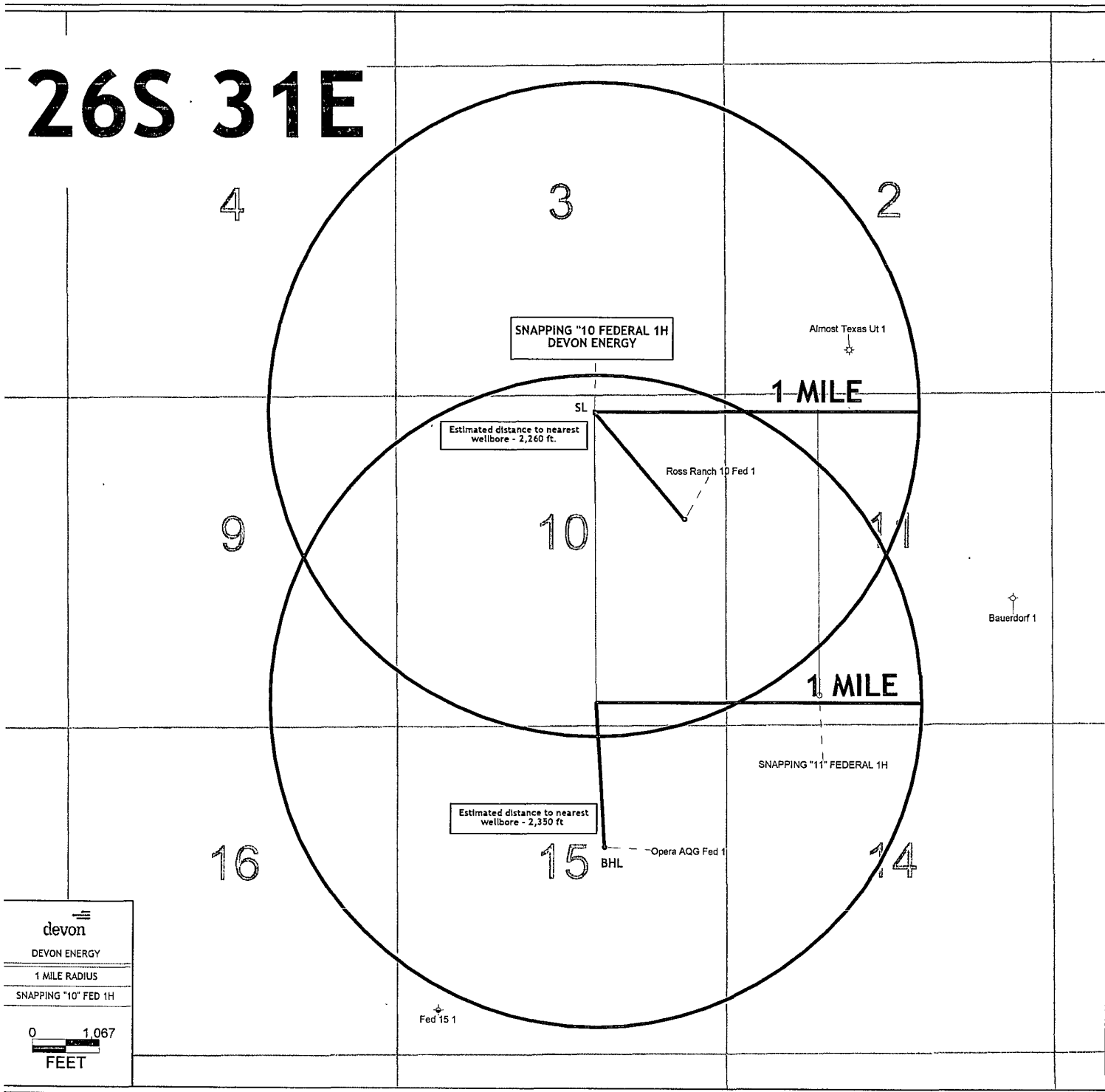
W.O. Number: JMS 22528

Scale: 1" = 2000'

YELLOW TINT - USA LAND  
BLUE TINT - STATE LAND  
NATURAL COLOR - FEE LAND

DEVON ENERGY  
PRODUCTION  
COMPANY, L.P.

# 26S 31E



## **DRILLING PROGRAM**

Devon Energy Production Company, LP

### **Snapping 10 Federal 1H**

Surface Location: 330' FNL & 1980' FEL, Unit B, Sec 10 T26S R31E, Eddy, NM

Bottom Hole Location: 330' FSL & 1980' FEL, Unit O, Sec 10 T26S 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	150'	
b. Rustler	869'	
c. Salado	1239'	
d. Base of Salt	3604'	
e. Delaware/Lamar	4109'	
f. Bell Canyon	4139'	
g. Cherry Canyon	5101'	
h. Brushy Canyon	6414'	Oil
i. Bone Spring	8139'	Oil & Gas
Total Depth	12,897'	

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 13 3/8" casing at 925' and circulating cement back to surface. Fresh water sands will be protected by setting 9 5/8" casing at 4100' and circulating cement to surface. The Delaware intervals will be isolated by setting 5 1/2" casing to total depth and circulating cement above the base of the 9 5/8" casing.

#### **Casing Program:**

<u>Hole Size</u>	<u>Hole Interval</u>	<u>OD Csg</u>	<u>Casing Interval</u>	<u>Weight</u>	<u>Collar</u>	<u>Grade</u>
17 1/2"	0' -925'	13 3/8"	0'-925'	48#	ST&C	H-40
12 1/4"	925'-3000'	9 5/8"	0'-3000'	36#	ST&C	J-55
12 1/4"	3000'-4100'	9 5/8"	3000'-4100'	40#	LT&C	J-55
8 3/4"	4100'-7800'	5 1/2"	0'-7800'	17#	LT&C	N-80
8 3/4"	7800-12897	5 1/2"	7800-12897'	17#	BT&C	N-80

An 8 3/4" Pilot Hole will be drilled to 9,900' MD and cemented back to KOP. The cement plug details and geometry are included below in the cementing program.



