

HOBBS OCD  
RECEIVED  
JUL 14 2014

# OCD Hobbs

14-660

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

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM121489
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, L.P. <b>(6137)</b>		7. If Unit or CA Agreement, Name and No.
3a. Address 333 W. Sheridan Ave. Oklahoma City, OK 73102		8. Lease Name and Well No. <b>(313483)</b> COACHWHIP 26 FEDERAL 1H
3b. Phone No. (include area code) 405-552-7848		9. API Well No. <b>30-025-41961</b>
4. Location of Well (Report location clearly and in accordance with any State requirements*) At surface 215 FSL & 1500 FEL Unit O PP: 200 FSL & 1500 FEL At proposed prod. zone 330 FNL & 660 FEL Unit A		10. Field and Pool, or Exploratory <b>(5990)</b> <b>TRIPLE; BOB SPRING</b>
14. Distance in miles and direction from nearest town or post office* Approximately 23 miles NW of Jal, NM		11. Sec., T. R. M. or Blk. and Survey or Area 26-23S-33E
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 215'	16. No. of acres in lease 640 acres	17. Spacing Unit dedicated to this well 160 acres
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. See attached map	19. Proposed Depth TVD: 10,948' MD: 15,731'	20. BLM/BIA Bond No. on file CO-1104 & NMB-000801
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,652.4' GL	22. Approximate date work will start* 08/01/2014	23. Estimated duration 45 days

### 24. Attachments To Be Pad Drilled w/ Coachwhip 26 Fed 2H

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	Name (Printed/Typed) David H. Cook	Date 03/10/2014
---------------	---------------------------------------	--------------------

Title  
Regulatory Specialist

Approved by (Signature) <b>Steve Caffey</b>	Name (Printed/Typed)	Date <b>JUN - 7 2014</b>
---------------------------------------------	----------------------	-----------------------------

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 States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

E-PERMITTING - - New Well **PM**  
 Comp \_\_\_\_\_ P&A \_\_\_\_\_ TA \_\_\_\_\_  
 CSNG \_\_\_\_\_ Loc CHG \_\_\_\_\_  
 ReComp \_\_\_\_\_ Add New Pool \_\_\_\_\_  
 Canc'l Well \_\_\_\_\_ Create Pool \_\_\_\_\_

(Continued on page 2)

*KAC*  
*07/14/14*

## Carlsbad Controlled Water Basin

### SEE ATTACHED FOR CONDITIONS OF APPROVAL

Approval Subject to General Requirements  
& Special Stipulations Attached

JUL 15 2014

HOBBS OCD

JUL 14 2014

RECEIVED

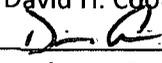
Certification

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 27th day of March, 2014.

Printed Name: David H. Cook

Signed Name: 

Position Title: Regulatory Specialist

Address: 333 W. Sheridan, OKC OK 73102

Telephone: (405)-552-6559

## DRILLING PROGRAM

Devon Energy Production Company, L.P.  
Coachwhip 26 Federal 1H

1. **Geologic Name of Surface Formation:** Quaternary

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

a. Fresh Water	225'	
b. Rustler	1290'	Barren
c. Top of Salt	1770'	Barren
d. Base of Salt/Lwr Castille	5090'	Barren
e. Delaware	5190'	Oil / Gas
f. Cherry Canyon	6060'	Oil / Gas
g. Brushy Canyon	7640'	Oil / Gas
h. Bone Spring Lime	9070'	Oil / Gas
i. 1 <sup>st</sup> Bone Spring SS	10065'	Oil / Gas
j. 2 <sup>nd</sup> Bone Spring SS	10770'	Oil / Gas
Total Depths	10948' TVD	15731' MD

### 3. 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). The line will be kept as straight as possible with minimal turns and will be secured with anchors and/or safety clamps as per the manufacturer's requirements. (See attached spec sheets).

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.

See COA

4. Casing Program:

Hole Size	Hole Interval (ft)	Casing OD	Casing Interval (ft)	Weight (lb/ft)	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17-1/2"	0 - 1,325' <i>1420'</i>	13-3/8"	0 - 1,325' <i>1420'</i>	48	STC	H-40	1.28	3.02	8.51
12-1/4"	1,325 - 5,200'	9-5/8"	0 - 5,200'	40	BTC	HCK-55	1.56	1.75	4.45
8-3/4"	5,200-15,731'	7"	0 -10,515'	29	BTC	HCP-110	1.87	2.46	3.13
8-3/4"		5-1/2"	10,515 - 15,731'	17	BTC	P-110	1.67	2.24	3.05

Casing Notes:

- All casing is new and API approved

Maximum Lateral TVD: 10,948'

5. Proposed mud Circulations System:

See COA

Depth (ft)	Mud Weight	Viscosity (cp)	Fluid Loss	Type System
0-1,325' <i>1420'</i>	8.5-8.7	1 - 3	N/C	FW
1,325-5,200'	9.8-10.0	1 - 3	< 100	Brine
5,200-15,731'	8.4-9.0	1 - 3	<100	Cut Brine

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.

6. Cementing Table:

*See  
COA*

String	Number of sx	Weight lbs/gal	Water Volume g/sx	Yield cf/sx	Stage; Lead/Tail	Slurry Description
13-3/8" Surface Casing	670	13.5	9.08	1.72	Lead	Class C Cement + 0.125 lbs/sack Poly-E-Flake + 4% bwoc Bentonite + 70.1% Fresh Water
	560	14.8	6.34	1.33	Tail	Class C Cement + 63.5% Fresh Water
9-5/8" Intermediate Casing	610	12.9	9.82	1.85	Lead	(65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake + 70.9 % Fresh Water
	430	14.8	6.32	1.33	Tail	Class C Cement + 0.125 lbs/sack Poly-E-Flake + 63.5% Fresh Water
5-1/2" Production Casing Single Stage Option	530	11.9	12.89	2.26	Lead #1	(50:50) Class H Cement: Poz (Fly Ash) + 10% BWOC Bentonite + 1 lb/sk of Kol-Seal + 0.3% BWOC HR-601 + 0.5lb/sk D-Air 5000 + 76.4% Fresh Water
	330	12.5	10.81	1.96	Lead #2	(65:35) Class H Cement: Poz (Fly Ash) + 6% BWOC Bentonite + 0.25% BWOC HR-601 + 0.125 lbs/sack Poly-E-Flake + 74.1 % Fresh Water
	1330	14.5	5.32	1.21	Tail	(50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.25% bwoc CFR-3 + 0.2% bwoc HR-601 + 2% bwoc Bentonite + 58.8% Fresh Water

**TOC for all Strings:**

Surface @ 0'  
 Intermediate @ 0'  
 Production @ 4,750'

**Notes:**

- Cement volumes Surface 100%, Intermediate 75%, Production based on at least 25% excess
- Actual cement volumes will be adjusted based on fluid caliper and caliper log data

**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. No logs are planned
- d. No coring program is planned
- e. Additional Testing will be initiated subsequent to setting the production casing. Specific intervals will be targeted based on log evaluation, geological sample shows, and drill stem tests.

