

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

NOV 10 2014

RECEIVED

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM121489
2. Name of Operator DEVON ENERGY PRODUCTION CO LP Contact: DAVID H COOK Email: david.cook@devn.com		6. If Indian, Allottee or Tribe Name
3a. Address 333 WEST SHERIDAN AVE OKLAHOMA CITY, OK 73102	3b. Phone No. (include area code) Ph: 405-552-7848	7. If Unit or CA/Agreement, Name and/or No.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 23 T23S R33E SWSW 0200FSL 0900FWL 32.283471 N Lat, 103.548759 W Lon		8. Well Name and No. HOGNOSE VIPER 23 FED 2H
		9. API Well No. 30-025-41976-00-X1
		10. Field and Pool, or Exploratory JOHNSON RANCH
		11. County or Parish, and State LEA COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original APD
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Devon Energy Production Company, L.P. respectfully requests to change the approved APD as follows:

- Change approved TD from 15,942' to 16,137'.
- Change intermediate casing string to a "mixed" grade casing string.
- Use multi-bowl wellhead assembly.

Please see the attached revised Drill Plan, FMC Uni-head schematics & revised directional survey.

Original COAs still stand.

200' tieback on production cement okay!

14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #274730 verified by the BLM Well Information System For DEVON ENERGY PRODUCTION CO LP, sent to the Hobbs Committed to AFMSS for processing by JENNIFER MASON on 11/06/2014 (15JAM0017SE)	
Name (Printed/Typed) DAVID H COOK	Title REGULATORY SPECIALIST
Signature (Electronic Submission)	Date 10/29/2014
THIS SPACE FOR FEDERAL OR STATE OFFICE USE	
Approved By	Title
Conditions of approval, if any, are attached. Approval of this notice 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.	Office
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.	

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

NOV 11 2014
13

DRILLING PROGRAM

Devon Energy Production Company, L.P.
Hognose Viper 23 Fed 2H

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

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

a. Rustler	1,290'	Barren
b. Top of Salt	1,770'	Barren
c. Base of Salt	5,090'	Barren
d. Delaware	5,190'	Oil / Gas
e. Cherry Canyon	6,060'	Oil / Gas
f. Brushy Canyon	7,640'	Oil / Gas
g. Bone Spring Lime	9,070'	Oil / Gas
h. 1 st Bone Spring SS	10,065'	Oil / Gas
i. 2 nd Bone Spring SS	10,771'	Oil / Gas
Total Depth	11,142' TVD	16,137' MD

See original
3. Pressure Control Equipment:

See original
Devon proposes using a multi-bowl wellhead assembly (FMC Uni-head). This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.

- Wellhead will be installed by FMC's representatives.
- If the welding is performed by a third party, the FMC's representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- FMC representative will install the test plug for the initial BOP test.
- FMC will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 5M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time.
- If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted.
- Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.
- Devon will test the casing to 70% of burst or 1500 psi, whichever is greater, as per Onshore Order #2.

After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the FMC Uni-head wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

After running the 9-5/8" intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 5M will already be installed on the FMC Uni-head.

The pipe rams will be operated and checked as per Onshore Order 2. 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**.

See original
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.

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.

4. Casing Program:

Hole Size	Hole Interval	Casing OD	Casing Interval	Weight (lb/ft)	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17-1/2"	0 - 1315'	13-3/8"	0 - 1315'	48	STC	H-40	1.25	2.81	8.57
12-1/4"	1440 - 5190'	9.625	0 - 4300'	40	BTC	J-55	1.15	3.43	4.69
12-1/4"		9.625	4300 - 5190'	40	BTC	HCK-55	1.57	4.63	6.07
8-3/4"	5190-16137'	5-1/2"	0-16137'	17	BTC	P-110	1.54	1.91	2.07

Casing Notes:

- All casing is new and API approved

Maximum Lateral TVD: 11,142'

5. Proposed mud Circulations System:

Depth	Mud Weight	Viscosity	Fluid Loss	Type System
0-1315'	8.4-9.0	30-34	N/C	FW
1315-5190'	9.8-10.0	28-32	N/C	Brine
5190-16137'	8.6-9.6	28-32	N/C	FW

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

6. Cementing Table:

String	Number of sx	Weight lbs/gal	Water Volume g/sx	Yield cf/sx	Stage; Lead/Tail	Slurry Description
13-3/8" Surface	660	13.5	9.07	1.72	Lead	Class C Cement + 0.125 lbs/sack Poly-E-Flake + 4% bwoc Bentonite + 70.8% Fresh Water
	560	14.8	6.32	1.33	Tail	Class C Cement + 63.5% Fresh Water
9-5/8" Intermediate	1120	12.9	9.81	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 + 63.5% Fresh Water
5-1/2" Production Casing	550	11.9	12.89	2.26	Lead	(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	10.86	1.96	Lead	(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
	1440	14.5	5.38	1.22	Tail	(50:50) Class H Cement: Poz (Fly Ash) + 1 lb/sk Sodium Chloride + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% bwoc HR-601 + 2% bwoc Bentonite + 58.8% Fresh Water

TOC for all Strings:

Surface @ 0'
Intermediate @ 0'
Production @ 4990'

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 5-1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows, and drill stem tests.

8. Potential Hazards:

- a. No abnormal pressures or temperatures are expected. There is no known presence of H₂S in this area, and none is anticipated to be encountered. If H₂S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation being used to drill this well. Estimated BHP: 5000 psi, and estimated BHT: 165 degrees.
- b. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13-3/8" casing shoe until the 5-1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13-3/8" shoe until total depth is reached.

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 20 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.

