

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs
HOBBSOCD

FEB 12 2015

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.

RECEIVED

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM121489
2. Name of Operator DEVON ENERGY PRODUCTION CO LP		6. If Indian, Allottee or Tribe Name
3a. Address 333 WEST SHERIDAN AVE OKLAHOMA CITY, OK 73102		7. If Unit or CA/Agreement, Name and/or No.
3b. Phone No. (include area code) Ph: 405-552-7848		8. Well Name and No. HOGNOSE VIPER 23 FED 1H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 23 T23S R33E SWSW 200FSL 850FWL 32.282972 N Lat, 103.551670 W Lon		9. API Well No. 30-025-41975-00-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 A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

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 recomple 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 recomple 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 Co., LP respectfully requests to make the following changes to the approved APD:

- Change the casing design of the production string to a combo 7" x 5-1/2" string.
- Revise production cement program.
- Change the approved TVD/MD to 11,162'TVD/15,715' MD.
- Change BOP from 5M to 3M.

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

Please see the attached revised drill plan, directional survey and BOPE schematic.

14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #290886 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 02/09/2015 (15JAM0072SE)	
Name (Printed/Typed) DAVID H COOK	Title REGULATORY SPECIALIST
Signature (Electronic Submission)	Date 02/09/2015
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 **

FEB 13 2015

DRILLING PROGRAM

Devon Energy Production Company, L.P.

Hognose Viper 23 Fed 1H

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

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

a. Fresh Water	400'	
b. Rustler	1290'	Barren
c. Top of Salt	1770'	Barren
d. Base of Salt	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 st Bone Spring SS	10065'	Oil / Gas
j. 2 nd Bone Spring SS	10800'	Oil / Gas
Total Depth	11162' TVD	15715' MD

3. Pressure Control Equipment:

See COA

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 3000 (3M) 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 3M, 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 0.22 psi/ft 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 3M will be installed on the FMC Uni-head wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 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 3M 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 **3,000 psi WP**.

See COA

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"	0-1440'	13-3/8"	0 - 1440'	48	STC	H-40	1.25	2.81	8.57
12-1/4"	1440 – 5190'	9-5/8"	0 – 4300'	40	BTC	J-55	1.15	3.43	4.69
12-1/4"	1440 – 5190'	9-5/8"	4300 – 5190'	40	BTC	HCK-55	1.57	4.63	6.07
8-3/4"	5190-15715'	7"	0 – 10,600'	29	BTC	P-110	1.87	2.46	3.13
8-3/4"	5190-15715'	5-1/2"	10,600-15715'	17	BTC	P-110	1.54	1.91	3.00

Casing Notes:

- All casing is new and API approved

Maximum Lateral TVD: 11,162'

5. Proposed mud Circulations System:

Depth	Mud Weight	Viscosity	Fluid Loss	Type System
0-1440'	8.4-9.0	30-34	N/C	FW
1440-5190'	9.8-10.0	28-32	N/C	Brine
5190-15715'	8.6-9.0	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
7 x 5-1/2" Production Casing	540	10.4	14.94	3.32	Lead	Tuned Light® Cement + 0.125 lb/sk Pol-E-Flake + 76.5% Fresh Water
	1060	14.5	5.31	1.22	Tail	(50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.25% bwoc CFR-3 + 0.1% bwoc HR-601 + 2% bwoc Bentonite + 58.8% Fresh Water