See  
COA

**8. Potential Hazards:**

- a. No abnormal pressures or temperatures are expected. There is no known presence of H<sub>2</sub>S in this area, and none is anticipated to be encountered. 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 being used to drill this well. Estimated BHP: 4927 psi, and estimated BHT: 170 degrees.
- b. Hydrogen Sulfide detection equipment will be in operation after drilling out the surface casing shoe until the production string is cemented. Breathing equipment will be on location upon drilling the surface casing 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.

**5D Plan Report****Devon Energy**

**Field Name:** *Lea Co, NM Nad 83 NMEZ*  
**Site Name:** *Coachwhip 26 Federal 1,2H*  
**Well Name:** *Coachwhip 26 Federal 1H*  
**Plan:** *P1:V3*

14 April 2014





Coachwhip 26 Federal 1H  
Lea Co, NM



KB-3677  
GL-3652

Plan Data for Coachwhip 26 Federal 1H

Plan Point Information:

MD	Inc	Az	TVD	+N/-S	+E/-W	Northing	Easting	VSec	DLS
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(DLSU)
0.00	0.00	0.00	0.00	0.00	0.00	462489.35	786714.57	0.00	0.00
5350.00	0.00	0.00	5350.00	0.00	0.00	462489.35	786714.57	0.00	0.00
5800.02	9.00	108.93	5798.17	-11.44	33.36	462477.91	786747.93	-9.82	2.00
9155.54	9.00	108.93	9112.37	-181.76	529.91	462307.59	787244.48	-155.94	0.00
9605.55	0.00	0.00	9560.54	-193.20	563.27	462296.15	787277.84	-165.75	2.00
10515.55	0.00	0.00	10470.54	-193.20	563.27	462296.15	787277.84	-165.75	0.00
11265.55	90.00	2.77	10948.00	283.71	586.34	462773.06	787300.91	311.71	12.00
15730.92	90.00	2.77	10948.00	4743.86	802.06	467233.21	787516.63	4777.08	0.00

Plan Data for Coachwhip 26 Federal 1H

Target Set Information:

Name: Coachwhip 26 Fed 1H

Position offsets from Slot centre

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape	Comment
(USft)	(USft)	(USft)	(USft)	(USft)	(USft)		
S Tgt	10470.54	-193.20	563.27	462296.15	787277.84	Cuboid	
PBHL 1H	10948.00	4743.86	802.06	467233.21	787516.63	Cuboid	

Plan Data for Coachwhip 26 Federal 1H

Slot: Coachwhip 26 Federal 1H

Position:

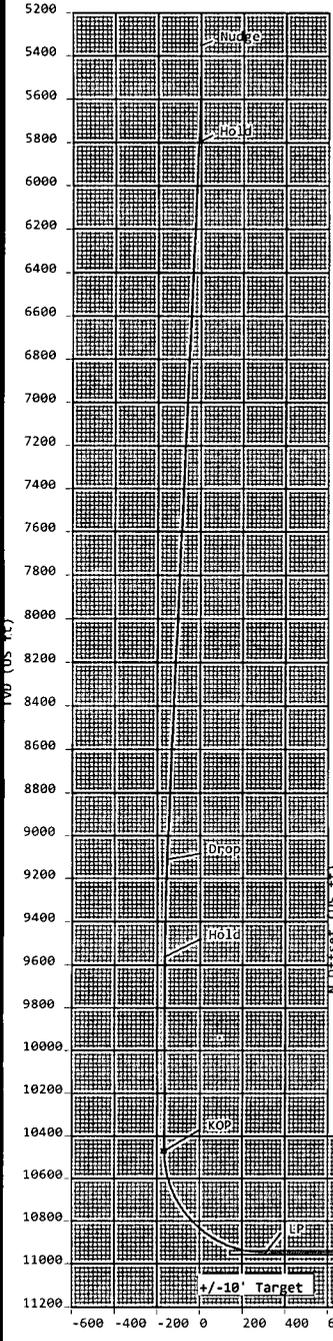
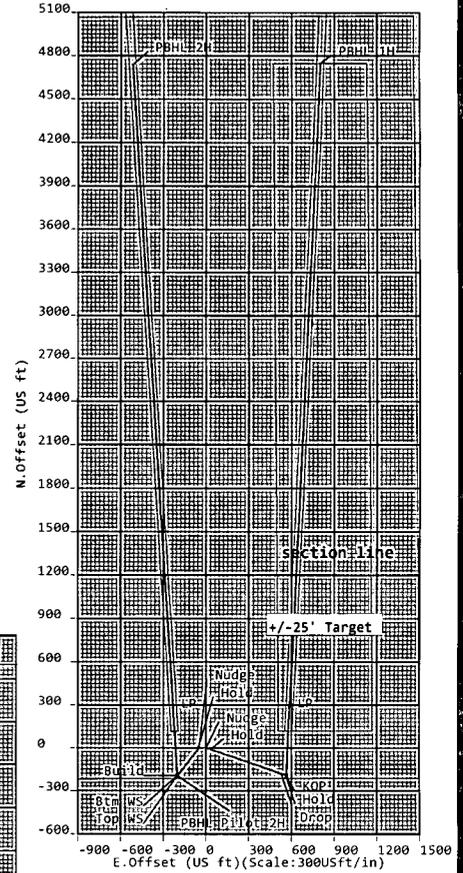
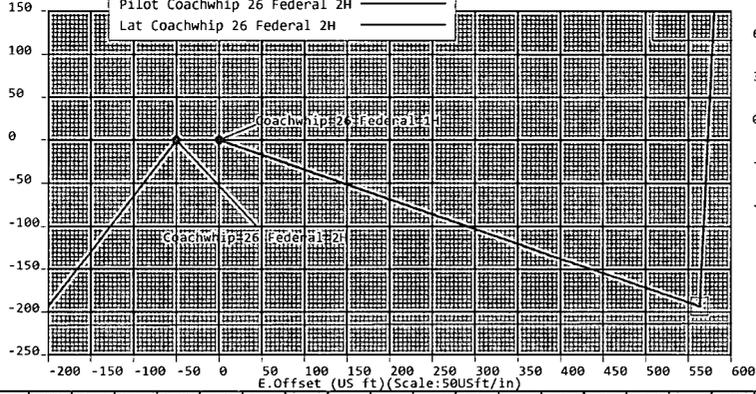
Offset is from Site centre

+N/-S: 0.00USft Northing: 462489.35USft Latitude: 32°16'8.3"

+E/-W: 0.00USft Easting: 786714.57USft Longitude: -103°32'22.0"

Elevation Above VRD: 3652.00USft

Coachwhip 26 Federal 1H  
Pilot Coachwhip 26 Federal 2H  
Lat Coachwhip 26 Federal 2H