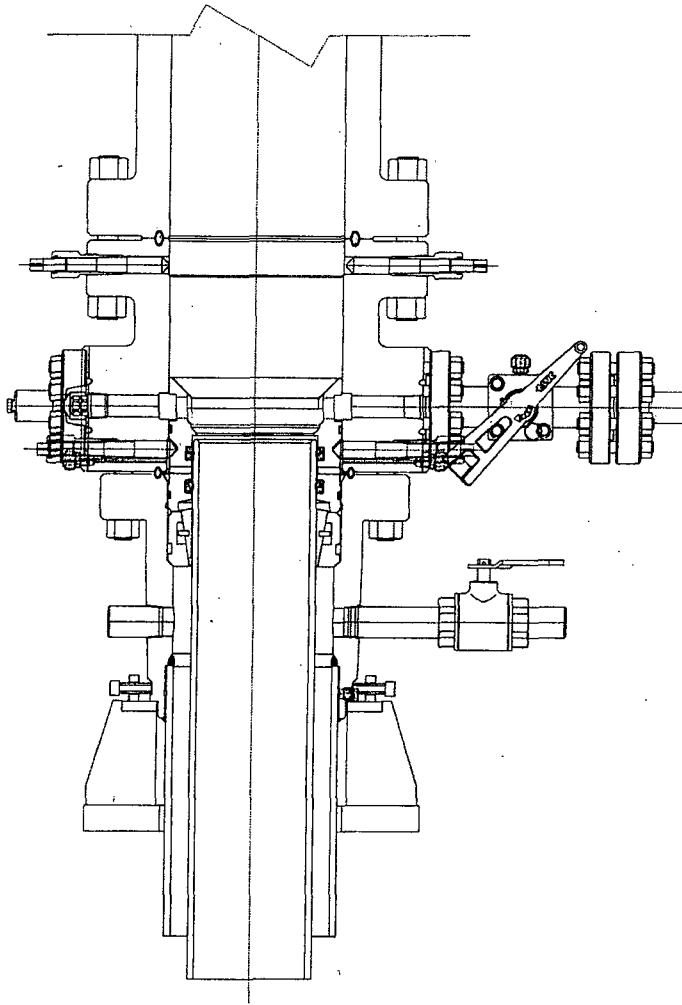
DEVON ENERGY

$$13 \frac{3}{8} \times 9 \frac{5}{8}$$

DM100151315

DM100161771-2A





CONTINGENCY MODE

DEVON ENERGY

ARTESIA

S.E.N.M

13 3/8 X 9 5/8

QUOTE LAYOUT

F18648

REF: DM100161737

DM100151315

PRIVATE AND CONFIDENTIAL		REVISIONS	DESCRIPTION			DM100161771-2B	
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	B	1-22-14		K. VU	05-08-13		
	C	5-13-14		DRAFTING REVIEW Z. MARQUEZ	05-08-13		
				DESIGN REVIEW K. TAHA	05-08-13		
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5D Plan Report

Devon Energy

Field Name: *Lea Co, NM Nad 83 NM*
Site Name: *Hognose Viper 23 Fed 1,2H Pad*
Well Name: *Hognose Viper 23 Fed 2H*
Plan: *P1 V1*

05 February 2014



evon

Hognose Viper 23 Fed 2H
Lea Co, NM



Weatherford

Plan Data for Hognose Viper 23 Fed 2H

Plan Point Information:									
Dogleg Severity Unit: °/100.00ft Position offsets from Slot centre									
NO	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	467746.14	783798.28	0.00	0.00
4502.00	0.00	0.00	4602.00	0.00	0.00	467746.14	783798.28	0.00	0.00
5101.85	10.00	109.86	5099.32	-14.78	40.91	467731.36	783839.19	-14.78	2.00
10731.38	10.00	109.86	10643.38	-346.78	960.06	467399.36	784758.34	-346.78	0.00
11515.06	90.67	0.00	11142.00	135.36	1043.72	467881.50	784842.00	135.36	12.00
16136.63	90.67	0.00	11088.00	4756.61	1043.72	472502.75	784842.00	4756.61	0.00

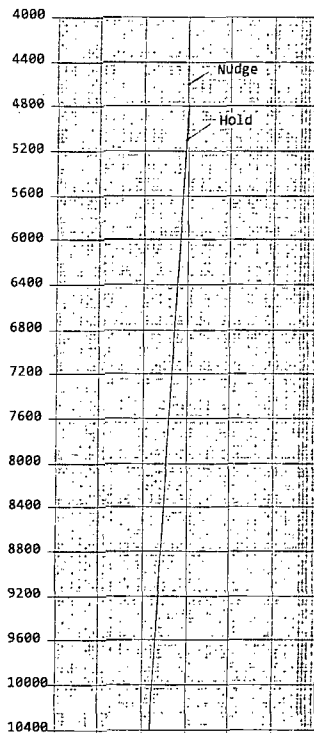
Plan Data for Hognose Viper 23 Fed 2H

Target Set Information:									
Name: Hognose Viper 23 Fed 2H									
Position offsets from Slot centre									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape	Comment		
(USft)	(USft)	(USft)	(USft)	(USft)	(USft)				
LP Tgt	11142.00	135.36	1043.72	467881.50	784842.00	Cuboid			
PBHL 2H	11088.00	4756.61	1043.72	472502.75	784842.00	Cuboid			

Plan Data for Hognose Viper 23 Fed 2H

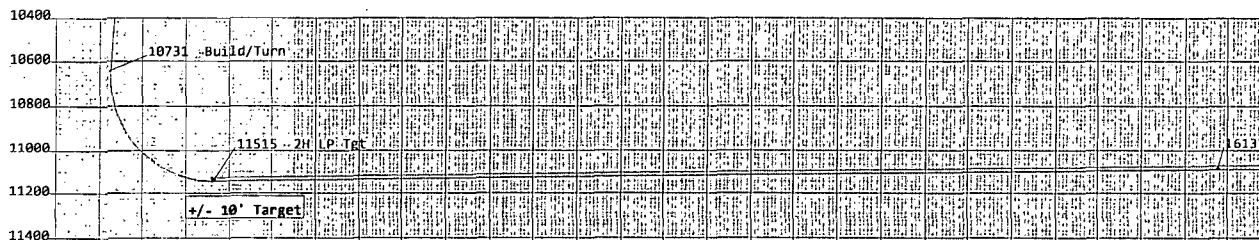
Slot: Hognose Viper 23 Fed 2H			
Position:			
Offset is from Site centre			
+N/-S: 0.23USft	Northing: 467746.14USft	Latitude: 32°17'0.5"	
+E/-W: 49.93USft	Easting: 783798.28USft	Longitude: -103°32'55.5"	
Elevation Above VRD: 3682.00USft			

Hognose Viper 23 Fed 1H
Hognose Viper 23 Fed 2H



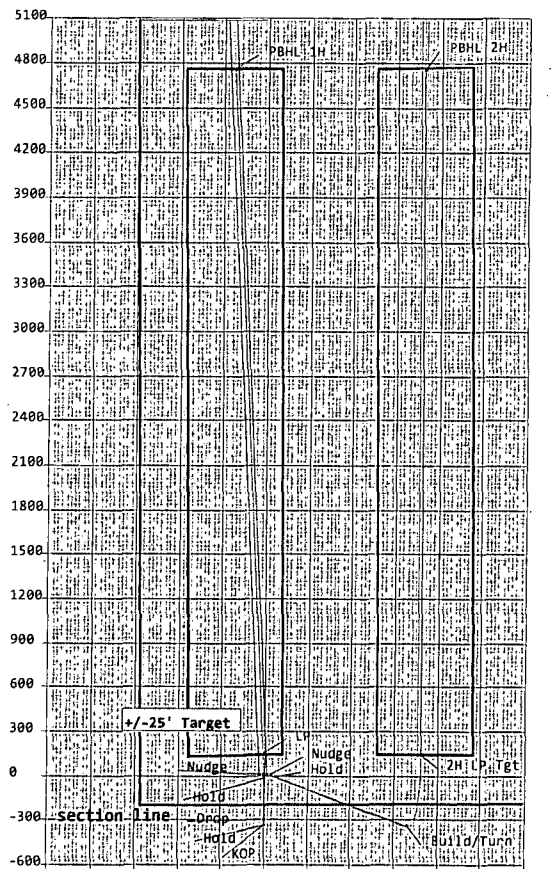
-1200 -800 -400 0 400 800 1200

VS (US ft)(Bearing:0.00° Scale:400USft/in)