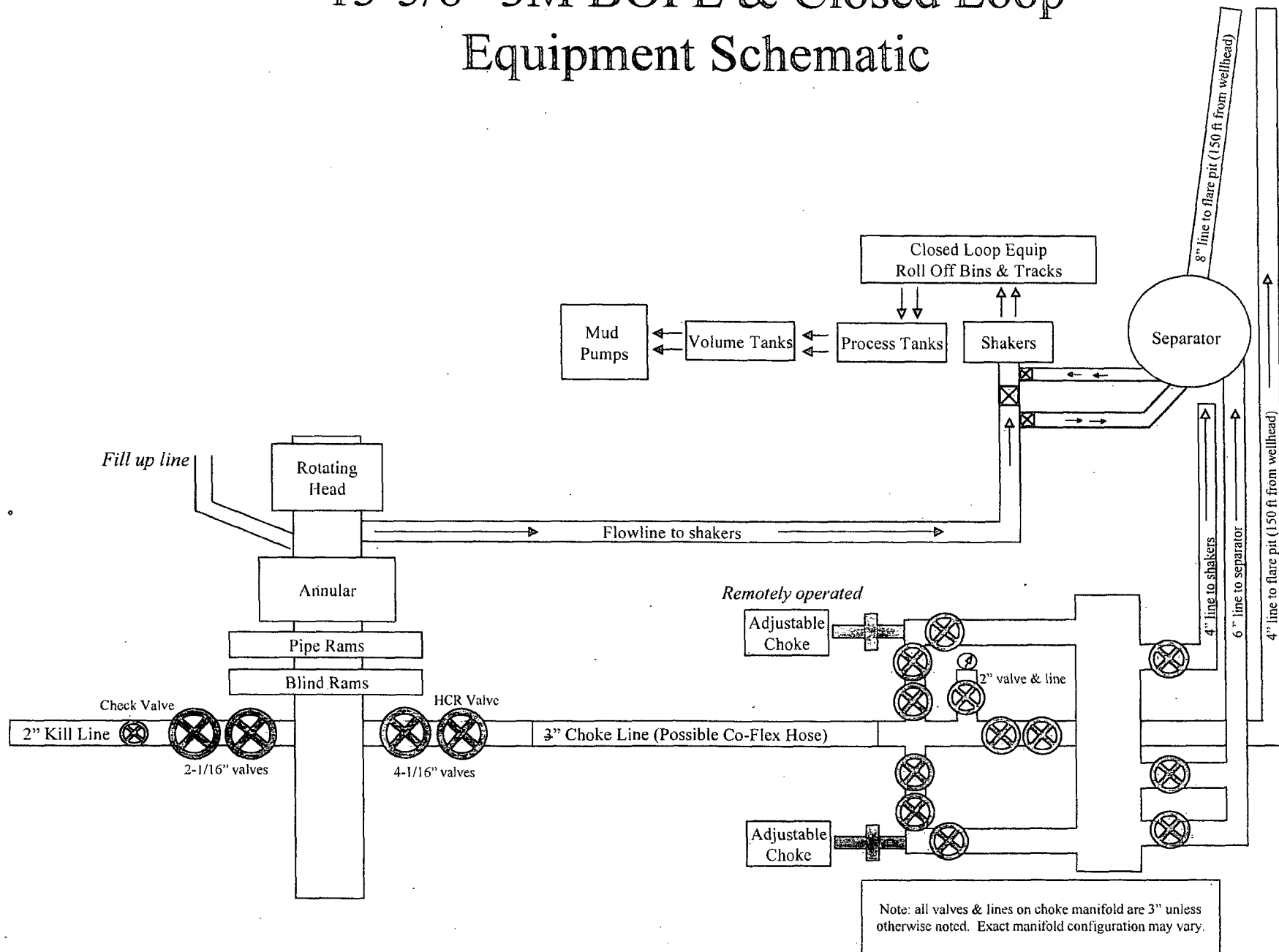
Estimated TOC for all Strings:

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

Notes:

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

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





Hognose Viper 23 Fed 1H
Lea Co, NM

Plan Data for Hognose Viper 23 Fed 1H

Plan Point Information:
Dogleg Severity Unit: %/100.00ft Position offsets from Slot centre
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 467745.91 783748.35 0.00 0.00
10684.54 0.00 0.00 10684.54 0.00 0.00 467745.91 783748.35 0.00 0.00
11434.54 90.00 357.28 11162.00 476.93 -22.69 468222.84 783725.66 477.47 12.00
15715.04 90.00 357.28 11162.00 4752.59 -226.08 472498.50 783522.27 4757.96 0.00

Plan Data for Hognose Viper 23 Fed 1H

Target Set Information:
Name: Hognose Viper 23 Fed 1H Lat
Position offsets from Slot centre
Name TVD +N/-S +E/-W Northing Easting Shape Comment
(USft) (USft) (USft) (USft) (USft)
PBHL #H Lat 11162.00 4752.59 -226.08 472498.50 783522.27 Cuboid

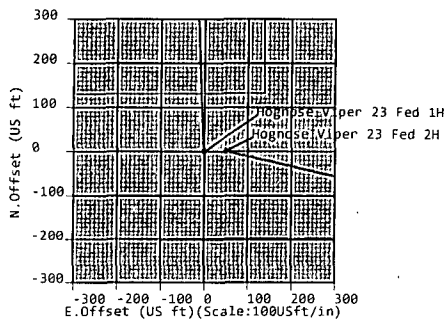
Plan Data for Hognose Viper 23 Fed 1H

Slot: Hognose Viper 23 Fed 1H
Position:
Offset is from Site centre
+N/-S: 0.00USft Northing: 467745.91USft Latitude: 32°17'0.5"
+E/-W: 0.00USft Easting: 783748.35USft Longitude: -103°32'56.1"
Elevation Above VRD: 3682.00USft