Sign Off: Russell Joyner

## Coachwhip 26 Federal 1H

<b>Field Name</b>	<b>Map Units :</b> US ft		<b>Company Name :</b> Devon Energy	
Lea Co, NM, Nad 83 NMEZ	<b>Vertical Reference Datum (VRD) :</b> Mean Sea Level			
	<b>Projected Coordinate System :</b> NAD83 / New Mexico East (ftUS)			
<b>Site Name</b>	<b>Units :</b> US ft		<b>North Reference :</b> Grid	
Coachwhip 26 Federal 1,2H	<b>Position</b>		<b>Convergence Angle :</b> 0.42	
	<b>Easting :</b> 786714.57 US ft		<b>Latitude :</b> 32° 16' 8.27"	
		<b>Longitude :</b> -103° 32' 22.02"		
		<b>Elevation above Mean Sea Level:</b> 3650.00 US ft		
<b>Comment :</b>				
<b>Slot Name</b>	<b>Position (Offsets relative to Site Centre)</b>			
Coachwhip 26 Federal 1H	<b>+N / -S :</b> 0.00 US ft		<b>Northing :</b> 462489.35 US ft	
	<b>+E / -W :</b> 0.00 US ft		<b>Easting :</b> 786714.57 US ft	
		<b>Latitude :</b> 32° 16' 8.27"		
		<b>Longitude :</b> -103° 32' 22.02"		
<b>Slot TVD Reference :</b> Ground Elevation				
<b>Elevation above Mean Sea Level :</b> 3652.00 US ft				
<b>Comment :</b>				
<b>Well Name</b>	<b>Type :</b> Main well		<b>UWI :</b>	
Coachwhip 26 Federal 1H	<b>Rig Height Drill Floor :</b> 25.00 US ft		<b>Plan :</b> P1:V3	
	<b>Relative to Mean Sea Level:</b> 3677.00 US ft		<b>Comment :</b>	
		<b>Closure Distance :</b> 4811.19 US ft		<b>Closure Azimuth :</b> 9.59643°
<b>Vertical Section (Position of Origin Relative to Slot )</b>				
		<b>+N / -S :</b> 0.00 US ft		<b>+E / -W :</b> 0.00 US ft
				<b>Az :</b> 2.77°
<b>Magnetic Parameters</b>				
<b>Model :</b> BGGM		<b>Field Strength :</b>		<b>Dec :</b> 7.34°
		48368.8nT		<b>Dip :</b> 60.15°
				<b>Date :</b> 15/Apr/2014

<b>Target Set</b>	
<b>Name :</b> Coachwhip 26 Fed 1H	<b>Number of Targets :</b> 2

**Comment :**

<b>Target Name:</b>	<b>Position (Relative to Slot centre)</b>		
S Tgt	<b>+N / -S :</b> -193.20US ft		<b>Northing :</b> 462296.15 US ft
	<b>+E / -W :</b> 563.27 US ft		<b>Easting :</b> 787277.84US ft
		<b>Latitude :</b> 32° 16' 6.31"	
		<b>Longitude :</b> -103° 32' 15.47"	
<b>Shape:</b>	<b>TVD (Drill Floor) :</b> 10470.54 US ft		
Cuboid	<b>Orientation Azimuth :</b> 0.00°		<b>Inclination :</b> 0.00°
	<b>Dimensions Length :</b> 20.00 US ft		<b>Breadth :</b> 20.00 US ft
		<b>Height :</b> 20.00 US ft	

5D Plan Report

<b>Target Name:</b> PBHL 1H  <b>Shape:</b> Cuboid	<b>Position (Relative to Slot centre)</b>		
	<b>+N / -S : 4743.86US ft</b>	<b>Northing : 467233.21 US ft</b>	<b>Latitude : 32°16'55.15"</b>
	<b>+E / -W : 802.06 US ft</b>	<b>Easting : 787516.63US ft</b>	<b>Longitude : -103°32'12.26"</b>
	<b>TVD (Drill Floor) : 10948.00 US ft</b>		
<b>Orientation</b>	<b>Azimuth : 2.77°</b>	<b>Inclination : 0.00°</b>	
<b>Dimensions</b>	<b>Length : 9264.00 US ft</b>	<b>Breadth : 50.00 US ft</b>	<b>Height : 20.00 US ft</b>

Well path created using minimum curvature

Salient Points (Relative to Slot centre, TVD relative to Drill Floor)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	DLS (°/100 US ft)	VS (US ft)	B. Rate (°/100 US ft)	T. Rate (°/100 US ft)	T. Face (°)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5350.00	0.00	0.00	5350.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Nudge
5800.02	9.00	108.93	5798.17	-11.44	33.36	2.00	-9.82	2.00	0.00	108.93	Hold
9155.54	9.00	108.93	9112.37	-181.76	529.91	0.00	-155.94	0.00	0.00	0.00	Drop
9605.55	0.00	0.00	9560.54	-193.20	563.27	2.00	-165.75	-2.00	0.00	180.00	Hold
10515.55	0.00	0.00	10470.54	-193.20	563.27	0.00	-165.75	0.00	0.00	0.00	KOP
11265.55	90.00	2.77	10948.00	283.71	586.34	12.00	311.71	12.00	0.00	2.77	LP
15730.92	90.00	2.77	10948.00	4743.86	802.06	0.00	4777.08	0.00	0.00	0.00	PBHL 1H

Interpolated Points (Relative to Slot centre, TVD relative to Drill Floor)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment	
5300.00	0.00	0.00	5300.00	0.00	0.00	0.00	0.00	462489.35	786714.57		
5350.00	0.00	0.00	5350.00	0.00	0.00	0.00	0.00	462489.35	786714.57	Nudge	
5400.00	1.00	108.93	5400.00	-0.14	0.41	-0.12	2.00	462489.21	786714.98		
5500.00	3.00	108.93	5499.93	-1.27	3.71	-1.09	2.00	462488.08	786718.28		
5600.00	5.00	108.93	5599.68	-3.54	10.31	-3.03	2.00	462485.81	786724.88		
5700.00	7.00	108.93	5699.13	-6.93	20.20	-5.94	2.00	462482.42	786734.77		
5800.00	9.00	108.93	5798.15	-11.44	33.36	-9.82	2.00	462477.91	786747.93		
5800.02	9.00	108.93	5798.17	-11.44	33.36	-9.82	0.00	462477.91	786747.93	Hold	
5900.00	9.00	108.93	5896.92	-16.52	48.16	-14.17	0.00	462472.83	786762.73		
6000.00	9.00	108.93	5995.69	-21.59	62.96	-18.53	0.00	462467.76	786777.53		
6100.00	9.00	108.93	6094.46	-26.67	77.76	-22.88	0.00	462462.68	786792.33		
6200.00	9.00	108.93	6193.23	-31.75	92.55	-27.24	0.00	462457.60	786807.12		
6300.00	9.00	108.93	6292.00	-36.82	107.35	-31.59	0.00	462452.53	786821.92		
6400.00	9.00	108.93	6390.76	-41.90	122.15	-35.94	0.00	462447.45	786836.72		
6500.00	9.00	108.93	6489.53	-46.97	136.95	-40.30	0.00	462442.38	786851.52		
6600.00	9.00	108.93	6588.30	-52.05	151.74	-44.65	0.00	462437.30	786866.31		
6700.00	9.00	108.93	6687.07	-57.12	166.54	-49.01	0.00	462432.23	786881.11		
6800.00	9.00	108.93	6785.84	-62.20	181.34	-53.36	0.00	462427.15	786895.91		
6900.00	9.00	108.93	6884.61	-67.27	196.14	-57.72	0.00	462422.08	786910.71		
7000.00	9.00	108.93	6983.38	-72.35	210.94	-62.07	0.00	462417.00	786925.51		
7100.00	9.00	108.93	7082.15	-77.43	225.73	-66.43	0.00	462411.92	786940.30		
7200.00	9.00	108.93	7180.91	-82.50	240.53	-70.78	0.00	462406.85	786955.10		
7300.00	9.00	108.93	7279.68	-87.58	255.33	-75.14	0.00	462401.77	786969.90		
7400.00	9.00	108.93	7378.45	-92.65	270.13	-79.49	0.00	462396.70	786984.70		
7500.00	9.00	108.93	7477.22	-97.73	284.92	-83.84	0.00	462391.62	786999.49		
7600.00	9.00	108.93	7575.99	-102.80	299.72	-88.20	0.00	462386.55	787014.29		
7700.00	9.00	108.93	7674.76	-107.88	314.52	-92.55	0.00	462381.47	787029.09		
7800.00	9.00	108.93	7773.53	-112.95	329.32	-96.91	0.00	462376.40	787043.89		
7900.00	9.00	108.93	7872.30	-118.03	344.11	-101.26	0.00	462371.32	787058.68		
8000.00	9.00	108.93	7971.06	-123.11	358.91	-105.62	0.00	462366.24	787073.48		
8100.00	9.00	108.93	8069.83	-128.18	373.71	-109.97	0.00	462361.17	787088.28		
8200.00	9.00	108.93	8168.60	-133.26	388.51	-114.33	0.00	462356.09	787103.08		