-600 -400 -200 0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000 3200 3400 3600 3800 4000 4200 4400 4600 4800 5000

VS (US ft)(Bearing:0.00° Scale:200USft/in)



-1500 -1200 -900 -600 -300 0 300 600 900 1200 1500 1800

E.Offset (US ft)(Scale:300USft/in)

Sign Off: Russell Joyner

Hognose Viper 23 Feb 2H

Field Name Lea Co, NM Nad 88 NM	Map Units : US ft	Company Name : Devon Energy
	Vertical Reference Datum (VRD) : Mean Sea Level	
	Projected Coordinate System : NAD83 / New Mexico East (ftUS)	
	Comment :	

Site Name Hognose Viper 23 Feb 1,2H Pad	Units : US ft	North Reference : Grid	Convergence Angle : 0.42
	Position	Northing : 467745.91 US ft	Latitude : 32° 17' 0.50"
		Easting : 783748.35 US ft	Longitude : -103° 32' 56.11"
	Elevation above Mean Sea Level: 3682.00 US ft		
Comment :			

Position (Offsets relative to Site Centre)	
Slot Name	+N / -S : 0.23 US ft Northing : 467746.14 US ft Latitude : 32°17'0.49" +E / -W : 49.93 US ft Easting : 783798.28 US ft Longitude : -103°32'55.53"
Hognose Viper 23 Feb 21	Slot TVD Reference : Ground Elevation Elevation above Mean Sea Level : 3682.00 US ft Comment :

Well Name Hognose Viper 23 Feb 2H	Type : Main well		UWI :		Plan : P1 V1	
	Rig Height <i>Drill Floor</i> : 25.00 US ft		Comment :			
	Relative to Mean Sea Level: 3707.00 US ft					
	Closure Distance : 4869.77 US ft		Closure Azimuth : 12.376°			
	Vertical Section (Position of Origin Relative to Slot)					
+N / -S : 0.00 US ft		+E / -W : 0.00 US ft		Az : 0.00°		
Magnetic Parameters						
Model : BGGM		Field Strength : 48356.3nT		Dec : 7.33°		Dip : 60.16° Date : 17/Jun/2014

Target Set

Name : Hognose Viper 23 **Number of Targets :** 2
Fed 2H

Comment :

Target Name:	Position (Relative to Slot centre)		
	+N / -S : 135.36US ft	Northing : 467881.50 US ft	Latitude : 32°17'1.76"
LP Tgt	+E / -W : 1043.72 US ft	Easting : 784842.00US ft	Longitude : -103°32'43.36"
Shape:	TVD (Drill Floor) : 11142.00 US ft		
Cuboid	Orientation	Azimuth : 0.00°	Inclination : 0.00°
	Dimensions	Length : 0.00 US ft	Breadth : 0.00 US ft Height : 0.00 US ft

5D Plan Report

Target Name:	Position (Relative to Slot centre)		
PEHL 2H	+N / -S : 4756.61 US ft	Northing : 472502.75 US ft	Latitude : 32°17'47.49"
Shape:	+E / -W : 1043.72 US ft	Easting : 784842.00 US ft	Longitude : -103°32'42.97"
Cuboid	TVD (Drill Floor) : 11088.00 US ft		
	Orientation Azimuth : 0.00°	Inclination : 0.67°	
	Dimensions Length : 9256.00 US ft	Breadth : 50.00 US ft	Height : 20.00 US ft

Well path created using minimum curvature

Sallent 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	
4602.00	0.00	0.00	4602.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Nudge
5101.85	10.00	109.86	5099.32	-14.78	40.91	2.00	-14.78	2.00	0.00	109.86	Hold
10731.38	10.00	109.86	10643.38	-346.78	960.06	0.00	-346.78	0.00	0.00	0.00	Build/Turn
11515.06	90.67	0.00	11142.00	135.36	1043.72	12.00	135.36	10.29	-14.02	250.53	2H LP Tgt
16136.63	90.67	0.00	11088.00	4756.61	1043.72	0.00	4756.61	0.00	0.00	0.00	PBHL 2H

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
4600.00	0.00	0.00	4600.00	0.00	0.00	0.00	0.00	467746.14	783798.28		
4602.00	0.00	0.00	4602.00	0.00	0.00	0.00	0.00	467746.14	783798.28		Nudge
4700.00	1.96	109.86	4699.98	-0.57	1.58	-0.57	2.00	467745.57	783799.86		
4800.00	3.96	109.86	4799.84	-2.32	6.43	-2.32	2.00	467743.82	783804.71		
4900.00	5.96	109.86	4899.46	-5.26	14.56	-5.26	2.00	467740.88	783812.84		
5000.00	7.96	109.86	4998.72	-9.38	25.96	-9.38	2.00	467736.76	783824.24		
5100.00	9.96	109.86	5097.49	-14.67	40.61	-14.67	2.00	467731.47	783838.89		
5101.85	10.00	109.86	5099.32	-14.78	40.91	-14.78	2.00	467731.36	783839.19		Hold
5200.00	10.00	109.86	5195.98	-20.56	56.93	-20.56	0.00	467725.58	783855.21		
5300.00	10.00	109.86	5294.46	-26.46	73.26	-26.46	0.00	467719.68	783871.54		
5400.00	10.00	109.86	5392.94	-32.36	89.59	-32.36	0.00	467713.78	783887.87		
5500.00	10.00	109.86	5491.42	-38.26	105.92	-38.26	0.00	467707.88	783904.20		
5600.00	10.00	109.86	5589.90	-44.15	122.24	-44.15	0.00	467701.99	783920.52		
5700.00	10.00	109.86	5688.38	-50.05	138.57	-50.05	0.00	467696.09	783936.85		
5800.00	10.00	109.86	5786.87	-55.95	154.90	-55.95	0.00	467690.19	783953.18		
5900.00	10.00	109.86	5885.35	-61.85	171.23	-61.85	0.00	467684.29	783969.51		
6000.00	10.00	109.86	5983.83	-67.74	187.55	-67.74	0.00	467678.40	783985.83		
6100.00	10.00	109.86	6082.31	-73.64	203.88	-73.64	0.00	467672.50	784002.16		
6200.00	10.00	109.86	6180.79	-79.54	220.21	-79.54	0.00	467666.60	784018.49		
6300.00	10.00	109.86	6279.27	-85.44	236.53	-85.44	0.00	467660.70	784034.81		
6400.00	10.00	109.86	6377.75	-91.33	252.86	-91.33	0.00	467654.81	784051.14		
6500.00	10.00	109.86	6476.24	-97.23	269.19	-97.23	0.00	467648.91	784067.47		
6600.00	10.00	109.86	6574.72	-103.13	285.52	-103.13	0.00	467643.01	784083.80		
6700.00	10.00	109.86	6673.20	-109.03	301.84	-109.03	0.00	467637.11	784100.12		
6800.00	10.00	109.86	6771.68	-114.92	318.17	-114.92	0.00	467631.22	784116.45		
6900.00	10.00	109.86	6870.16	-120.82	334.50	-120.82	0.00	467625.32	784132.78		
7000.00	10.00	109.86	6968.64	-126.72	350.83	-126.72	0.00	467619.42	784149.11		
7100.00	10.00	109.86	7067.12	-132.62	367.15	-132.62	0.00	467613.52	784165.43		
7199.99	10.00	109.86	7165.61	-138.51	383.48	-138.51	0.00	467607.63	784181.76		
7299.99	10.00	109.86	7264.09	-144.41	399.81	-144.41	0.00	467601.73	784198.09		
7399.99	10.00	109.86	7362.57	-150.31	416.13	-150.31	0.00	467595.83	784214.41		
7499.99	10.00	109.86	7461.05	-156.21	432.46	-156.21	0.00	467589.93	784230.74		
7599.99	10.00	109.86	7559.53	-162.10	448.79	-162.10	0.00	467584.04	784247.07		
7699.99	10.00	109.86	7658.01	-168.00	465.12	-168.00	0.00	467578.14	784263.40		