**Design Parameter Factors:**

<u>Casing Size</u>	<u>Collapse Design</u>	<u>Burst Design</u>	<u>Tension Design</u>
	<u>Factor</u>	<u>Factor</u>	<u>Factor</u>
13 3/8"	1.78	4.00	7.25
9 5/8" 36#	1.29	2.26	2.98
9 5/8" 40#	1.21	1.85	11.82
5 1/2" 17# LTC	1.72	2.12	1.60
5 1/2" 17#BTC	1.58	1.95	5.15

**3. Cement Program:**

- a. 13 3/8" Surface **Lead** w/ 710 Class + 2% bwoc Calcium Chloride + 0.125#/sx CF + 4% bwoc Bentonite + 81.4% FW, 13.5 ppg. **Yield** 1.75 cf/sx. **TOC @ surface. Tail** w/ 250 sx Class C + 2% bwoc Calcium Chloride + 0.125#/sx CF + 56.3% FW, 14.8 ppg. **Yield** 1.35 cf/sx.
- b. 9 5/8" Intermediate **Lead** w/ 1100 sx 35:65 POZ (Fly Ash): Class C + 5% bwow Sodium Chloride + 0.125#/sx CF + 6% bwoc Bentonite + 107.8% FW, 12.5 ppg. **Yield** 2.04 cf/sx. **TOC @ surface. Tail** w/ 300 sx 60:40 POZ (Fly Ash): Class C + 5% bwow Sodium Chloride + 0.125#/sx CF + 0.4% bwoc Sodium Metasilicate + 4% bwoc MPA-5 + 64.7% FW, 13.8 ppg. **Yield** 1.37 cf/sx.
- c. 5 1/2" Production **1<sup>st</sup> Stage**  
**Lead** w/ 455 sx 35:65 POZ (Fly Ash) Class H + 5% bwow Sodium Chloride + 0.3% bwoc CD-32 + 0.5% bwoc FL-25 + 2% bwoc Bentonite + 0.6% bwoc Sodium Metasilicate + 0.5% bwoc FL-52A + 102.5% FW, 12.5 ppg. **Yield** 2.01 cf/sx. **Tail** w/ 1485 sx 50:50 POZ (Fly Ash) Class H + 1% bwow Sodium Chloride + 0.2% bwoc R-3 + 0.125#/sx CF + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 58.3% FW, 14.2 ppg. **Yield** 1.31 cf/sx.  
**DV Tool @ 6000'**  
**2<sup>nd</sup> Stage**  
**Lead** w/ 380 sx Class C + 1% bwow Calcium Chloride + 0.125#/sx CF + 157.8% FW, 11.4 ppg. **Yield:** 289 cf/sx. **TOC @ 3600'.**  
**Tail** w/ 100 sx 60:40 POZ (Fly Ash) Class C + 1% bwow Sodium Chloride + 0.2% bwoc R-3 + 0.125#/sx CF + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 63.2% FW, 13.8 ppg. **Yield:** 1.37 cf/sx.

8 3/4" Pilot Hole Plug

Plug 1: 130 sx Class H, 15.6 ppg, 1.18 cf/sx.  
 Top of Plug: 9600'. Bottom of Plug 9900'.

*See COA - 2nd plug  
not listed*

The above cement volumes could be revised pending the caliper measurement from the open hole logs. The top of cement is designed to reach approximately 500' above the 9 5/8" casing shoe. All casing is new and API approved.

#### **Pressure Control Equipment**

The BOP system used to drill the intermediate hole will consist of a 13-5/8" 5M Double Ram and Annular preventer. The BOP system will be tested as per BLM Onshore Oil and Gas Order No. 2 as a 3M system prior to drilling out the surface casing shoe.

The BOP system used to drill the production hole will consist of a 13-5/8" 5M Double Ram and Annular preventer. The BOP system will be tested as per BLM Onshore Oil and Gas Order No. 2 as a 5M system prior to drilling out the intermediate casing shoe.

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 5,000 psi WP.

#### **Proposed Mud Circulation System**

<u>Depth</u>	<u>Mud Wt.</u>	<u>Visc</u>	<u>Fluid Loss</u>	<u>Type System</u>
0' - 925'	8.4-9.0	30-34	NC	FW
925' - 4100'	9.8-10.0	28-32	NC	Brine
4100' - 12,897'	8.6-9.0	28-32	NC-12	FW

The necessary mud products for weight addition and fluid loss control will be on location at all times.

#### **4. 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.
- c. 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.

#### **5. Logging, Coring, and Testing Program:** *See COA*

- 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.

**6. Potential Hazards:**

- a. No abnormal pressures or temperatures are expected. There is no known presence of H<sub>2</sub>S in this area. If H<sub>2</sub>S 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 4500 psi and Estimated BHT 140°. No H<sub>2</sub>S is anticipated to be encountered.

**7. 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®**

## **Drilling Services**

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## **Proposal**

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**devon**

**SNAPPING 10 FEDERAL #1H**

**EDDY COUNTY, NM**

**WELL FILE: PLAN 1**

**APRIL 6, 2010**

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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

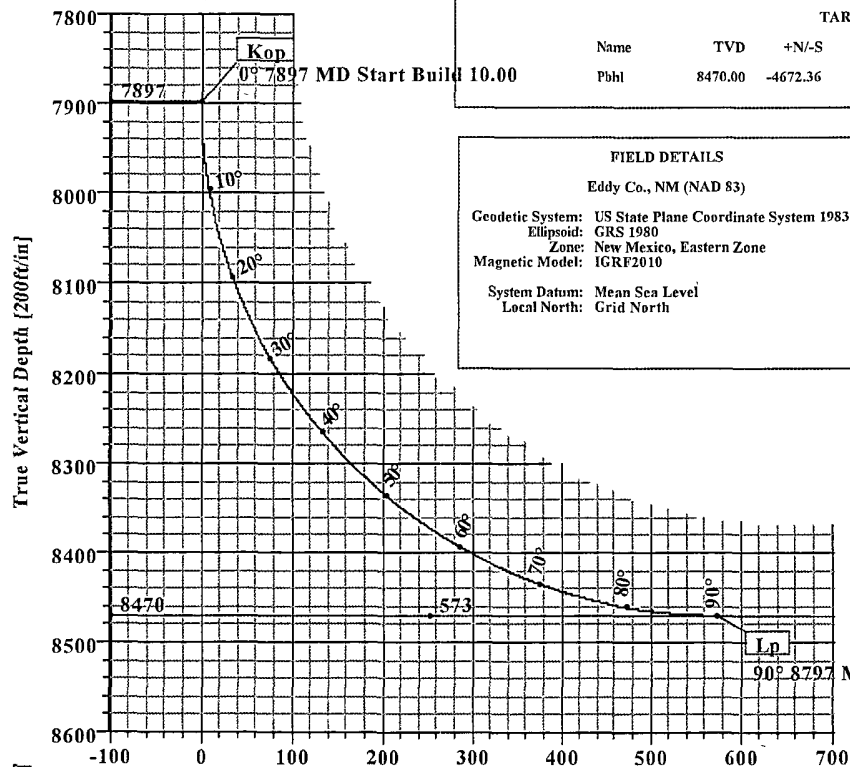
[www.weatherford.com](http://www.weatherford.com)