## 5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Drill Floor)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	VS (US ft)	DLS (%/100 US ft)	Northing (US ft)	Easting (US ft)	Comment	
8300.00	9.00	108.93	8267.37	-138.33	403.31	-118.68	0.00	462351.02	787117.88		
8400.00	9.00	108.93	8366.14	-143.41	418.10	-123.04	0.00	462345.94	787132.67		
8500.00	9.00	108.93	8464.91	-148.48	432.90	-127.39	0.00	462340.87	787147.47		
8600.00	9.00	108.93	8563.68	-153.56	447.70	-131.74	0.00	462335.79	787162.27		
8700.00	9.00	108.93	8662.45	-158.63	462.50	-136.10	0.00	462330.72	787177.07		
8800.00	9.00	108.93	8761.21	-163.71	477.29	-140.45	0.00	462325.64	787191.86		
8900.00	9.00	108.93	8859.98	-168.79	492.09	-144.81	0.00	462320.56	787206.66		
9000.00	9.00	108.93	8958.75	-173.86	506.89	-149.16	0.00	462315.49	787221.46		
9100.00	9.00	108.93	9057.52	-178.94	521.69	-153.52	0.00	462310.41	787236.26		
9155.54	9.00	108.93	9112.37	-181.76	529.91	-155.94	0.00	462307.59	787244.48	Drop	
9200.00	8.11	108.93	9156.34	-183.90	536.16	-157.78	2.00	462305.45	787250.73		
9300.00	6.11	108.93	9255.57	-187.92	547.87	-161.22	2.00	462301.43	787262.44		
9400.00	4.11	108.93	9355.16	-190.81	556.30	-163.70	2.00	462298.54	787270.87		
9500.00	2.11	108.93	9455.01	-192.57	561.43	-165.21	2.00	462296.78	787276.00		
9600.00	0.11	108.93	9554.99	-193.20	563.26	-165.75	2.00	462296.15	787277.83		
9605.55	0.00	0.00	9560.54	-193.20	563.27	-165.75	2.00	462296.15	787277.84	Hold	
9700.00	0.00	0.00	9654.99	-193.20	563.27	-165.75	0.00	462296.15	787277.84		
9800.00	0.00	0.00	9754.99	-193.20	563.27	-165.75	0.00	462296.15	787277.84		
9900.00	0.00	0.00	9854.99	-193.20	563.27	-165.75	0.00	462296.15	787277.84		
10000.00	0.00	0.00	9954.99	-193.20	563.27	-165.75	0.00	462296.15	787277.84		
10100.00	0.00	0.00	10054.99	-193.20	563.27	-165.75	0.00	462296.15	787277.84		
10200.00	0.00	0.00	10154.99	-193.20	563.27	-165.75	0.00	462296.15	787277.84		
10300.00	0.00	0.00	10254.99	-193.20	563.27	-165.75	0.00	462296.15	787277.84		
10400.00	0.00	0.00	10354.99	-193.20	563.27	-165.75	0.00	462296.15	787277.84		
10500.00	0.00	0.00	10454.99	-193.20	563.27	-165.75	0.00	462296.15	787277.84		
10515.55	0.00	0.00	10470.54	-193.20	563.27	-165.75	0.00	462296.15	787277.84	KOP	
10600.00	10.13	2.77	10554.55	-185.76	563.63	-158.30	12.00	462303.59	787278.20		
10700.00	22.13	2.77	10650.43	-158.06	564.97	-130.57	12.00	462331.29	787279.54		
10800.00	34.13	2.77	10738.46	-111.04	567.24	-83.50	12.00	462378.31	787281.81		
10900.00	46.13	2.77	10814.77	-46.78	570.35	-19.16	12.00	462442.57	787284.92		
11000.00	58.13	2.77	10876.04	31.93	574.16	59.64	12.00	462521.28	787288.73		
11100.00	70.13	2.77	10919.59	121.64	578.50	149.46	12.00	462610.99	787293.07		
11200.00	82.13	2.77	10943.51	218.44	583.18	246.37	12.00	462707.79	787297.75		
11265.55	90.00	2.77	10948.00	283.71	586.34	311.71	12.00	462773.06	787300.91	LP	
11300.00	90.00	2.77	10948.00	318.12	588.00	346.16	0.00	462807.47	787302.57		
11400.00	90.00	2.77	10948.00	418.00	592.83	446.16	0.00	462907.35	787307.40		
11500.00	90.00	2.77	10948.00	517.88	597.66	546.16	0.00	463007.23	787312.23		
11600.00	90.00	2.77	10948.00	617.77	602.49	646.16	0.00	463107.12	787317.06		
11700.00	90.00	2.77	10948.00	717.65	607.32	746.16	0.00	463207.00	787321.89		
11800.00	90.00	2.77	10948.00	817.53	612.16	846.16	0.00	463306.88	787326.73		
11900.00	90.00	2.77	10948.00	917.41	616.99	946.16	0.00	463406.76	787331.56		
12000.00	90.00	2.77	10948.00	1017.30	621.82	1046.16	0.00	463506.65	787336.39		
12100.00	90.00	2.77	10948.00	1117.18	626.65	1146.16	0.00	463606.53	787341.22		
12200.00	90.00	2.77	10948.00	1217.06	631.48	1246.16	0.00	463706.41	787346.05		
12300.00	90.00	2.77	10948.00	1316.95	636.31	1346.16	0.00	463806.30	787350.88		
12400.00	90.00	2.77	10948.00	1416.83	641.14	1446.16	0.00	463906.18	787355.71		
12500.00	90.00	2.77	10948.00	1516.71	645.97	1546.16	0.00	464006.06	787360.54		
12600.00	90.00	2.77	10948.00	1616.60	650.80	1646.16	0.00	464105.95	787365.37		
12700.00	90.00	2.77	10948.00	1716.48	655.64	1746.16	0.00	464205.83	787370.21		
12800.00	90.00	2.77	10948.00	1816.36	660.47	1846.16	0.00	464305.71	787375.04		
12900.00	90.00	2.77	10948.00	1916.25	665.30	1946.16	0.00	464405.60	787379.87		
13000.00	90.00	2.77	10948.00	2016.13	670.13	2046.16	0.00	464505.48	787384.70		
13100.00	90.00	2.77	10948.00	2116.01	674.96	2146.16	0.00	464605.36	787389.53		
13200.00	90.00	2.77	10948.00	2215.90	679.79	2246.16	0.00	464705.25	787394.36		
13300.00	90.00	2.77	10948.00	2315.78	684.62	2346.16	0.00	464805.13	787399.19		
13400.00	90.00	2.77	10948.00	2415.66	689.45	2446.16	0.00	464905.01	787404.02		
13500.00	90.00	2.77	10948.00	2515.55	694.28	2546.16	0.00	465004.90	787408.85		
13600.00	90.00	2.77	10948.00	2615.43	699.11	2646.16	0.00	465104.78	787413.68		
13700.00	90.00	2.77	10948.00	2715.31	703.95	2746.16	0.00	465204.66	787418.52		