5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	AP (°)	TVD (US ft)	North (US ft)	East (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
7799.99	10.00	109.86	7756.49	-173.90	481.44	-173.90	0.00	467572.24	784279.72	
7899.99	10.00	109.86	7854.98	-179.80	497.77	-179.80	0.00	467566.34	784296.05	
7999.99	10.00	109.86	7953.46	-185.69	514.10	-185.69	0.00	467560.45	784312.38	
8099.99	10.00	109.86	8051.94	-191.59	530.43	-191.59	0.00	467554.55	784328.71	
8199.99	10.00	109.86	8150.42	-197.49	546.75	-197.49	0.00	467548.65	784345.03	
8299.99	10.00	109.86	8248.90	-203.39	563.08	-203.39	0.00	467542.75	784361.36	
8399.99	10.00	109.86	8347.38	-209.28	579.41	-209.28	0.00	467536.86	784377.69	
8499.99	10.00	109.86	8445.86	-215.18	595.73	-215.18	0.00	467530.96	784394.01	
8599.99	10.00	109.86	8544.35	-221.08	612.06	-221.08	0.00	467525.06	784410.34	
8699.99	10.00	109.86	8642.83	-226.98	628.39	-226.98	0.00	467519.16	784426.67	
8799.99	10.00	109.86	8741.31	-232.87	644.72	-232.87	0.00	467513.27	784443.00	
8899.99	10.00	109.86	8839.79	-238.77	661.04	-238.77	0.00	467507.37	784459.32	
8999.99	10.00	109.86	8938.27	-244.67	677.37	-244.67	0.00	467501.47	784475.65	
9099.99	10.00	109.86	9036.75	-250.57	693.70	-250.57	0.00	467495.57	784491.98	
9199.99	10.00	109.86	9135.24	-256.46	710.03	-256.46	0.00	467489.68	784508.31	
9299.99	10.00	109.86	9233.72	-262.36	726.35	-262.36	0.00	467483.78	784524.63	
9399.99	10.00	109.86	9332.20	-268.26	742.68	-268.26	0.00	467477.88	784540.96	
9499.99	10.00	109.86	9430.68	-274.16	759.01	-274.16	0.00	467471.98	784557.29	
9599.99	10.00	109.86	9529.16	-280.05	775.33	-280.05	0.00	467466.09	784573.61	
9699.99	10.00	109.86	9627.64	-285.95	791.66	-285.95	0.00	467460.19	784589.94	
9799.99	10.00	109.86	9726.12	-291.85	807.99	-291.85	0.00	467454.29	784606.27	
9899.99	10.00	109.86	9824.61	-297.75	824.32	-297.75	0.00	467448.39	784622.60	
9999.99	10.00	109.86	9923.09	-303.64	840.64	-303.64	0.00	467442.50	784638.92	
10099.99	10.00	109.86	10021.57	-309.54	856.97	-309.54	0.00	467436.60	784655.25	
10199.99	10.00	109.86	10120.05	-315.44	873.30	-315.44	0.00	467430.70	784671.58	
10299.99	10.00	109.86	10218.53	-321.34	889.63	-321.34	0.00	467424.80	784687.91	
10399.99	10.00	109.86	10317.01	-327.23	905.95	-327.23	0.00	467418.91	784704.23	
10499.99	10.00	109.86	10415.49	-333.13	922.28	-333.13	0.00	467413.01	784720.56	
10599.99	10.00	109.86	10513.98	-339.03	938.61	-339.03	0.00	467407.11	784736.89	
10699.99	10.00	109.86	10612.46	-344.92	954.93	-344.92	0.00	467401.22	784753.21	
10731.38	10.00	109.86	10643.38	-346.78	960.06	-346.78	0.00	467399.36	784758.34	Build/Turn
10799.99	10.59	62.61	10710.99	-345.90	971.28	-345.90	12.00	467400.24	784769.56	
10899.99	19.25	28.47	10807.70	-327.11	987.36	-327.11	12.00	467419.03	784785.64	
10999.99	30.24	16.64	10898.43	-288.34	1002.49	-288.34	12.00	467457.80	784800.77	
11099.99	41.75	10.82	10979.22	-231.30	1016.00	-231.30	12.00	467514.84	784814.28	
11199.99	53.45	7.18	11046.54	-158.48	1027.31	-158.48	12.00	467587.66	784825.59	
11299.99	65.23	4.50	11097.45	-73.05	1035.92	-73.05	12.00	467673.09	784834.20	
11399.99	77.05	2.30	11129.72	21.24	1041.46	21.24	12.00	467767.38	784839.74	
11499.99	88.88	0.30	11141.94	120.28	1043.68	120.28	12.00	467866.42	784841.96	
11515.06	90.67	0.00	11142.00	135.36	1043.72	135.36	12.00	467881.50	784842.00	2H LP Tgt
11599.99	90.67	0.00	11141.01	220.28	1043.72	220.28	0.00	467966.42	784842.00	
11699.99	90.67	0.00	11139.84	320.27	1043.72	320.27	0.00	468066.41	784842.00	
11799.99	90.67	0.00	11138.67	420.26	1043.72	420.26	0.00	468166.40	784842.00	
11899.99	90.67	0.00	11137.50	520.26	1043.72	520.26	0.00	468266.40	784842.00	
11999.99	90.67	0.00	11136.33	620.25	1043.72	620.25	0.00	468366.39	784842.00	
12099.99	90.67	0.00	11135.16	720.24	1043.72	720.24	0.00	468466.38	784842.00	
12199.98	90.67	0.00	11134.00	820.24	1043.72	820.24	0.00	468566.38	784842.00	
12299.98	90.67	0.00	11132.83	920.23	1043.72	920.23	0.00	468666.37	784842.00	
12399.98	90.67	0.00	11131.66	1020.22	1043.72	1020.22	0.00	468766.36	784842.00	
12499.98	90.67	0.00	11130.49	1120.21	1043.72	1120.21	0.00	468866.35	784842.00	
12599.98	90.67	0.00	11129.32	1220.21	1043.72	1220.21	0.00	468966.35	784842.00	
12699.98	90.67	0.00	11128.15	1320.20	1043.72	1320.20	0.00	469066.34	784842.00	
12799.98	90.67	0.00	11126.99	1420.19	1043.72	1420.19	0.00	469166.33	784842.00	
12899.98	90.67	0.00	11125.82	1520.19	1043.72	1520.19	0.00	469266.33	784842.00	
12999.98	90.67	0.00	11124.65	1620.18	1043.72	1620.18	0.00	469366.32	784842.00	
13099.98	90.67	0.00	11123.48	1720.17	1043.72	1720.17	0.00	469466.31	784842.00	
13199.98	90.67	0.00	11122.31	1820.17	1043.72	1820.17	0.00	469566.31	784842.00	
13299.98	90.67	0.00	11121.14	1920.16	1043.72	1920.16	0.00	469666.30	784842.00	
13399.98	90.67	0.00	11119.98	2020.15	1043.72	2020.15	0.00	469766.29	784842.00	