# devon

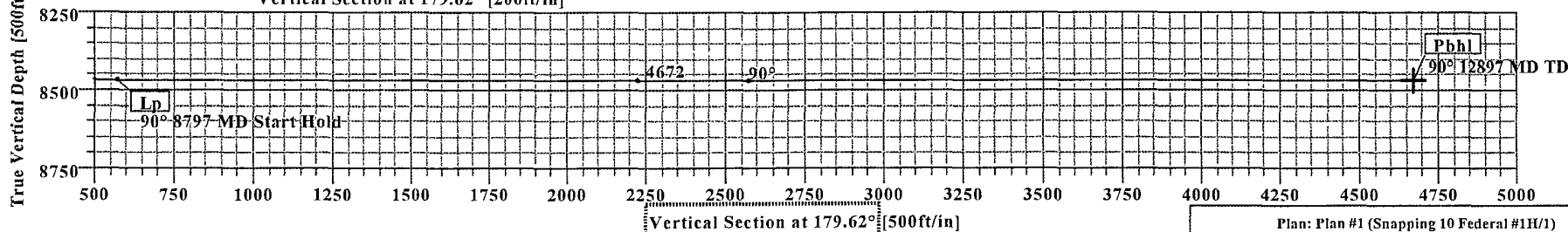
Snapping 10 Federal #1H  
Eddy Co., NM

Rig H&P 214

KB ELEV: 3269  
GL ELEV: 3244



Vertical Section at 179.62° [200ft/in]



Vertical Section at 179.62° [500ft/in]

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	179.62	0.00	0.00	0.00	0.00	0.00	0.00	
2	7897.04	0.00	179.62	7897.04	0.00	0.00	0.00	0.00	0.00	
3	8797.04	90.00	179.62	8470.00	-572.95	3.81	10.00	179.62	572.96	
4	12896.55	90.00	179.62	8470.00	-4672.36	31.04	0.00	0.00	4672.46	Pbhl

## WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Snapping 10 Federal #1H	0.00	0.00	387446.80	717755.30	32°03'50.002N	103°45'49.807W	N/A

## TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Pbhl	8470.00	-4672.36	31.04	382774.44	717786.34	Point

## FIELD DETAILS

Eddy Co., NM (NAD 83)  
Geodetic System: US State Plane Coordinate System 1983  
Ellipsoid: GRS 1980  
Zone: New Mexico, Eastern Zone  
Magnetic Model: IGRF2010  
System Datum: Mean Sea Level  
Local North: Grid North

## SITE DETAILS

Snapping 10 Federal #1H  
Site Centre Northing: 387446.80  
Easting: 717755.30  
Ground Level: 3244.00  
Positional Uncertainty: 0.00  
Convergence: 0.30



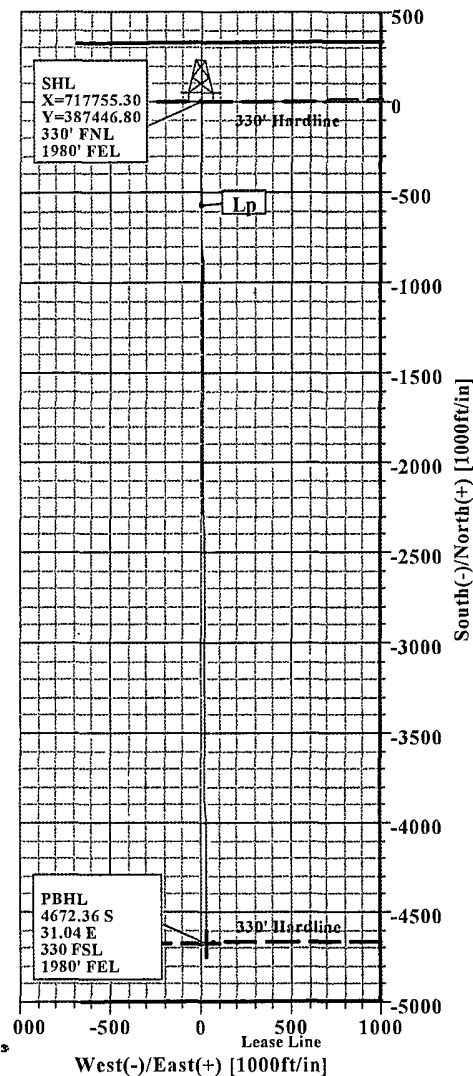
Azimuths to Grid North  
True North: -0.30°  
Magnetic North: 7.47°

Magnetic Field  
Strength: 48609nT  
Dip Angle: 60.03°  
Date: 8/5/2010  
Model: IGRF2010

Total Correction to Grid North: 7.47°



Weatherford



Plan: Plan #1 (Snapping 10 Federal #1H/1)  
Created By: Russell W Joyner  
Date: 4/6/2010



# Weatherford International Ltd.

## WFT Plan Report - X & Y's

**Weatherford**

Company: Devon Energy	Date: 4/6/2010	Time: 09:23:40	Page: 1
Field: Eddy Co., NM (NAD 83)	Co-ordinate(NE) Reference:	Well: Snapping 10 Federal #1H, Grid Nort	
Site: Snapping 10 Federal #1H	Vertical (TVD) Reference:	SITE 3269.0	
Well: Snapping 10 Federal #1H	Section (VS) Reference:	Well (0.00N,0.00E,179.62Azi)	
Wellpath: 1	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Field: Eddy Co., NM (NAD 83)

Map System: US State Plane Coordinate System 1983  
Geo Datum: GRS 1980  
Sys Datum: Mean Sea LevelMap Zone: New Mexico, Eastern Zone  
Coordinate System: Well Centre  
Geomagnetic Model: IGRF2010

Site: Snapping 10 Federal #1H

Site Position:	Northing:	387446.80 ft	Latitude:	32 3 50.002 N
From: Map	Easting:	717755.30 ft	Longitude:	103 45 49.807 W
Position Uncertainty:	0.00 ft		North Reference:	Grid
Ground Level:	3244.00 ft		Grid Convergence:	0.30 deg

Well: Snapping 10 Federal #1H

Slot Name:

Well Position:	+N/-S	0.00 ft	Northing:	387446.80 ft	Latitude:	32 3 50.002 N
	+E/-W	0.00 ft	Easting:	717755.30 ft	Longitude:	103 45 49.807 W
Position Uncertainty:	0.00 ft					

Wellpath: 1

Current Datum:	SITE	Height	3269.00 ft	Drilled From:	Surface
Magnetic Data:	8/5/2010			Tie-on Depth:	0.00 ft
Field Strength:	48609 nT			Above System Datum:	Mean Sea Level
Vertical Section:	Depth From (TVD)	+N/-S		Declination:	7.77 deg
	ft	ft		Mag Dip Angle:	60 03 deg
				+E/-W	Direction
				ft	deg
	8470.00	0.00		0.00	179.62