## 5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
13800.00	90.00	2.77	10948.00	2815.20	708.78	2846.16	0.00	465304.55	787423.35	
13900.00	90.00	2.77	10948.00	2915.08	713.61	2946.16	0.00	465404.43	787428.18	
14000.00	90.00	2.77	10948.00	3014.96	718.44	3046.16	0.00	465504.31	787433.01	
14100.00	90.00	2.77	10948.00	3114.85	723.27	3146.16	0.00	465604.20	787437.84	
14200.00	90.00	2.77	10948.00	3214.73	728.10	3246.16	0.00	465704.08	787442.67	
14300.00	90.00	2.77	10948.00	3314.61	732.93	3346.16	0.00	465803.96	787447.50	
14400.00	90.00	2.77	10948.00	3414.50	737.76	3446.16	0.00	465903.85	787452.33	
14500.00	90.00	2.77	10948.00	3514.38	742.59	3546.16	0.00	466003.73	787457.16	
14600.00	90.00	2.77	10948.00	3614.26	747.42	3646.16	0.00	466103.61	787461.99	
14700.00	90.00	2.77	10948.00	3714.15	752.26	3746.16	0.00	466203.50	787466.83	
14800.00	90.00	2.77	10948.00	3814.03	757.09	3846.16	0.00	466303.38	787471.66	
14900.00	90.00	2.77	10948.00	3913.91	761.92	3946.16	0.00	466403.26	787476.49	
15000.00	90.00	2.77	10948.00	4013.80	766.75	4046.16	0.00	466503.15	787481.32	
15100.00	90.00	2.77	10948.00	4113.68	771.58	4146.16	0.00	466603.03	787486.15	
15200.00	90.00	2.77	10948.00	4213.56	776.41	4246.16	0.00	466702.91	787490.98	
15300.00	90.00	2.77	10948.00	4313.44	781.24	4346.16	0.00	466802.79	787495.81	
15400.00	90.00	2.77	10948.00	4413.33	786.07	4446.16	0.00	466902.68	787500.64	
15500.00	90.00	2.77	10948.00	4513.21	790.90	4546.16	0.00	467002.56	787505.47	
15600.00	90.00	2.77	10948.00	4613.09	795.74	4646.16	0.00	467102.44	787510.31	
15700.00	90.00	2.77	10948.00	4712.98	800.57	4746.16	0.00	467202.33	787515.14	
15730.92	90.00	2.77	10948.00	4743.86	802.06	4777.08	0.00	467233.21	787516.63	PBHL 1H

**5D Anti-Collision Report****Devon Energy****Field Name:** *Lea Co, NM Nad 83 NMEZ***Site Name:** *Coachwhip 26 Federal 1,2H***Well Name:** *Coachwhip 26 Federal 1H*

14 April 2014





# Weatherford®

## Coachwhip 26 Federal 1H

<b>Field Name</b> Lea Co, NM Nad 83 NMEZ	<b>Map Units</b> : US ft	<b>Company Name</b> : Devon Energy		
	<b>Vertical Reference Datum (VRD)</b> : Mean Sea Level			
	<b>Projected Coordinate System</b> : NAD83 / New Mexico East (ftUS)			
	<b>Comment</b> :			
<b>Site Name</b> Coachwhip 26 Federal 1,2H	<b>Units</b> : US ft	<b>North Reference</b> : Grid	<b>Convergence Angle</b> : 0.42	
	<b>Position</b>	<b>Northing</b> : 462489.35 US ft	<b>Latitude</b> : 32° 16' 8.27"	
		<b>Easting</b> : 786714.57 US ft	<b>Longitude</b> : -103° 32' 22.02"	
	<b>Elevation above Mean Sea Level</b> :3650.00 US ft		<b>Comment</b> :	
<b>Slot Name</b> Coachwhip 26 Federal 1H	<b>Position (Offsets relative to Site Centre)</b>			
	<b>+N / -S</b> : 0.00 US ft	<b>Northing</b> :462489.35 US ft	<b>Latitude</b> : 32°16'8.27"	
	<b>+E / -W</b> : 0.00 US ft	<b>Easting</b> :786714.57 US ft	<b>Longitude</b> : -103°32'22.02"	
	<b>Slot TVD Reference</b> : Ground Elevation			
	<b>Elevation above Mean Sea Level</b> : 3652.00 US ft		<b>Comment</b> :	
<b>Well Name</b> Coachwhip 26 Federal 1H	<b>Type</b> : Main well	<b>UWI</b> :	<b>Plan</b> : Working Plan	
	<b>Rig Height</b> <i>Drill Floor</i> : 25.00 US ft	<b>Comment</b> :		
	<b>Relative to Mean Sea Level</b> : 3677.00 US ft			
	<b>Closure Distance</b> : 4811.19 US ft	<b>Closure Azimuth</b> : 9.59643°		
	<b>Vertical Section (Position of Origin Relative to Slot)</b>			
		<b>+N / -S</b> : 0.00 US ft	<b>+E / -W</b> : 0.00 US ft	<b>Az</b> :2.77°
	<b>Magnetic Parameters</b>			
	<b>Model</b> : BGGM	<b>Field Strength</b> :	<b>Dec</b> : 7.34°	<b>Dip</b> : 60.15° <b>Date</b> : 15/Apr/2014
	48368.8nT			

### Collision / Uncertainty Analysis

Primary Well	Start MD (US ft)	End MD (US ft)	Collision Risk Interval	No. of Std Deviations in Error Computation
Coachwhip 26 Federal 1H (p)	10520.00	15730.92	100.00	2

### Secondary Well Names

Pilot Coachwhip 26 Federal 2H (p)

### Anti-Collision Report Terminology

**S.Minor, S.Major** :Radii of the ellipse of uncertainty at the current location as seen in the along hole direction.

**PHI** :Angle between high-side vector and semi-minor axis

**TVD Spread** :Total TVD range of the ellipsoid of uncertainty at the current location

**ES** :Distance between the extremities of the primary and secondary uncertainty ellipsoids in the direction Cr-Cr

**T.Face to Sec** :Angle between the Hi-Side vector of the primary well at the current location and line of closest approach between the two wells

Separation factors calculated using Pedal Curve (Independent Uncertainty). Well path created using minimum curvature.