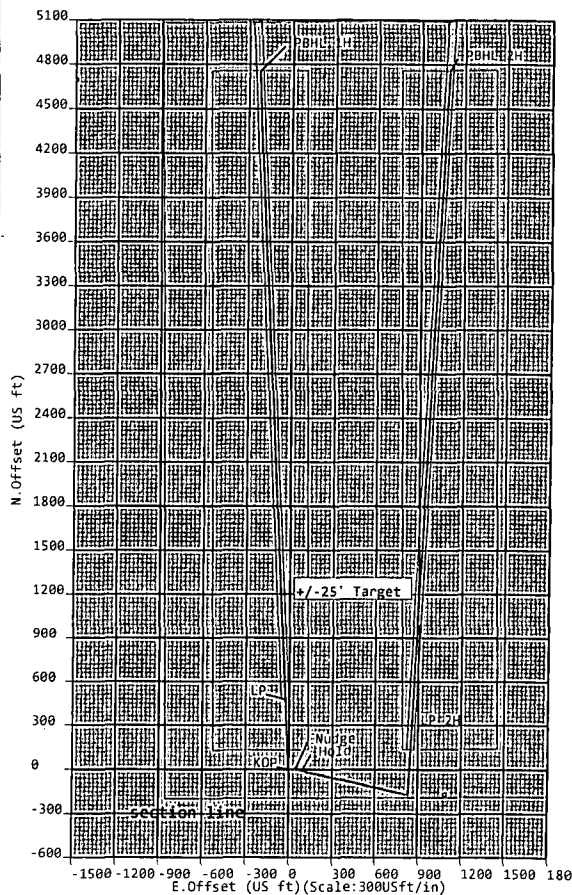
Plan Data for Hognose Viper 23 Fed 1H

Well: Hognose Viper 23 Fed 1H
Type: Main-Well
File Number:
Plan Folder: P1 Plan: P1-V3
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 357.28°
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
BGM 48223(nT) 7.27° 60.14° 2015-06-15

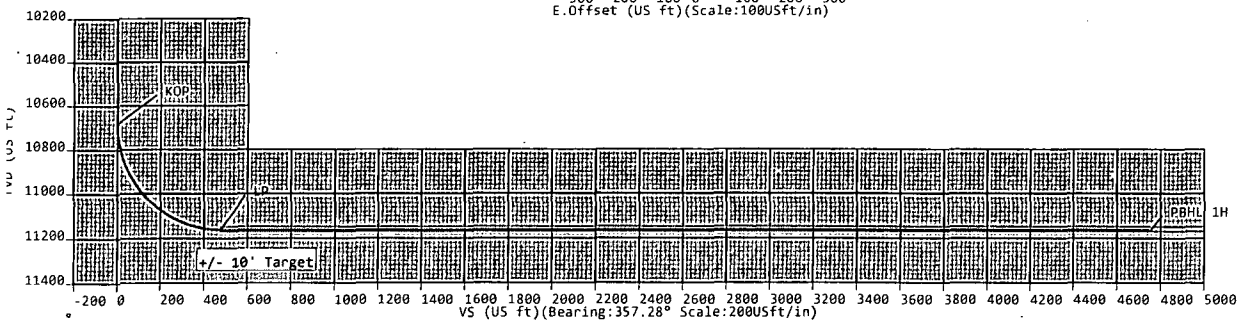
Hognose Viper 23 Fed 1H
Hognose Viper 23 Fed 2H



Weatherford



KB-3707
GL-3682



Sign Off: Russell Joyner

5D Plan Report**Devon Energy**

Field Name: *Lea Co, NM Nad 83 NMEZ*
Site Name: *Hognose Viper 23 Fed 1,2H Pad*
Well Name: *Hognose Viper 23 Fed 1H*
Plan: *P1:V3*