5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	W.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DIS (%/100 US ft)	Northing (US ft)	Eastings (US ft)	Comment
13499.98	90.67	0.00	11118.81	2120.14	1043.72	2120.14	0.00	469866.28	784842.00	
13599.98	90.67	0.00	11117.64	2220.14	1043.72	2220.14	0.00	469966.28	784842.00	
13699.98	90.67	0.00	11116.47	2320.13	1043.72	2320.13	0.00	470066.27	784842.00	
13799.98	90.67	0.00	11115.30	2420.12	1043.72	2420.12	0.00	470166.26	784842.00	
13899.98	90.67	0.00	11114.13	2520.12	1043.72	2520.12	0.00	470266.26	784842.00	
13999.98	90.67	0.00	11112.96	2620.11	1043.72	2620.11	0.00	470366.25	784842.00	
14099.98	90.67	0.00	11111.80	2720.10	1043.72	2720.10	0.00	470466.24	784842.00	
14199.98	90.67	0.00	11110.63	2820.10	1043.72	2820.10	0.00	470566.24	784842.00	
14299.98	90.67	0.00	11109.46	2920.09	1043.72	2920.09	0.00	470666.23	784842.00	
14399.98	90.67	0.00	11108.29	3020.08	1043.72	3020.08	0.00	470766.22	784842.00	
14499.98	90.67	0.00	11107.12	3120.07	1043.72	3120.07	0.00	470866.21	784842.00	
14599.98	90.67	0.00	11105.95	3220.07	1043.72	3220.07	0.00	470966.21	784842.00	
14699.98	90.67	0.00	11104.79	3320.06	1043.72	3320.06	0.00	471066.20	784842.00	
14799.98	90.67	0.00	11103.62	3420.05	1043.72	3420.05	0.00	471166.19	784842.00	
14899.98	90.67	0.00	11102.45	3520.05	1043.72	3520.05	0.00	471266.19	784842.00	
14999.98	90.67	0.00	11101.28	3620.04	1043.72	3620.04	0.00	471366.18	784842.00	
15099.98	90.67	0.00	11100.11	3720.03	1043.72	3720.03	0.00	471466.17	784842.00	
15199.98	90.67	0.00	11098.94	3820.02	1043.72	3820.02	0.00	471566.16	784842.00	
15299.98	90.67	0.00	11097.78	3920.02	1043.72	3920.02	0.00	471666.16	784842.00	
15399.98	90.67	0.00	11096.61	4020.01	1043.72	4020.01	0.00	471766.15	784842.00	
15499.98	90.67	0.00	11095.44	4120.00	1043.72	4120.00	0.00	471866.14	784842.00	
15599.98	90.67	0.00	11094.27	4220.00	1043.72	4220.00	0.00	471966.14	784842.00	
15699.98	90.67	0.00	11093.10	4319.99	1043.72	4319.99	0.00	472066.13	784842.00	
15799.98	90.67	0.00	11091.93	4419.98	1043.72	4419.98	0.00	472166.12	784842.00	
15899.98	90.67	0.00	11090.76	4519.98	1043.72	4519.98	0.00	472266.12	784842.00	
15999.98	90.67	0.00	11089.60	4619.97	1043.72	4619.97	0.00	472366.11	784842.00	
16099.98	90.67	0.00	11088.43	4719.96	1043.72	4719.96	0.00	472466.10	784842.00	
16136.63	90.67	0.00	11088.00	4756.61	1043.72	4756.61	0.00	472502.75	784842.00	PBHL 2H