### Plan Section Information

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
0.00	0.00	179.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7897.04	0.00	179.62	7897.04	0.00	0.00	0.00	0.00	0.00	0.00	
8797.04	90.00	179.62	8470.00	-572.95	3.81	10.00	10.00	0.00	179.62	
12896.55	90.00	179.62	8470.00	-4672.36	31.04	0.00	0.00	0.00	0.00	Pbhl

### Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Comment
7800.00	0.00	179.62	7800.00	0.00	0.00	0.00	0.00	387446.80	717755.30	
7897.04	0.00	179.62	7897.04	0.00	0.00	0.00	0.00	387446.80	717755.30	Kop
7900.00	0.30	179.62	7900.00	-0.01	0.00	0.01	10.00	387446.79	717755.30	
8000.00	10.30	179.62	7999.45	-9.23	0.06	9.23	10.00	387437.57	717755.36	
8100.00	20.30	179.62	8095.78	-35.57	0.24	35.57	10.00	387411.23	717755.54	
8200.00	30.30	179.62	8186.08	-78.25	0.52	78.25	10.00	387368.55	717755.82	
8300.00	40.30	179.62	8267.59	-135.95	0.90	135.95	10.00	387310.85	717756.20	
8400.00	50.30	179.62	8337.85	-206.93	1.37	206.94	10.00	387239.87	717756.67	
8500.00	60.30	179.62	8394.71	-289.04	1.92	289.04	10.00	387157.76	717757.22	
8600.00	70.30	179.62	8436.45	-379.77	2.52	379.78	10.00	387067.03	717757.82	
8700.00	80.30	179.62	8461.80	-476.37	3.16	476.38	10.00	386970.43	717758.46	
8797.04	90.00	179.62	8470.00	-572.95	3.81	572.96	10.00	386873.85	717759.11	Lp
8800.00	90.00	179.62	8470.00	-575.90	3.83	575.92	0.00	386870.90	717759.13	
8900.00	90.00	179.62	8470.00	-675.90	4.49	675.92	0.00	386770.90	717759.79	
9000.00	90.00	179.62	8470.00	-775.90	5.15	775.92	0.00	386670.90	717760.45	
9100.00	90.00	179.62	8470.00	-875.90	5.82	875.92	0.00	386570.90	717761.12	
9200.00	90.00	179.62	8470.00	-975.89	6.48	975.92	0.00	386470.91	717761.78	
9300.00	90.00	179.62	8470.00	-1075.89	7.15	1075.92	0.00	386370.91	717762.45	
9400.00	90.00	179.62	8470.00	-1175.89	7.81	1175.92	0.00	386270.91	717763.11	
9500.00	90.00	179.62	8470.00	-1275.89	8.48	1275.92	0.00	386170.91	717763.78	



# Weatherford International Ltd.

## WFT Plan Report - X & Y's



Company: Devon Energy  
Field: Eddy Co., NM (NAD 83)  
Site: Snapping 10 Federal #1H  
Well: Snapping 10 Federal #1H  
Wellpath: 1

Date: 4/6/2010  
Co-ordinate(NE) Reference: Well: Snapping 10 Federal #1H, Grid Nort  
Vertical (TVD) Reference: SITE 3269.0  
Section (VS) Reference: Well (0.00N,0.00E,179.62Azi)  
Survey Calculation Method: Minimum Curvature Db: Sybase

Page: 2

### Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Comment
9600.00	90.00	179.62	8470.00	-1375.89	9.14	1375.92	0.00	386070.91	717764.44	
9700.00	90.00	179.62	8470.00	-1475.88	9.80	1475.92	0.00	385970.92	717765.10	
9800.00	90.00	179.62	8470.00	-1575.88	10.47	1575.92	0.00	385870.92	717765.77	
9900.00	90.00	179.62	8470.00	-1675.88	11.13	1675.92	0.00	385770.92	717766.43	
10000.00	90.00	179.62	8470.00	-1775.88	11.80	1775.92	0.00	385670.92	717767.10	
10100.00	90.00	179.62	8470.00	-1875.87	12.46	1875.92	0.00	385570.93	717767.76	
10200.00	90.00	179.62	8470.00	-1975.87	13.13	1975.92	0.00	385470.93	717768.43	
10300.00	90.00	179.62	8470.00	-2075.87	13.79	2075.92	0.00	385370.93	717769.09	
10400.00	90.00	179.62	8470.00	-2175.87	14.45	2175.92	0.00	385270.93	717769.75	
10500.00	90.00	179.62	8470.00	-2275.87	15.12	2275.92	0.00	385170.93	717770.42	
10600.00	90.00	179.62	8470.00	-2375.86	15.78	2375.92	0.00	385070.94	717771.08	
10700.00	90.00	179.62	8470.00	-2475.86	16.45	2475.92	0.00	384970.94	717771.75	
10800.00	90.00	179.62	8470.00	-2575.86	17.11	2575.92	0.00	384870.94	717772.41	
10900.00	90.00	179.62	8470.00	-2675.86	17.78	2675.92	0.00	384770.94	717773.08	
11000.00	90.00	179.62	8470.00	-2775.85	18.44	2775.92	0.00	384670.95	717773.74	
11100.00	90.00	179.62	8470.00	-2875.85	19.11	2875.92	0.00	384570.95	717774.41	
11200.00	90.00	179.62	8470.00	-2975.85	19.77	2975.92	0.00	384470.95	717775.07	
11300.00	90.00	179.62	8470.00	-3075.85	20.43	3075.92	0.00	384370.95	717775.73	
11400.00	90.00	179.62	8470.00	-3175.85	21.10	3175.92	0.00	384270.95	717776.40	
11500.00	90.00	179.62	8470.00	-3275.84	21.76	3275.92	0.00	384170.96	717777.06	
11600.00	90.00	179.62	8470.00	-3375.84	22.43	3375.92	0.00	384070.96	717777.73	
11700.00	90.00	179.62	8470.00	-3475.84	23.09	3475.92	0.00	383970.96	717778.39	
11800.00	90.00	179.62	8470.00	-3575.84	23.76	3575.92	0.00	383870.96	717779.06	
11900.00	90.00	179.62	8470.00	-3675.83	24.42	3675.92	0.00	383770.97	717779.72	
12000.00	90.00	179.62	8470.00	-3775.83	25.08	3775.92	0.00	383670.97	717780.38	
12100.00	90.00	179.62	8470.00	-3875.83	25.75	3875.92	0.00	383570.97	717781.05	
12200.00	90.00	179.62	8470.00	-3975.83	26.41	3975.92	0.00	383470.97	717781.71	
12300.00	90.00	179.62	8470.00	-4075.83	27.08	4075.92	0.00	383370.97	717782.38	
12400.00	90.00	179.62	8470.00	-4175.82	27.74	4175.92	0.00	383270.98	717783.04	
12500.00	90.00	179.62	8470.00	-4275.82	28.41	4275.92	0.00	383170.98	717783.71	
12600.00	90.00	179.62	8470.00	-4375.82	29.07	4375.92	0.00	383070.98	717784.37	
12700.00	90.00	179.62	8470.00	-4475.82	29.73	4475.92	0.00	382970.98	717785.03	
12800.00	90.00	179.62	8470.00	-4575.81	30.40	4575.92	0.00	382870.99	717785.70	
12896.55	90.00	179.62	8470.00	-4672.36	31.04	4672.46	0.00	382774.44	717786.34	Pbhl

### Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude ---> Deg Min Sec			<--- Longitude ---> Deg Min Sec		
Pbhl			8470.00	-4672.36	31.04	382774.44	717786.34	32	3	3.763 N	103	45	49.733 W

### Casing Points

MD	TVD	Diameter	Hole Size	Name

### Annotation

MD ft	TVD ft	
7897.04	7897.04	Kop
8797.04	8470.00	Lp
12896.54	8470.00	Pbhl



# Weatherford International Ltd.

## WFT Plan Report - X & Y's



Company:	Devon Energy	Date:	4/6/2010	Time:	09:23:40	Page:	3
Field:	Eddy Co., NM (NAD 83)	Co-ordinate(NE) Reference:	Well: Snapping 10 Federal #1H, Grid Nort				
Site:	Snapping 10 Federal #1H	Vertical (TVD) Reference:	SITE 3269.0				
Well:	Snapping 10 Federal #1H	Section (VS) Reference:	Well (0.00N,0.00E,179.62Azi)				
Wellpath:	1	Survey Calculation Method:	Minimum Curvature				Db: Sybase

### Formations

MD	TVD	Formations	Lithology	Dip Angle	Dip Direction



**Weatherford®****Weatherford Drilling Services**

GeoDec v5.03

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Report Date: April 06, 2010  
Job Number: \_\_\_\_\_  
Customer: Devon Energy  
Well Name: Snapping 10 Federal #1H  
API Number: \_\_\_\_\_  
Rig Name: \_\_\_\_\_  
Location: Eddy Co., NM  
Block: \_\_\_\_\_  
Engineer: R joyner

---

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 387446.800 USFT	Latitude 32.0638915 DEG
East/West 717755.300 USFT	Longitude -103.7638306 DEG
Grid Convergence: .30°	
Total Correction: +7.47°	

---

Geodetic Location WGS84	Elevation =	0.0 Meters
Latitude =	32.06389° N	32° 3 min 50.010 sec
Longitude =	103.76383° W	103° 45 min 49.790 sec

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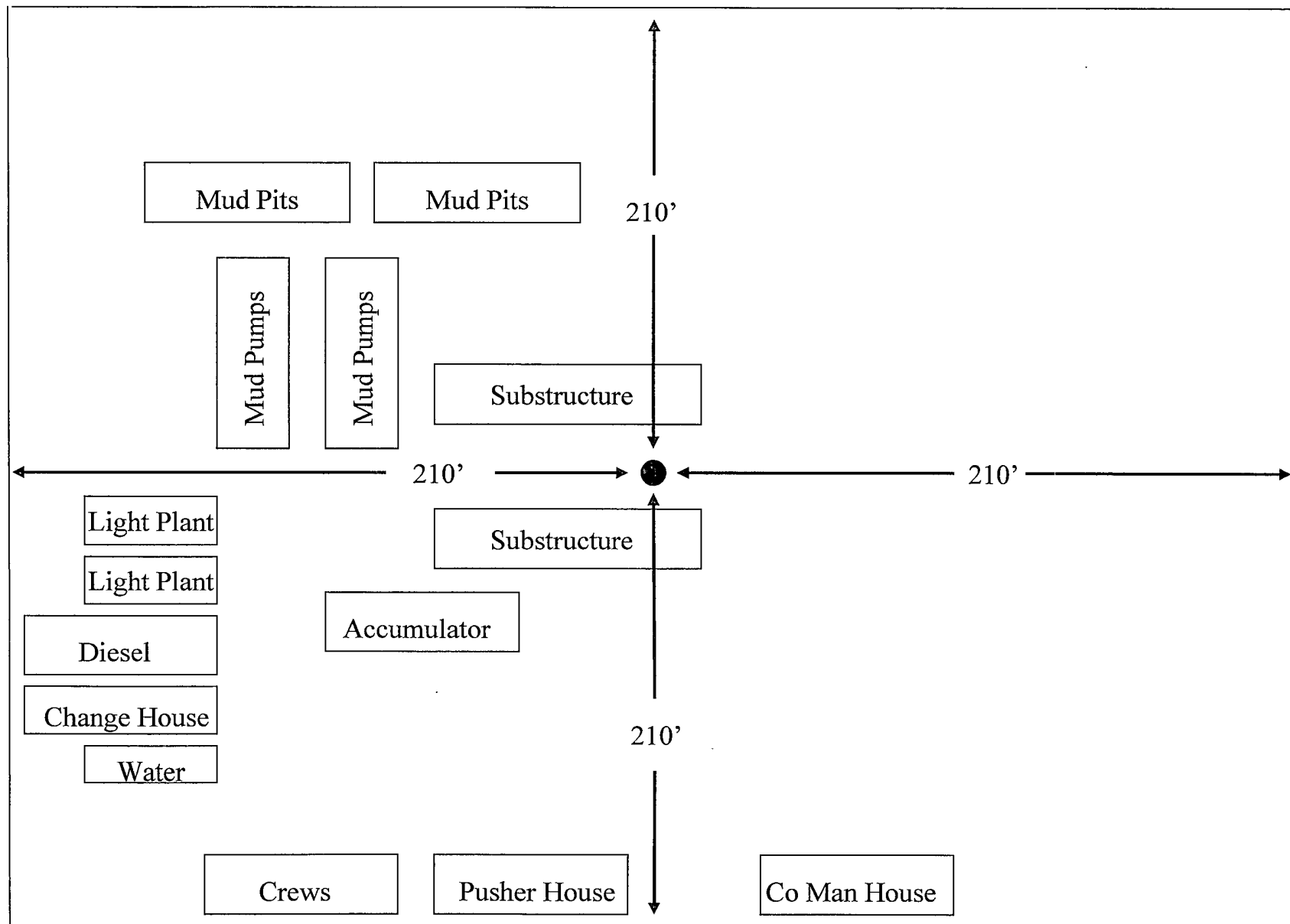
Magnetic Declination =	7.77°	[True North Offset]
Local Gravity =	.9988 g	Checksum = 6555
Local Field Strength =	48606 nT	Magnetic Vector X = 24061 nT
Magnetic Dip =	60.03°	Magnetic Vector Y = 3283 nT
Magnetic Model =	IGRF-2010g11	Magnetic Vector Z = 42104 nT
Spud Date =	Aug 05, 2010	Magnetic Vector H = 24284 nT