03 February 2015

**Weatherford®**

Hognose Viper 23 Fed 1H

Field Name Lea Co NM Nad 83 NMEZ	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 1H	Position (Offsets relative to Site Centre) +N / -S : 0.00 US ft Northing : 467745.91 US ft Latitude : 32° 17' 0.50" +E / -W : 0.00 US ft Easting : 783748.35 US ft Longitude : -103° 32' 56.11" Slot TVD Reference : Ground Elevation Elevation above Mean Sea Level : 3682.00 US ft Comment :	
Well Name Hognose Viper 23 Fed 1H	Type : Main well UWI : Plan : P1:V3 Rig Height Drill Floor : 25.00 US ft Comment : Relative to Mean Sea Level: 3707.00 US ft Closure Distance : 4757.96 US ft Closure Azimuth : 357.277° Vertical Section (Position of Origin Relative to Slot) +N / -S : 0.00 US ft +E / -W : 0.00 US ft Az : 357.28° Magnetic Parameters Model : BGGM Field Strength : 48223.8nT Dec : 7.27° Dip : 60.14° Date : 15/Jun/2015	

Target Set

Name : Hognose Viper 23 **Number of Targets :** 1
 Fed 1H Lat

Comment :

Target Name: PBHL #H Lat	Position (Relative to Slot centre) +N / -S : 4752.59 US ft Northing : 472498.50 US ft Latitude : 32° 17' 47.54" +E / -W : 226.08 US ft Easting : 783522.27 US ft Longitude : -103° 32' 58.34" TVD (Drill Floor) : 11162.00 US ft	
Shape: Cuboid	Orientation Azimuth : 357.28° Inclination : 0.00° Dimensions Length : 8560.00 US ft Breadth : 50.00 US ft Height : 20.00 US ft	