5D Anti-Collision Report

Devon Energy

Field Name: *Lea Co, NM Nad 83 NM*

Site Name: *Hognose Viper 23 Fed 1,2H Pad*

Well Name: *Hognose Viper 23 Fed 2H*

05 February 2014



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Hognose Viper 23 Fed 2H

Field Name Lea Co, NM Nad 83 NM	Map Units : US ft		Company Name : Devon Energy	
	Vertical Reference Datum (VRD) : Mean Sea Level			
	Projected Coordinate System : NAD83 / New Mexico East (ftUS)			
	Comment :			
Site Name Hognose Viper 23 Fed 1, 2H Pad	Units : US ft	North Reference : Grid	Convergence Angle : 0.42	
	Position	Northing : 467745.91 US ft	Latitude : 32° 17' 0.50"	
		Easting : 783748.35 US ft	Longitude : -103° 32' 56.11"	
	Elevation above Mean Sea Level: 3682.00 US ft			
Comment :				
Slot Name Hognose Viper 23 Fed 2H	Position (Offsets relative to Site Centre)			
	+N / -S : 0.23 US ft	Northing : 467746.14 US ft	Latitude : 32° 17' 0.49"	
	+E / -W : 49.93 US ft	Easting : 783798.28 US ft	Longitude : -103° 32' 55.53"	
	Slot TVD Reference : Ground Elevation			
Elevation above Mean Sea Level : 3682.00 US ft				
Comment :				
Well Name Hognose Viper 23 Fed 2H	Type : Main well	UWI :	Plan : Working Plan	
	Rig Height	Drill Floor : 25.00 US ft	Comment :	
	Relative to Mean Sea Level: 3707.00 US ft			
	Closure Distance : 4869.77 US ft	Closure Azimuth : 12.376°		
	Vertical Section (Position of Origin Relative to Slot)			
	+N / -S : 0.00 US ft	+E / -W : 0.00 US ft	Az : 0.00°	
	Magnetic Parameters			
	Model : BGGM	Field Strength : 48356.3nT	Dec : 7.33°	Dip : 60.16°

Collision / Uncertainty Analysis

Primary Well	Start MD (US ft)	End MD (US ft)	Collision Risk Interval	No. of Std Deviations in Error Computation
Hognose Viper 23 Fed 2H (p)	0.00	16195.29	100.00	2

Secondary Well Names

Hognose Viper 23 Fed 1H (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 (Petal Curve) (Independent Uncertainty) Well path created using minimum curvature

5D Anti-Collision Report

Anti Collision Proximity Summary (TVD relative to)

Secondary Well Name	PRIMD (US ft)	SecMD (US ft)	TVD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
Hognose Viper 23 Fed 1H (p)	4625.98	4625.97	4625.97	50.02	28.75	2.35	

Secondary Well: Hognose Viper 23 Fed 1H (p) (TVD Relative to Drill Floor (Primary)); All Azimuth Relative to GRID NORTH)

PRIMD (US ft)	TVD (US ft)	SecMD (US ft)	T/Face to Sec (°)	S-Major (US ft)	S-Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
0.00	0.00	0.00	269.74	0.00	0.00	49.93	49.22	70.08	
100.00	100.00	100.00	269.74	0.12	0.12	49.93	48.99	52.93	
200.00	200.00	200.00	269.74	0.34	0.34	49.93	48.54	35.90	
300.00	300.00	300.00	269.74	0.57	0.57	49.93	48.09	27.14	
400.00	400.00	400.00	269.74	0.79	0.79	49.93	47.64	21.81	
500.00	500.00	500.00	269.74	1.02	1.02	49.93	47.19	18.23	
600.00	600.00	600.00	269.74	1.24	1.24	49.93	46.74	15.66	
700.00	700.00	700.00	269.74	1.46	1.46	49.93	46.29	13.73	
800.00	800.00	800.00	269.74	1.69	1.69	49.93	45.84	12.22	
900.00	900.00	900.00	269.74	1.91	1.91	49.93	45.39	11.01	
1000.00	1000.00	1000.00	269.74	2.14	2.14	49.93	44.94	10.01	
1100.00	1100.00	1100.00	269.74	2.36	2.36	49.93	44.49	9.19	
1200.00	1200.00	1200.00	269.74	2.59	2.59	49.93	44.05	8.48	
1300.00	1300.00	1300.00	269.74	2.81	2.81	49.93	43.60	7.88	
1400.00	1400.00	1400.00	269.74	3.04	3.04	49.93	43.15	7.36	
1500.00	1500.00	1500.00	269.74	3.26	3.26	49.93	42.70	6.90	
1600.00	1600.00	1600.00	269.74	3.49	3.49	49.93	42.25	6.50	
1700.00	1700.00	1700.00	269.74	3.71	3.71	49.93	41.80	6.14	
1800.00	1800.00	1800.00	269.74	3.94	3.94	49.93	41.35	5.82	
1900.00	1900.00	1900.00	269.74	4.16	4.16	49.93	40.90	5.53	
2000.00	2000.00	2000.00	269.74	4.39	4.39	49.93	40.45	5.27	
2100.00	2100.00	2100.00	269.74	4.61	4.61	49.93	40.00	5.03	
2200.00	2200.00	2200.00	269.74	4.84	4.84	49.93	39.55	4.81	
2300.00	2300.00	2300.00	269.74	5.06	5.06	49.93	39.10	4.61	
2400.00	2400.00	2400.00	269.74	5.29	5.29	49.93	38.65	4.43	
2500.00	2500.00	2500.00	269.74	5.51	5.51	49.93	38.20	4.26	
2600.00	2600.00	2600.00	269.74	5.74	5.74	49.93	37.75	4.10	
2700.00	2700.00	2700.00	269.74	5.96	5.96	49.93	37.30	3.95	
2800.00	2800.00	2800.00	269.74	6.18	6.18	49.93	36.85	3.82	
2900.00	2900.00	2900.00	269.74	6.41	6.41	49.93	36.40	3.69	
3000.00	3000.00	3000.00	269.74	6.63	6.63	49.93	35.95	3.57	
3100.00	3100.00	3100.00	269.74	6.86	6.86	49.93	35.50	3.46	
3200.00	3200.00	3200.00	269.74	7.08	7.08	49.93	35.05	3.36	
3300.00	3300.00	3300.00	269.74	7.31	7.31	49.93	34.61	3.26	
3400.00	3400.00	3400.00	269.74	7.53	7.53	49.93	34.16	3.17	
3500.00	3500.00	3500.00	269.74	7.76	7.76	49.93	33.71	3.08	
3600.00	3600.00	3600.00	269.74	7.98	7.98	49.93	33.26	2.99	
3700.00	3700.00	3700.00	269.74	8.21	8.21	49.93	32.81	2.92	
3800.00	3800.00	3800.00	269.74	8.43	8.43	49.93	32.36	2.84	
3900.00	3900.00	3900.00	269.74	8.66	8.66	49.93	31.91	2.77	
4000.00	4000.00	4000.00	269.74	8.88	8.88	49.93	31.46	2.70	
4100.00	4100.00	4100.00	269.74	9.11	9.11	49.93	31.01	2.64	
4200.00	4200.00	4200.00	269.74	9.33	9.33	49.93	30.56	2.58	
4300.00	4300.00	4300.00	269.74	9.56	9.56	49.93	30.11	2.52	
4400.00	4400.00	4400.00	269.74	9.78	9.78	49.93	29.66	2.46	
4500.00	4500.00	4500.00	269.74	10.01	10.01	49.93	29.21	2.41	
4600.00	4600.00	4600.00	269.74	10.23	10.23	49.93	28.76	2.36	
4700.00	4699.98	4699.98	160.51	10.46	10.46	51.51	29.93	2.39	
4800.00	4799.84	4799.84	162.23	10.68	10.68	56.40	34.42	2.57	
4900.00	4899.46	4899.46	164.52	10.90	10.90	64.69	42.33	2.89	
5000.00	4998.72	4998.72	166.89	11.13	11.13	76.44	53.66	3.36	
5100.00	5097.50	5097.50	169.04	11.35	11.35	91.68	68.48	3.95	