## 5D Anti-Collision Report

**Anti Collision Proximity Summary (TVD relative to)**

Secondary Well Name	Pri MD (US ft)	Sec MD (US ft)	TVD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
Pilot Coachwhip 26 Federal 2H (p)	10765.12	10718.45	10708.90	771.34	724.29	16.39	

Secondary Well	Pilot Coachwhip 26 Federal 2H (p) (TVD Relative to Drill Floor (Primary) ; All Azimuth Relative to GRID NORTH)								Risk
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	CC (US ft)	ES (US ft)	SF	
10520.00	10474.99	10484.55	267.05	22.62	22.22	765.43	719.30	16.59	
10620.00	10574.16	10583.71	266.29	22.83	22.43	766.09	719.57	16.47	
10720.00	10668.80	10678.35	264.39	23.03	22.64	768.85	721.99	16.41	
10820.00	10754.77	10764.33	262.03	23.22	22.83	775.93	728.68	16.42	
10920.00	10828.33	10837.88	260.14	23.37	22.99	790.32	742.83	16.64	
11020.00	10886.24	10895.80	259.71	23.50	23.12	814.77	766.97	17.05	
11120.00	10925.99	10935.55	261.66	23.58	23.20	850.81	802.90	17.76	
11220.00	10945.83	10955.39	266.64	23.63	23.25	898.07	850.01	18.69	
11320.00	10948.00	10957.56	270.00	23.63	23.25	954.32	906.24	19.85	
11420.00	10948.00	10957.56	270.00	23.63	23.25	1017.34	969.17	21.12	
11520.00	10948.00	10957.56	270.00	23.63	23.25	1085.93	1037.78	22.55	
11620.00	10948.00	10957.56	270.00	23.63	23.25	1159.10	1110.88	24.04	
11720.00	10948.00	10957.56	270.00	23.63	23.25	1236.03	1187.75	25.60	
11820.00	10948.00	10957.56	270.00	23.63	23.25	1316.07	1267.77	27.25	
11920.00	10948.00	10957.56	270.00	23.63	23.25	1398.68	1350.27	28.89	
12020.00	10948.00	10957.56	270.00	23.63	23.25	1483.43	1434.94	30.59	
12120.00	10948.00	10957.56	270.00	23.63	23.25	1569.98	1521.45	32.35	
12220.00	10948.00	10957.56	270.00	23.63	23.25	1658.04	1609.49	34.15	
12320.00	10948.00	10957.56	270.00	23.63	23.25	1747.39	1698.85	36.00	
12420.00	10948.00	10957.56	270.00	23.63	23.25	1837.83	1789.27	37.84	
12520.00	10948.00	10957.56	270.00	23.63	23.25	1929.22	1880.62	39.69	
12620.00	10948.00	10957.56	270.00	23.63	23.25	2021.44	1972.80	41.57	
12720.00	10948.00	10957.56	270.00	23.63	23.25	2114.34	2065.61	43.39	
12820.00	10948.00	10957.56	270.00	23.63	23.25	2207.87	2159.08	45.26	
12920.00	10948.00	10957.56	270.00	23.63	23.25	2301.94	2253.21	47.24	
13020.00	10948.00	10957.56	270.00	23.63	23.25	2396.50	2347.67	49.08	
13120.00	10948.00	10957.56	270.00	23.63	23.25	2491.48	2442.63	51.01	
13220.00	10948.00	10957.56	270.00	23.63	23.25	2586.84	2538.01	52.98	
13320.00	10948.00	10957.56	270.00	23.63	23.25	2682.54	2633.69	54.92	
13420.00	10948.00	10957.56	270.00	23.63	23.25	2778.54	2729.63	56.81	
13520.00	10948.00	10957.56	270.00	23.63	23.25	2874.81	2825.98	58.88	
13620.00	10948.00	10957.56	270.00	23.63	23.25	2971.33	2922.38	60.71	
13720.00	10948.00	10957.56	270.00	23.63	23.25	3068.07	3019.05	62.59	
13820.00	10948.00	10957.56	270.00	23.63	23.25	3165.01	3115.96	64.52	
13920.00	10948.00	10957.56	270.00	23.63	23.25	3262.14	3213.06	66.47	
14020.00	10948.00	10957.56	270.00	23.63	23.25	3359.44	3310.33	68.41	
14120.00	10948.00	10957.56	270.00	23.63	23.25	3456.89	3407.75	70.35	
14220.00	10948.00	10957.56	270.00	23.63	23.25	3554.49	3505.32	72.30	
14320.00	10948.00	10957.56	270.00	23.63	23.25	3652.21	3603.02	74.25	
14420.00	10948.00	10957.56	270.00	23.63	23.25	3750.05	3700.83	76.19	
14520.00	10948.00	10957.56	270.00	23.63	23.25	3848.01	3798.73	78.10	
14620.00	10948.00	10957.56	270.00	23.63	23.25	3946.06	3896.74	80.01	
14720.00	10948.00	10957.56	270.00	23.63	23.25	4044.22	3994.85	81.92	
14820.00	10948.00	10957.56	270.00	23.63	23.25	4142.46	4093.04	83.83	
14920.00	10948.00	10957.56	270.00	23.63	23.25	4240.78	4191.32	85.74	
15020.00	10948.00	10957.56	270.00	23.63	23.25	4339.18	4289.67	87.65	
15120.00	10948.00	10957.56	270.00	23.63	23.25	4437.65	4388.10	89.55	
15220.00	10948.00	10957.56	270.00	23.63	23.25	4536.19	4486.59	91.46	
15320.00	10948.00	10957.56	270.00	23.63	23.25	4634.79	4585.14	93.36	
15420.00	10948.00	10957.56	270.00	23.63	23.25	4733.45	4683.76	95.26	
15520.00	10948.00	10957.56	270.00	23.63	23.25	4832.16	4782.43	97.16	
15620.00	10948.00	10957.56	270.00	23.63	23.25	4930.93	4881.15	99.05	

## 5D Anti-Collision Report

Secondary Well : Pilot Coachwhip 26 Federal 2H (p) (TVD Relative to Drill Floor (Primary) ; All Azimuth Relative to GRID NORTH)									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
15720.00	10948.00	10957.56	270.00	23.63	23.25	5029.74	4979.91	100.94	
15730.92	10948.00	10957.56	270.00	23.63	23.25	5040.54	4990.70	101.15	