Well path created using minimum curvature

SD Plan Report

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)	VS (US ft)	DLS (%/100 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	
10684.54	0.00	0.00	10684.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP
11434.54	90.00	357.28	11162.00	476.93	-22.69	477.47	12.00	12.00	0.00	357.28	LP
15715.04	90.00	357.28	11162.00	4752.59	-226.08	4757.96	0.00	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
10600.00	0.00	0.00	10600.00	0.00	0.00	0.00	0.00	467745.91	783748.35		
10684.54	0.00	0.00	10684.54	0.00	0.00	0.00	0.00	467745.91	783748.35		KOP
10700.00	1.86	357.28	10700.00	0.25	-0.01	0.25	12.00	467746.16	783748.34		
10800.00	13.86	357.28	10798.88	13.88	-0.66	13.89	12.00	467759.79	783747.69		
10900.00	25.86	357.28	10892.76	47.74	-2.27	47.79	12.00	467793.65	783746.08		
11000.00	37.86	357.28	10977.54	100.36	-4.77	100.48	12.00	467846.27	783743.58		
11100.00	49.86	357.28	11049.52	169.44	-8.06	169.63	12.00	467915.35	783740.29		
11200.00	61.86	357.28	11105.55	251.96	-11.99	252.24	12.00	467997.87	783736.36		
11300.00	73.86	357.28	11143.17	344.31	-16.38	344.70	12.00	468090.22	783731.97		
11400.00	85.86	357.28	11160.76	442.45	-21.05	442.95	12.00	468188.36	783727.30		
11434.54	90.00	357.28	11162.00	476.93	-22.69	477.47	12.00	468222.84	783725.66		LP
11500.00	90.00	357.28	11162.00	542.31	-25.80	542.92	0.00	468288.22	783722.55		
11600.00	90.00	357.28	11162.00	642.20	-30.55	642.92	0.00	468388.11	783717.80		
11700.00	90.00	357.28	11162.00	742.09	-35.30	742.92	0.00	468488.00	783713.05		
11800.00	90.00	357.28	11162.00	841.97	-40.05	842.92	0.00	468587.88	783708.30		
11900.00	90.00	357.28	11162.00	941.86	-44.80	942.92	0.00	468687.77	783703.55		
12000.00	90.00	357.28	11162.00	1041.75	-49.56	1042.92	0.00	468787.66	783698.79		
12100.00	90.00	357.28	11162.00	1141.63	-54.31	1142.92	0.00	468887.54	783694.04		
12200.00	90.00	357.28	11162.00	1241.52	-59.06	1242.92	0.00	468987.43	783689.29		
12300.00	90.00	357.28	11162.00	1341.41	-63.81	1342.92	0.00	469087.32	783684.54		
12400.00	90.00	357.28	11162.00	1441.30	-68.56	1442.92	0.00	469187.21	783679.79		
12500.00	90.00	357.28	11162.00	1541.18	-73.31	1542.92	0.00	469287.09	783675.04		
12600.00	90.00	357.28	11162.00	1641.07	-78.07	1642.92	0.00	469386.98	783670.28		
12700.00	90.00	357.28	11162.00	1740.96	-82.82	1742.92	0.00	469486.87	783665.53		
12800.00	90.00	357.28	11162.00	1840.84	-87.57	1842.92	0.00	469586.75	783660.78		
12900.00	90.00	357.28	11162.00	1940.73	-92.32	1942.92	0.00	469686.64	783656.03		
13000.00	90.00	357.28	11162.00	2040.62	-97.07	2042.92	0.00	469786.53	783651.28		
13100.00	90.00	357.28	11162.00	2140.50	-101.82	2142.92	0.00	469886.41	783646.53		
13200.00	90.00	357.28	11162.00	2240.39	-106.58	2242.92	0.00	469986.30	783641.77		
13300.00	90.00	357.28	11162.00	2340.28	-111.33	2342.92	0.00	470086.19	783637.02		
13400.00	90.00	357.28	11162.00	2440.17	-116.08	2442.92	0.00	470186.08	783632.27		
13500.00	90.00	357.28	11162.00	2540.05	-120.83	2542.92	0.00	470285.96	783627.52		
13600.00	90.00	357.28	11162.00	2639.94	-125.58	2642.92	0.00	470385.85	783622.77		
13700.00	90.00	357.28	11162.00	2739.83	-130.33	2742.92	0.00	470485.74	783618.02		
13800.00	90.00	357.28	11162.00	2839.71	-135.08	2842.92	0.00	470585.62	783613.27		
13900.00	90.00	357.28	11162.00	2939.60	-139.84	2942.92	0.00	470685.51	783608.51		
14000.00	90.00	357.28	11162.00	3039.49	-144.59	3042.92	0.00	470785.40	783603.76		
14100.00	90.00	357.28	11162.00	3139.37	-149.34	3142.92	0.00	470885.28	783599.01		
14200.00	90.00	357.28	11162.00	3239.26	-154.09	3242.92	0.00	470985.17	783594.26		
14300.00	90.00	357.28	11162.00	3339.15	-158.84	3342.92	0.00	471085.06	783589.51		
14400.00	90.00	357.28	11162.00	3439.04	-163.59	3442.92	0.00	471184.95	783584.76		
14500.00	90.00	357.28	11162.00	3538.92	-168.35	3542.92	0.00	471284.83	783580.00		
14600.00	90.00	357.28	11162.00	3638.81	-173.10	3642.92	0.00	471384.72	783575.25		
14700.00	90.00	357.28	11162.00	3738.70	-177.85	3742.92	0.00	471484.61	783570.50		
14800.00	90.00	357.28	11162.00	3838.58	-182.60	3842.92	0.00	471584.49	783565.75		
14900.00	90.00	357.28	11162.00	3938.47	-187.35	3942.92	0.00	471684.38	783561.00		
15000.00	90.00	357.28	11162.00	4038.36	-192.10	4042.92	0.00	471784.27	783556.25		
15100.00	90.00	357.28	11162.00	4138.25	-196.86	4142.92	0.00	471884.16	783551.49		
15200.00	90.00	357.28	11162.00	4238.13	-201.61	4242.92	0.00	471984.04	783546.74		
15300.00	90.00	357.28	11162.00	4338.02	-206.36	4342.92	0.00	472083.93	783541.99		
15400.00	90.00	357.28	11162.00	4437.91	-211.11	4442.92	0.00	472183.82	783537.24		

5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Drill Floor)										
MP (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
15500.00	90.00	357.28	11162.00	4537.79	-215.86	4542.92	0.00	472283.70	783532.49	
15600.00	90.00	357.28	11162.00	4637.68	-220.61	4642.92	0.00	472383.59	783527.74	
15700.00	90.00	357.28	11162.00	4737.57	-225.37	4742.92	0.00	472483.48	783522.98	
15715.04	90.00	357.28	11162.00	4752.59	-226.08	4757.96	0.00	472498.50	783522.27	PBHL 1H

5D Anti-Collision Report**Devon Energy****Field Name:** *Lea Co, NM Nad 83 NMEZ***Site Name:** *Hognose Viper 23 Fed 1,2H Pad***Well Name:** *Hognose Viper 23 Fed 1H*