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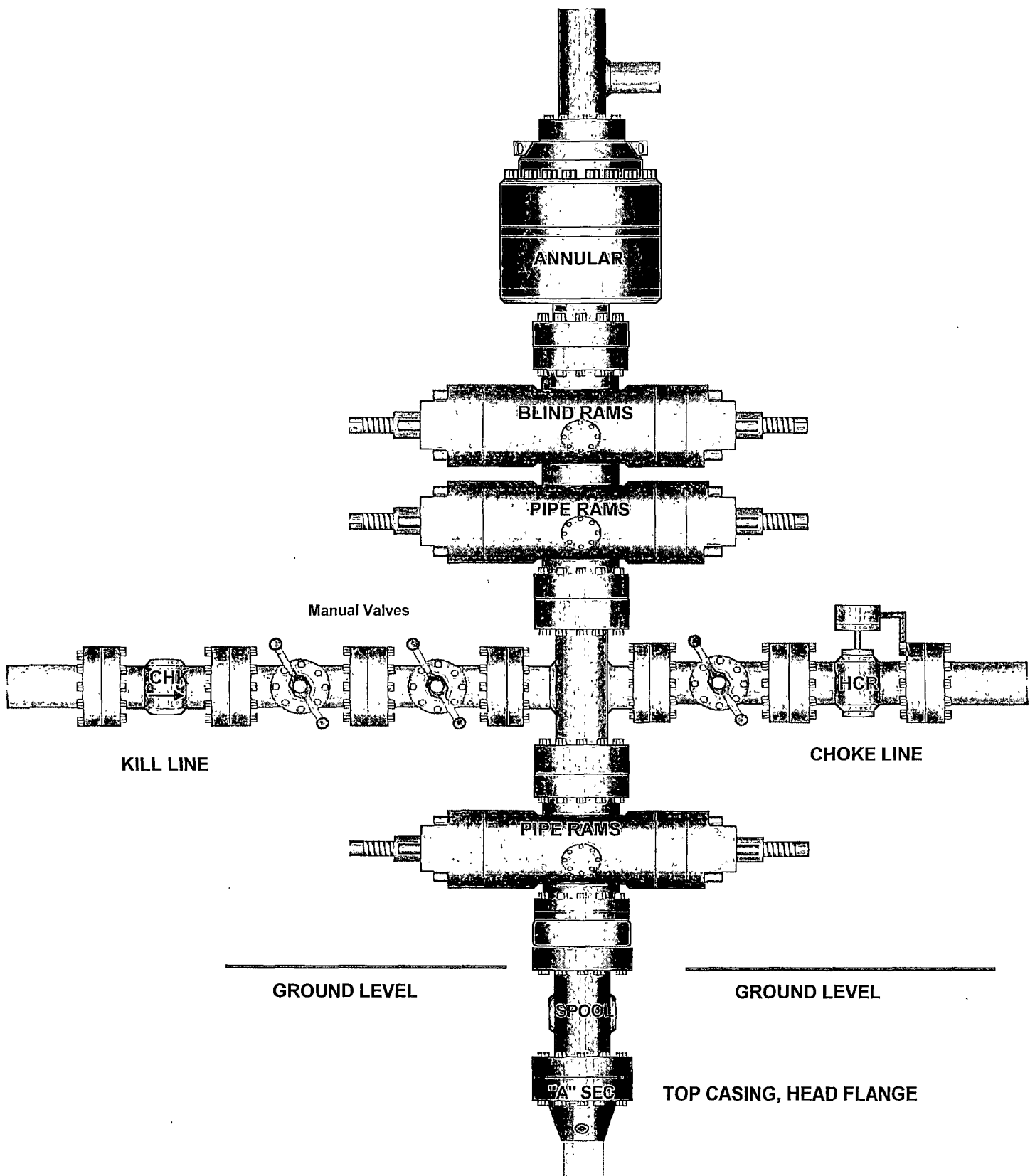
Signed: \_\_\_\_\_