Weatherford International Limited



**Weatherford**

**Weatherford Drilling Services**

GeoDec v5.03

Report Date: November 04, 2013  
 Job Number: \_\_\_\_\_  
 Customer: Devon Energy  
 Well Name: Coachwhip 26 Federal 1H  
 API Number: \_\_\_\_\_  
 Rig Name: \_\_\_\_\_  
 Location: Lea County, 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 462489.190 USFT	Latitude 32.2689634 DEG
East/West 786664.570 USFT	Longitude -103.5396104 DEG
Grid Convergence: -42°	
<b>Total Correction: +6.92°</b>	

Geodetic Location WGS84	Elevation =	0.0 Meters
Latitude = 32.26896° N	32° 16 min 8.268 sec	
Longitude = 103.53961° W	103° 32 min 22.598 sec	

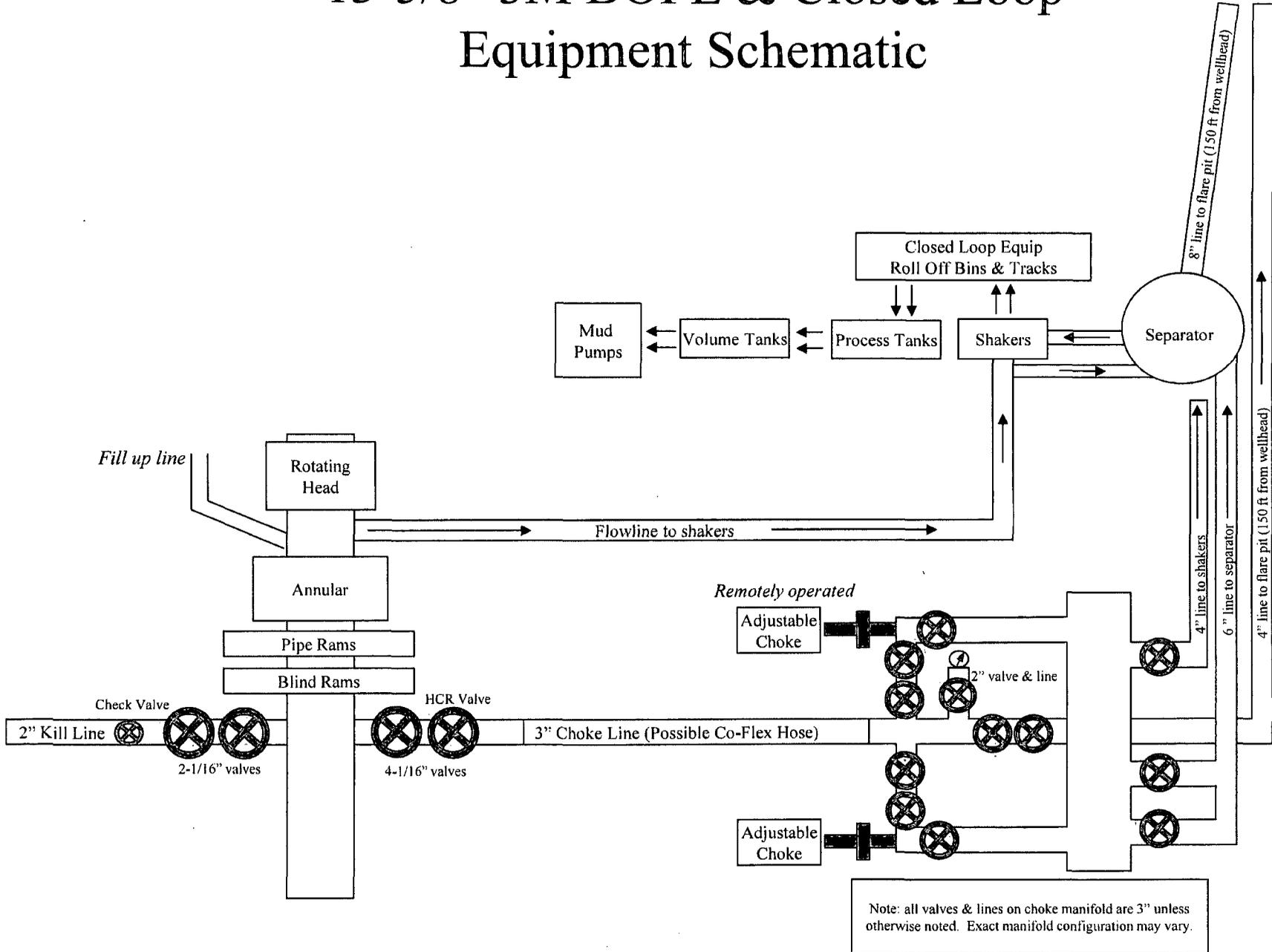
Magnetic Declination =	7.34°	[True North Offset]	
Local Gravity =	.9988 g	Checksum =	6620
Local Field Strength =	48369 nT	Magnetic Vector X =	23878 nT
Magnetic Dip =	60.15°	Magnetic Vector Y =	3076 nT
Magnetic Model =	bggm2013	Magnetic Vector Z =	41951 nT
Spud Date =	Apr 15, 2014	Magnetic Vector H =	24076 nT

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

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

00000000

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



## **NOTES REGARDING BLOWOUT PREVENTERS**

Devon Energy Production Company, L.P.  
**Coachwhip 26 Federal 1H**

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 filings will be in operable condition to withstand a minimum of 3000psi working pressure.
4. All fittings will be flanged.
5. A fill bore safety valve tested to a minimum of 3000psi 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.

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 1713	
PURCHASER: ContiTech Beattie Co.			P.O. N°: 002808		
CONTITECH ORDER N°: 426127		HOSE TYPE: 3" ID Choke and Kill Hose			
HOSE SERIAL N°: 53622		NOMINAL / ACTUAL LENGTH: 10,67 m			
W.P. 68,96 MPa 10000 psi		T.P. 103,4 MPa 15000 psi		Duration: 60 min.	
<p>Pressure test with water at ambient temperature</p> <p style="text-align: center;">See attachment. (1 page)</p> <p>↑ 10 mm = 10 Min. → 10 mm = 25 MPa</p>					
COUPLINGS Type	Serial N°	Quality	Heat N°		
3" coupling with 4 1/16" Flange end	5503 2029	AISI 4130	N1590P		
		AISI 4130	27566		
INFOCHIP INSTALLED			API Spec 16 C Temperature rate: "B"		
All metal parts are flawless			Hose conform to NACE MR 01-75		
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:  25. August. 2008	Inspector	Quality Control ContiTech Rubber Industrial Kft. Quality Control Dept. <i>(Signature)</i>			





Fluid Technology

ContiTech Beattie Corp.  
Website: [www.contitechbeattie.com](http://www.contitechbeattie.com)

Monday, June 14, 2010

RE: Drilling & Production Hoses  
Lifting & Safety Equipment

To Helmerich & Payne,

A Continental ContiTech hose assembly can perform as intended and suitable for the application regardless of whether the hose is secured or unsecured in its configuration. As a manufacturer of High Pressure Hose Assemblies for use in Drilling & Production, we do offer the corresponding lifting and safety equipment, this has the added benefit of easing the lifting and handling of each hose assembly whilst affording hose longevity by ensuring correct handling methods and procedures as well as securing the hose in the unlikely event of a failure; but in no way does the lifting and safety equipment affect the performance of the hoses providing the hoses have been handled and installed correctly. It is good practice to use lifting & safety equipment but not mandatory.