SD Anti-Collision Report

Secondary Well # Hognose Viper 23 Fed 1H (p) (TVD Relative to Drill Floor (Primary) @ All Azimuth Relative to GRID NORTH)									
Pt MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S: Major (US ft)	S: Minor (US ft)	CG (US ft)	ES (US ft)	SF	REX
5200.00	5195.98	5195.98	170.78	11.57	11.57	108.78	85.17	4.61	
5300.00	5294.46	5294.46	172.04	11.79	11.79	125.95	101.93	5.24	
5400.00	5392.94	5392.94	173.00	12.01	12.01	143.17	118.74	5.86	
5500.00	5491.42	5491.42	173.76	12.23	12.23	160.42	135.57	6.46	
5600.00	5589.90	5589.90	174.37	12.46	12.46	177.69	152.43	7.03	
5700.00	5688.39	5688.39	174.87	12.68	12.68	194.97	169.30	7.59	
5800.00	5786.87	5786.87	175.29	12.90	12.90	212.27	186.17	8.13	
5900.00	5885.35	5885.35	175.64	13.12	13.12	229.58	203.04	8.65	
6000.00	5983.83	5983.83	175.95	13.34	13.34	246.89	219.93	9.15	
6100.00	6082.31	6082.31	176.21	13.56	13.56	264.21	236.81	9.64	
6200.00	6180.79	6180.79	176.45	13.78	13.78	281.54	253.70	10.11	
6300.00	6279.28	6279.28	176.65	14.01	14.01	298.87	270.59	10.57	
6400.00	6377.76	6377.76	176.84	14.23	14.23	316.20	287.49	11.01	
6500.00	6476.24	6476.24	177.00	14.45	14.45	333.54	304.39	11.44	
6600.00	6574.72	6574.72	177.15	14.67	14.67	350.87	321.29	11.86	
6700.00	6673.20	6673.20	177.28	14.89	14.89	368.21	338.19	12.26	
6800.00	6771.68	6771.68	177.41	15.11	15.11	385.56	355.09	12.65	
6900.00	6870.17	6870.17	177.52	15.33	15.33	402.90	371.99	13.03	
7000.00	6968.65	6968.65	177.62	15.56	15.56	420.24	388.89	13.40	
7100.00	7067.13	7067.13	177.72	15.78	15.78	437.59	405.79	13.76	
7200.00	7168.05	7168.05	177.76	15.99	15.99	454.83	422.62	14.12	
7300.00	7272.48	7272.55	177.45	16.17	16.15	471.02	438.41	14.44	
7400.00	7376.83	7377.16	176.72	16.34	16.28	486.03	453.00	14.72	
7500.00	7480.29	7481.21	175.63	16.51	16.39	499.95	466.51	14.95	
7600.00	7578.11	7579.77	174.49	16.68	16.56	513.56	479.71	15.17	
7700.00	7675.94	7678.33	173.41	16.85	16.73	527.36	493.10	15.39	
7800.00	7773.76	7776.89	172.39	17.03	16.90	541.33	506.61	15.59	
7900.00	7871.59	7875.45	171.41	17.21	17.07	555.47	520.35	15.82	
8000.00	7969.41	7974.01	170.49	17.40	17.25	569.76	534.20	16.02	
8100.00	8067.24	8072.57	169.61	17.58	17.42	584.20	548.21	16.23	
8200.00	8165.06	8171.13	168.77	17.77	17.60	598.76	562.38	16.46	
8300.00	8262.88	8269.69	167.97	17.97	17.78	613.44	576.64	16.67	
8400.00	8360.71	8368.25	167.21	18.17	17.95	628.23	590.94	16.85	
8500.00	8458.53	8466.81	166.48	18.37	18.14	643.13	605.34	17.02	
8600.00	8556.36	8565.37	165.79	18.57	18.32	658.12	619.85	17.20	
8700.00	8654.18	8663.93	165.12	18.78	18.50	673.21	634.45	17.37	
8800.00	8752.01	8762.49	164.49	18.99	18.68	688.38	649.15	17.55	
8900.00	8849.83	8861.05	163.88	19.21	18.87	703.63	663.92	17.72	
9000.00	8947.65	8959.61	163.30	19.42	19.06	718.95	678.77	17.89	
9100.00	9045.48	9058.17	162.74	19.64	19.24	734.35	693.69	18.06	
9200.00	9143.30	9156.73	162.21	19.86	19.43	749.81	708.68	18.23	
9300.00	9241.13	9255.29	161.70	20.08	19.62	765.33	723.72	18.40	
9400.00	9338.95	9353.85	161.20	20.31	19.81	780.90	738.81	18.55	
9500.00	9436.78	9452.41	160.73	20.54	20.00	796.54	753.94	18.70	
9600.00	9534.60	9550.97	160.27	20.77	20.20	812.22	769.12	18.84	
9700.00	9632.43	9649.53	159.84	21.00	20.39	827.95	784.34	18.99	
9800.00	9730.25	9748.09	159.42	21.24	20.58	843.73	799.58	19.11	
9900.00	9827.84	9846.38	159.03	21.48	20.81	859.56	814.86	19.23	
10000.00	9925.49	9944.56	158.75	21.72	21.06	875.47	830.23	19.35	
10100.00	10023.39	10042.84	158.60	21.97	21.31	891.44	845.68	19.48	
10200.00	10121.46	10141.15	158.56	22.20	21.55	907.45	861.20	19.62	
10300.00	10219.62	10239.45	158.63	22.43	21.79	923.51	876.77	19.76	
10400.00	10317.77	10337.66	158.79	22.66	22.01	939.62	892.41	19.90	
10500.00	10415.83	10435.74	159.06	22.87	22.23	955.80	908.14	20.05	
10600.00	10513.99	10533.90	159.41	23.08	22.45	972.05	923.96	20.21	
10700.00	10612.47	10632.38	159.76	23.29	22.66	988.35	939.83	20.37	
10800.00	10707.46	10727.40	207.85	23.49	22.79	1004.76	955.85	20.54	
10900.00	10795.65	10816.97	242.91	23.61	22.65	1021.62	972.44	20.77	