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

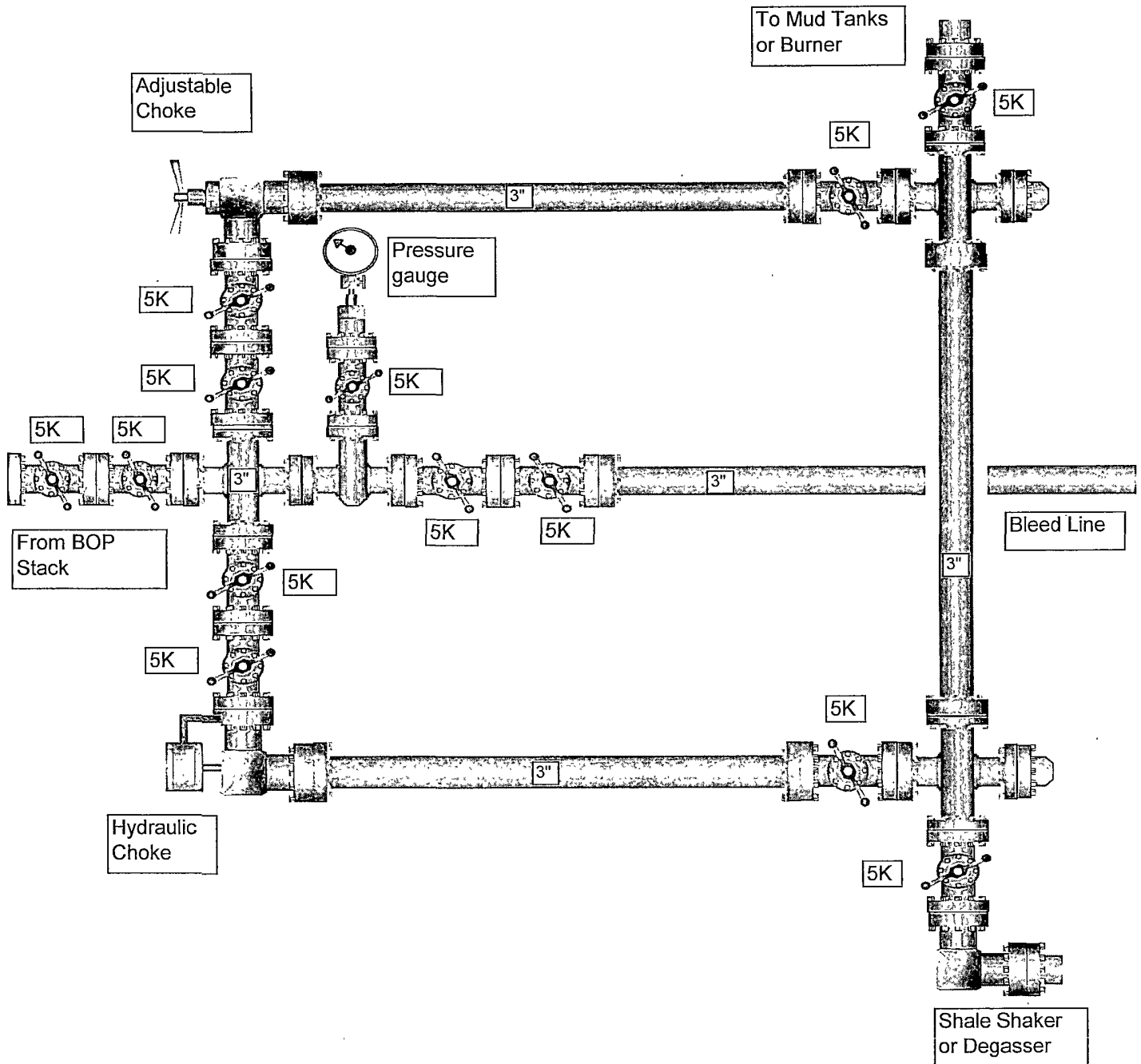
# DEVON PAD DIMENSIONS



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



# 5,000 PSI CHOKE MANIFOLD



## **SURFACE USE PLAN**

Devon Energy Production Company, LP

### **Snapping 10 Federal 1H**

Surface Location: 330' FNL & 1980' FEL, Unit B, Sec 10 T26S R31E, Eddy, NM

Bottom hole Location: 330' FSL & 1980' FEL, Unit O, Sec 10 T26S 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 Basin Surveys.
- b. All roads into the location are depicted on Exhibit 3.
- c. Directions to Location: From the junction of Hwy 128 and Orla, go south 10.6 miles to Ross Ranch, go west on Ross ranch for 5.3 miles to reclaimed lease road, on reclaimed lease road go south 0.1 miles to proposed lease road.

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

- a. The well site layout, Form C-102 shows the existing County road. Approximately 67.4' of new access road will be constructed as follows.
- b. The maximum width of the road will be 14'. It will be crowned and made of 6" rolled and compacted caliche. Water will be deflected, as necessary, to avoid accumulation and prevent surface erosion.
- c. Surface material will be native caliche. This material will be obtained from a BLM approved pit nearest in proximity to the location. The average grade will be approximately 1%.
- d. 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, the Ross Ranch 10 Federal 1 tank battery Sec 10 T26S R31E will be utilized and the necessary production equipment will be installed at the well site.
- b. If necessary, the well will be operated by means of an electric prime mover. Electric power poles will be set along side of the access road.
- c. All flow lines will adhere to API standards.
- d. If the well is productive, rehabilitation plans are as follows:
  - i. 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:**

The caliche utilized for the drilling pad and proposed access road will be from minerals that are located onsite or will be used onsite. If minerals are not available onsite, then an established mineral pit will be used to build the location and stem road.

**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 comply with the NMOCD requirements 19.15.17 and submit form C-144 to the appropriate NMOCD District Office. A copy to be provided to the BLM.

**10. Plans for Surface Reclamation Include Both final & Interim:**

- 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.

**13. Bond Coverage:**

Bond Coverage is Nationwide; Bond # is CO-1104

**Operators Representative:**

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

Jim Cromer - Operations Engineer Advisor  
Devon Energy Production Company, L.P.  
20 North Broadway  
Oklahoma City, OK 73102-8260  
(405) 228-4464 (office)  
(405) 694-7718 (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)



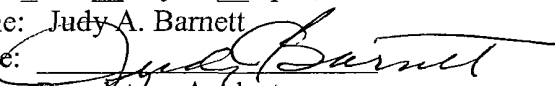
## Certification

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 16th day of April, 2010.

Printed Name: Judy A. Barnett

Signed Name: 

Position Title: Regulatory Analyst

Address: 20 North Broadway, OKC OK 73102

Telephone: (405)-228-8699

Field Representative (if not above signatory):

Address (if different from above):

Telephone (if different from above):

## PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Devon Energy Production Company, LP
LEASE NO.:	NM-89057
WELL NAME & NO.:	Snapping 10 Federal #1H
SURFACE HOLE FOOTAGE:	0330' FNL & 1980' FEL
BOTTOM HOLE FOOTAGE:	0330' FSL & 1980' FEL
LOCATION:	Section 10, T. 26 S., R 31 E., NMPM
COUNTY:	Eddy County, New Mexico

### TABLE OF CONTENTS

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**
  - Solid Waste Containment
- ☐ **Construction**
  - Notification
  - V-Door Direction – Not stipulated
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
  - Logging Requirements
- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines
- ☐ **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)**

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

## **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) 234-5972 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. V-DOOR DIRECTION:** Not stipulated

### **C. TOPSOIL**

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 10 inches in depth. The topsoil will be used for interim and final reclamation.

### **D. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

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

### **E. 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.

### **F. 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.

### **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 twelve (12) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty (20) 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**

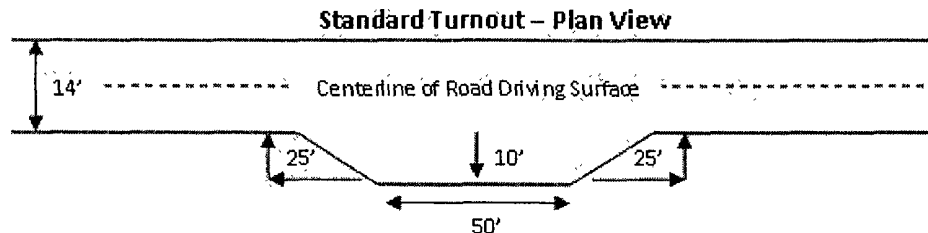
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **Ditching**

Ditching shall be required on the uphill side 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 be constructed on all blind curves. Turnouts shall conform to the following diagram:

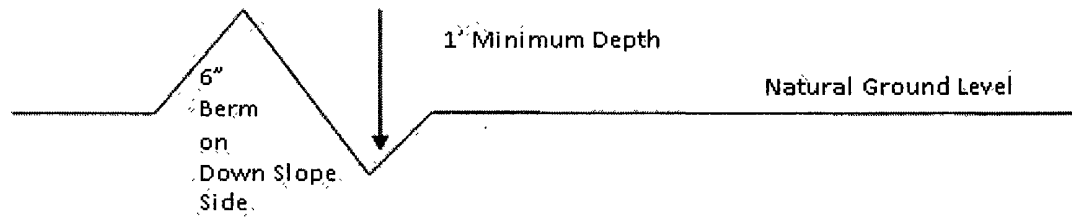


### **Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing and inslaping, 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:

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

### Culvert Installations

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

### Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road 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 cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

### Fence Requirement

Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

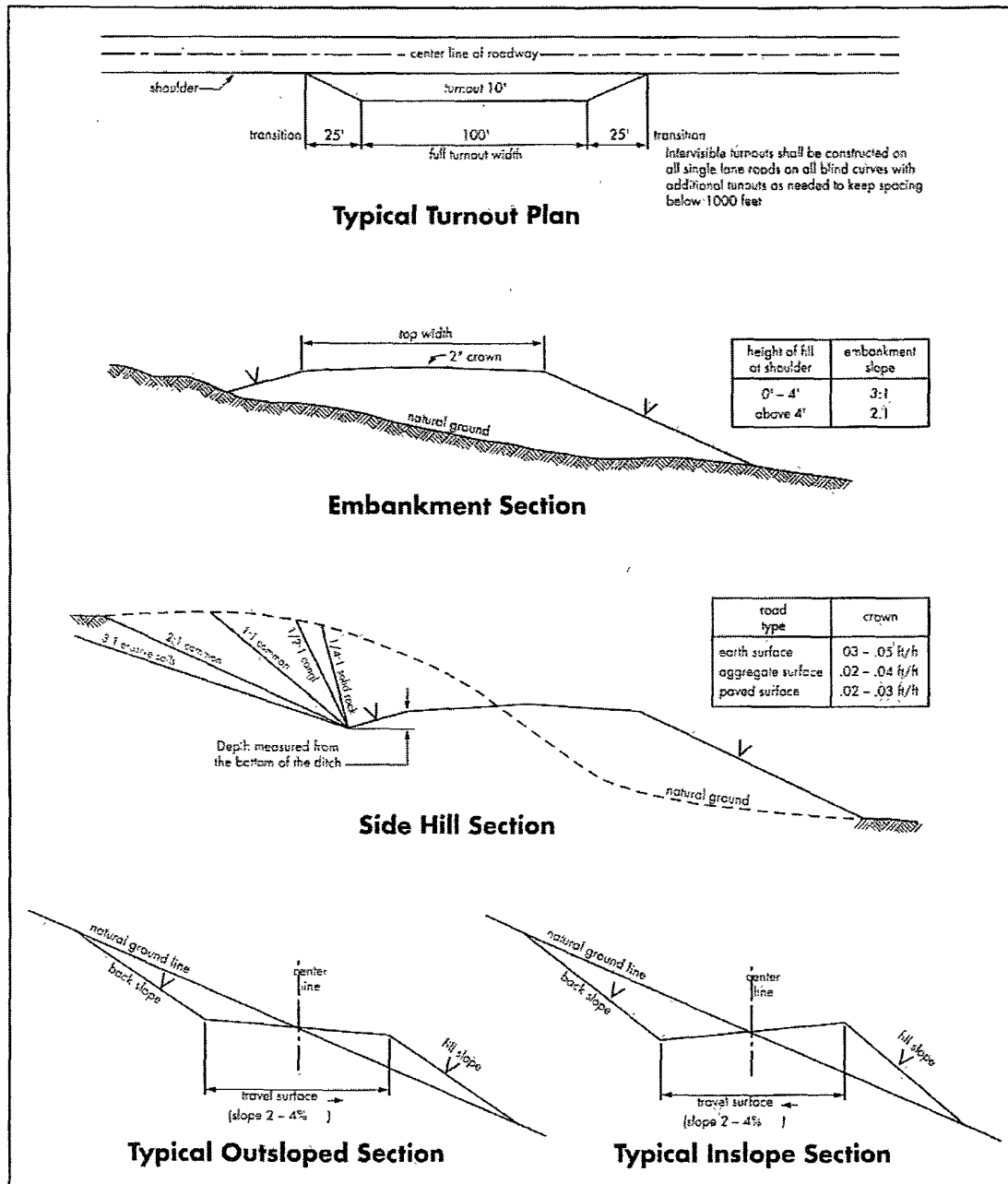
The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

**Public Access**

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



**Figure 1 – Cross Sections and Plans For Typical Road Sections**



## VII. DRILLING

### A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

- a. Spudding well
- b. Setting and/or Cementing of all casing strings
- c. BOPE tests

☒ **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. If Hydrogen Sulfide is encountered, please 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.
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 are located, this does not include the dog house or stairway area.
4. **The record of the drilling rate along with the CAL/GR/N well log run from TD to surface will 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 and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.**

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

Wait on cement (WOC) time 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. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. 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.

Possible lost circulation in the Delaware and Bone Spring Groups.  
Possible high pressure gas in the Wolfcamp Formation. (Pilot Hole)

1. The 13-3/8 inch surface casing shall be set at **approximately 925 feet (a minimum of 25 feet into the Rustler Anhydrite and 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:  
**Set this casing in the Lamar Limestone.**

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

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

**Pilot hole is required to have a plug at the bottom of the hole. If two plugs are set, the BLM is to be contacted (575-361-2822) prior to tag of bottom plug, which must be a minimum of 200' in length. Operator can set one plug from bottom of pilot hole to kick-off point and save the WOC time for tagging the first plug.**

3. The minimum required fill of cement behind the 5-1/2 inch production casing is:
  - a. First stage to DV tool, cement shall:
    - ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job.
  - b. Second stage above DV tool, cement shall:
    - ☒ 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.
1. 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. Operator installing a 5M system and testing as a 3M.**
  - 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.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 9-5/8 intermediate casing shoe shall be **5000 (5M) psi. 5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. Casing cut-off and BOP installation will not be initiated until the cement has had a minimum of 8 hours setup time for a water basin. The casing shall remain stationary and under pressure for at least eight hours after the operator places the cement. In the potash area, the minimum time is 12 hours and the casing shall remain stationary and under pressure during this time period. Casing shall be under pressure if the operator uses some acceptable means of holding pressure or if the operator employs one or more float valves to hold the cement in place. Testing the BOP/BOPE against a plug can commence after meeting the above conditions plus the BOP installation time.
  - b. The tests shall be done by an independent service company utilizing a test plug.
  - c. The results of the test shall be reported to the appropriate BLM office.
  - d. 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.**
  - e. 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.
  - f. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2. **(Pilot Hole)**

#### **D. DRILLING MUD (Pilot Hole)**

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

**Proposed mud weight may not be adequate for drilling through Wolfcamp.**

**E. DRILL STEM TEST**

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

**CRW 051810**

## **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.

#### **Containment Structures**

The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

#### **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, Munsell Soil Color Chart # 5Y 4/2

### **B. PIPELINES – not requested in APD**

### **C. ELECTRIC LINES – not requested in 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).

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