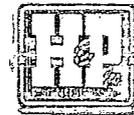
Should you have any questions or require any additional information/clarifications then please do not hesitate to contact us.

ContiTech Beattie is part of the Continental AG Corporation and can offer the full support resources associated with a global organization.

Best regards,

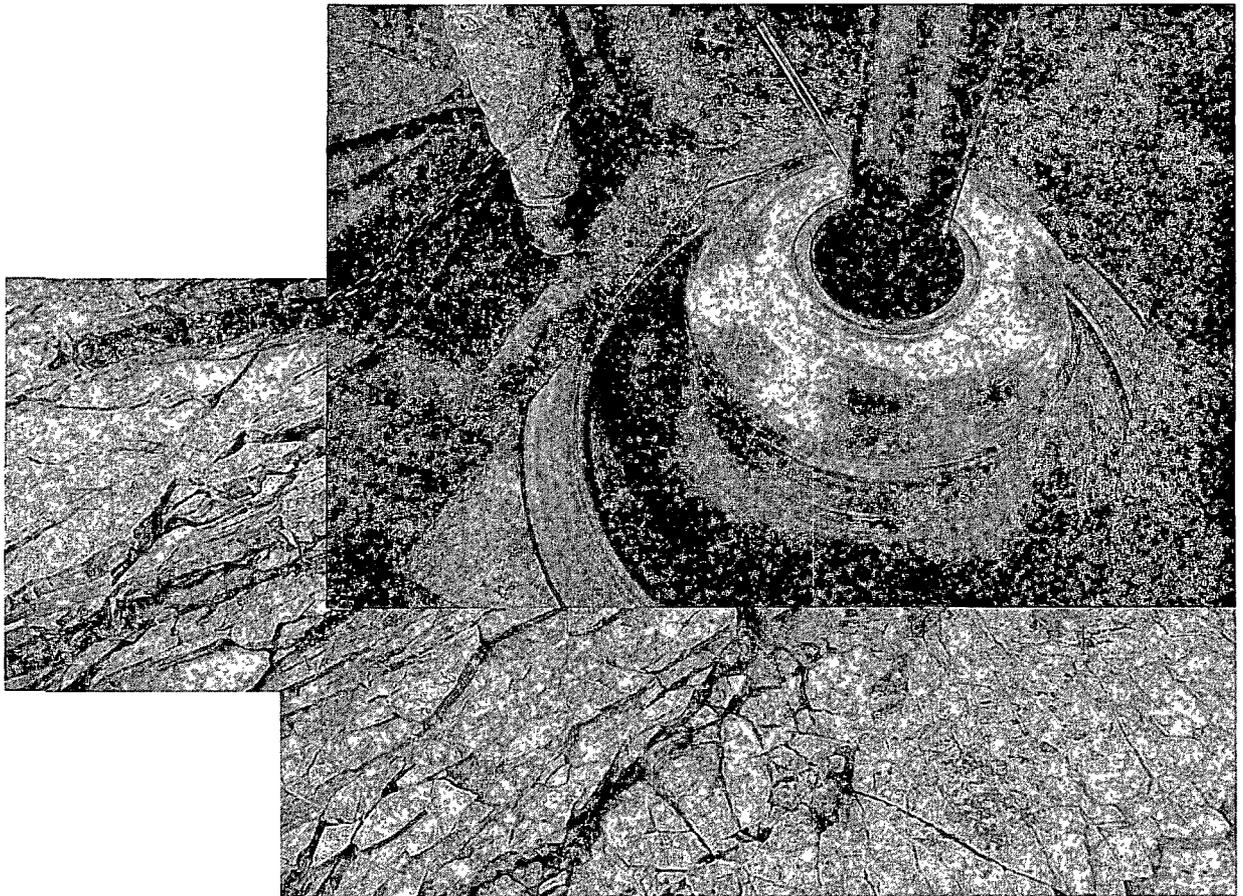
Robin Hodgson  
Sales Manager  
ContiTech Beattie Corp

ContiTech Beattie Corp,  
11535 Brittmoore Park Drive,  
Houston, TX 77041  
Phone: +1 (832) 327-0141  
Fax: +1 (832) 327-0148  
[www.contitechbeattie.com](http://www.contitechbeattie.com)





Commitment Runs Deep



Design Plan  
Operation and Maintenance Plan  
Closure Plan

SENM - Closed Loop Systems  
February 2014

## **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.

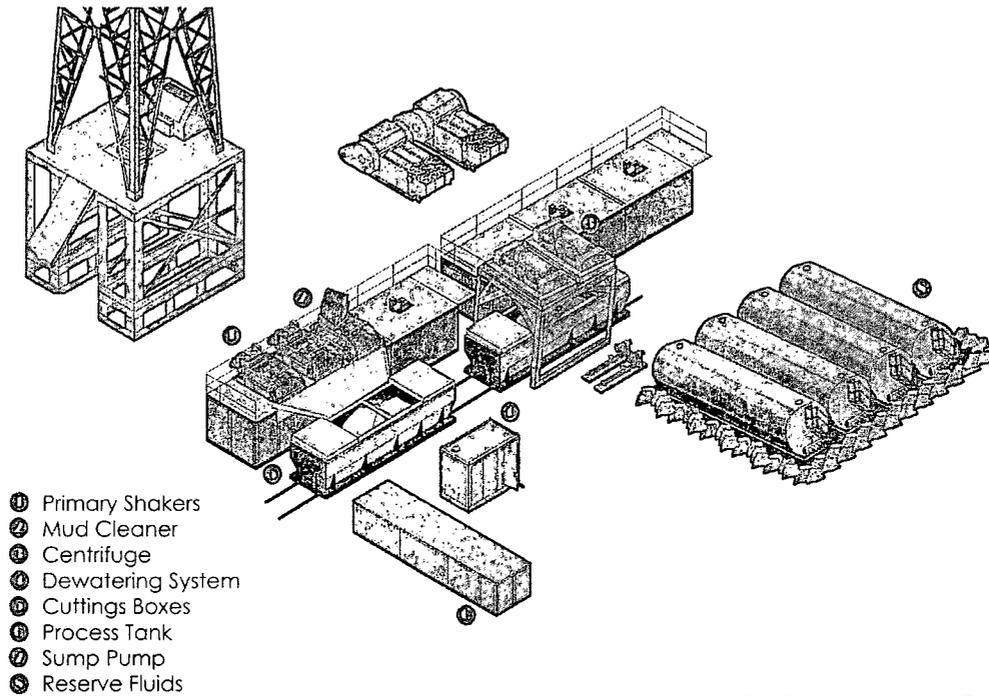
## **II. Operations and Maintenance Plan**

*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.