SD Anti-Collision Report

Secondary Well # Hognose Viper-23 Red 1H (P) (TVD Relative to Drill Floor (Primary)) All Azimuth Relative to GRID NORTH									
PM MD (US ft)	TVD (US ft)	Sec MD (US ft)	TR Face to Sec (°)	S-Major (US ft)	S-Minor (US ft)	CC (US ft)	ES (US ft)	SF	REK
11000.00	10879.92	10906.97	255.49	23.68	22.12	1038.37	989.01	21.03	
11100.00	10957.57	10997.90	261.80	23.70	21.28	1054.33	1004.89	21.32	
11200.00	11025.86	11090.21	265.57	23.69	20.26	1068.83	1019.41	21.62	
11300.00	11081.93	11184.36	267.92	23.69	19.18	1081.28	1031.82	21.86	
11400.00	11122.87	11280.69	269.25	23.76	18.32	1091.16	1041.50	21.97	
11500.00	11145.86	11379.48	269.74	23.93	17.87	1098.07	1048.08	21.97	
11600.00	11150.00	11480.06	269.56	24.19	17.94	1102.89	1052.48	21.88	
11700.00	11150.00	11579.94	269.51	24.58	18.06	1107.65	1056.43	21.62	
11800.00	11150.00	11679.82	269.45	25.09	18.26	1112.42	1060.19	21.30	
11900.00	11150.00	11779.70	269.39	25.72	18.48	1117.18	1063.77	20.92	
12000.00	11150.00	11879.58	269.33	26.46	18.73	1121.95	1067.15	20.47	
12100.00	11150.00	11979.46	269.28	27.31	19.00	1126.71	1070.21	19.94	
12200.00	11150.00	12079.34	269.22	28.25	19.27	1131.48	1073.24	19.43	
12300.00	11150.00	12179.22	269.16	29.28	19.55	1136.25	1075.95	18.84	
12400.00	11150.00	12279.10	269.11	30.38	19.83	1141.02	1078.69	18.31	
12500.00	11150.01	12378.98	269.05	31.56	20.23	1145.79	1081.11	17.71	
12600.00	11150.01	12478.86	269.00	32.79	20.62	1150.56	1083.44	17.14	
12700.00	11150.01	12578.74	268.95	34.08	20.99	1155.33	1085.75	16.60	
12800.00	11150.01	12678.62	268.89	35.42	21.35	1160.11	1087.90	16.07	
12900.00	11150.01	12778.50	268.84	36.80	21.84	1164.88	1089.89	15.53	
13000.00	11150.01	12878.38	268.79	38.22	22.24	1169.66	1091.84	15.03	
13100.00	11150.01	12978.26	268.74	39.67	22.71	1174.44	1093.76	14.56	
13200.00	11150.01	13078.14	268.68	41.16	23.18	1179.21	1095.64	14.11	
13300.00	11150.01	13178.02	268.63	42.67	23.66	1183.99	1097.48	13.69	
13400.00	11150.01	13277.90	268.58	44.21	24.16	1188.77	1099.29	13.28	
13500.00	11150.01	13377.78	268.53	45.77	24.62	1193.55	1100.95	12.89	
13600.00	11150.01	13477.66	268.48	47.35	25.20	1198.33	1102.59	12.52	
13700.00	11150.01	13577.54	268.43	48.95	25.69	1203.12	1104.29	12.17	
13800.00	11150.01	13677.42	268.38	50.57	26.20	1207.90	1105.80	11.83	
13900.00	11150.01	13777.30	268.33	52.20	26.80	1212.68	1107.37	11.51	
14000.00	11150.01	13877.18	268.29	53.84	27.36	1217.47	1108.98	11.22	
14100.00	11150.01	13977.06	268.24	55.50	27.91	1222.26	1110.55	10.94	
14200.00	11150.01	14076.94	268.19	57.17	28.44	1227.04	1112.00	10.67	
14300.00	11150.01	14176.82	268.14	58.84	28.97	1231.83	1113.45	10.41	
14400.00	11150.01	14276.70	268.10	60.53	29.60	1236.62	1114.90	10.16	
14500.00	11150.01	14376.58	268.05	62.23	30.22	1241.41	1116.33	9.93	
14600.00	11150.01	14476.46	268.00	63.93	30.83	1246.20	1117.76	9.70	
14700.00	11150.01	14576.34	267.96	65.65	31.45	1250.99	1119.17	9.49	
14800.00	11150.01	14676.22	267.91	67.36	32.06	1255.78	1120.58	9.29	
14900.00	11150.01	14776.10	267.87	69.09	32.68	1260.57	1121.97	9.09	
15000.00	11150.01	14875.98	267.82	70.82	33.29	1265.37	1123.36	8.91	
15100.00	11150.01	14975.87	267.78	72.56	33.91	1270.16	1124.73	8.73	
15200.00	11150.01	15075.75	267.73	74.30	34.53	1274.95	1126.10	8.57	
15300.00	11150.01	15175.63	267.69	76.05	35.15	1279.75	1127.46	8.40	
15400.00	11150.01	15275.51	267.65	77.80	35.78	1284.55	1128.82	8.25	
15500.00	11150.01	15375.39	267.60	79.55	36.40	1289.34	1130.12	8.10	
15600.00	11150.01	15475.27	267.56	81.31	37.03	1294.14	1131.42	7.95	
15700.00	11150.01	15575.15	267.52	83.07	37.67	1298.94	1132.71	7.81	
15800.00	11150.01	15675.03	267.48	84.84	38.30	1303.74	1134.00	7.68	
15900.00	11150.01	15774.91	267.43	86.60	38.94	1308.54	1135.28	7.55	
16000.00	11150.01	15874.79	267.39	88.38	39.58	1313.34	1136.56	7.43	
16100.00	11150.01	15974.67	267.35	90.15	40.22	1318.14	1137.84	7.31	
16136.63	11150.01	16011.25	267.34	90.80	40.46	1319.90	1138.31	7.27	

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

GeoDec v5.03

Report Date: February 04, 2014
Job Number: _____
Customer: Devon Energy
Well Name: Hognose Viper 23 Fed 2H
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 467746.140 USFT	Latitude 32.2834708 DEG
East/West 783798.280 USFT	Longitude -103.5487588 DEG
Grid Convergence: .42°	
Total Correction: +6.90°	

Geodetic Location WGS84	Elevation =	0.0 Meters
Latitude =	32.28347° N	32° 17 min .495 sec
Longitude =	103.54876° W	103° 32 min 55.532 sec

Magnetic Declination =	7.32°	[True North Offset]
Local Gravity =	.9988 g	Checksum = 6571
Local Field Strength =	48354 nT	Magnetic VectorX = 23867 nT
Magnetic Dip =	60.15°	Magnetic VectorY = 3067 nT
Magnetic Model =	bggm2013	Magnetic VectorZ = 41941 nT
Spud Date =	Jun 25, 2014	Magnetic VectorH = 24064 nT

Signed: _____ Date: _____