03 February 2015

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Hognose Viper 23 Fed 1H

Field Name Lea Co, NM Nad 88 NMEZ	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 1H	Position (Offsets relative to Site Centre)			
	+N / -S : 0.00 US ft	Northing : 467745.91 US ft	Latitude : 32° 17' 0.50"	
	+E / -W : 0.00 US ft	Easting : 783748.35 US ft	Longitude : -103° 32' 56.11"	
	Slot TVD Reference : Ground Elevation			
Elevation above Mean Sea Level : 3682.00 US ft				
Comment :				
Well Name Hognose Viper 23 Fed 1H	Type : Main well		UWI :	Plan : Working Plan
	Rig Height : 25.00 US ft		Comment :	
	Drill Floor : 25.00 US ft			
	Relative to Mean Sea Level : 3707.00 US ft			
	Closure Distance : 4757.96 US ft		Closure Azimuth : 357.277°	
	Vertical Section (Position of Origin Relative to Slot)			
	+N / -S : 0.00 US ft		+E / -W : 0.00 US ft	Az : 357.28°
	Magnetic Parameters			
	Model : BGGM	Field Strength : 48223.8nT	Dec : 7.27°	Dip : 60.14°
			Date : 15/Jun/2015	

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 1H (p)	0.00	15715.04	50.00	2

Secondary Well Names

Hognose Viper 23 Fed 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 Drill Floor)

Secondary Well Name	Pri MD (US ft)	Sec MD (US ft)	TVD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
Hognose Viper 23 Fed 2H (p)	4133.59	4133.03	4133.59	50.12	31.15	2.64	

Primary Well : Hognose Viper 23 Fed 2H (p) (TVD Relative to Drill Floor ; All Azimuth Relative to GRID NORTH.)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
0.00	0.00	89.74	0.00	0.00	Hognose Viper 23 Fed 2H (p)	49.93	49.29	78.07	
50.00	50.00	89.74	0.08	0.08	Hognose Viper 23 Fed 2H (p)	49.93	49.14	62.85	
100.00	100.00	89.74	0.11	0.11	Hognose Viper 23 Fed 2H (p)	49.93	49.07	58.04	
150.00	150.00	89.74	0.25	0.25	Hognose Viper 23 Fed 2H (p)	49.93	48.79	43.87	
200.00	200.00	89.74	0.34	0.34	Hognose Viper 23 Fed 2H (p)	49.93	48.62	38.12	
250.00	250.00	89.74	0.46	0.46	Hognose Viper 23 Fed 2H (p)	49.93	48.37	31.96	
300.00	300.00	89.74	0.56	0.56	Hognose Viper 23 Fed 2H (p)	49.93	48.17	28.38	
350.00	350.00	89.74	0.68	0.68	Hognose Viper 23 Fed 2H (p)	49.93	47.93	24.93	
400.00	400.00	89.74	0.79	0.79	Hognose Viper 23 Fed 2H (p)	49.93	47.72	22.60	
450.00	450.00	89.74	0.91	0.91	Hognose Viper 23 Fed 2H (p)	49.93	47.48	20.40	
500.00	500.00	89.74	1.01	1.01	Hognose Viper 23 Fed 2H (p)	49.93	47.27	18.78	
550.00	550.00	89.74	1.13	1.13	Hognose Viper 23 Fed 2H (p)	49.93	47.04	17.25	
600.00	600.00	89.74	1.24	1.24	Hognose Viper 23 Fed 2H (p)	49.93	46.82	16.06	
650.00	650.00	89.74	1.35	1.35	Hognose Viper 23 Fed 2H (p)	49.93	46.59	14.94	
700.00	700.00	89.74	1.46	1.46	Hognose Viper 23 Fed 2H (p)	49.93	46.37	14.03	
750.00	750.00	89.74	1.58	1.58	Hognose Viper 23 Fed 2H (p)	49.93	46.14	13.17	
800.00	800.00	89.74	1.69	1.69	Hognose Viper 23 Fed 2H (p)	49.93	45.92	12.46	
850.00	850.00	89.74	1.80	1.80	Hognose Viper 23 Fed 2H (p)	49.93	45.69	11.78	
900.00	900.00	89.74	1.91	1.91	Hognose Viper 23 Fed 2H (p)	49.93	45.47	11.20	
950.00	950.00	89.74	2.03	2.03	Hognose Viper 23 Fed 2H (p)	49.93	45.24	10.65	
1000.00	1000.00	89.74	2.14	2.14	Hognose Viper 23 Fed 2H (p)	49.93	45.02	10.18	
1050.00	1050.00	89.74	2.25	2.25	Hognose Viper 23 Fed 2H (p)	49.93	44.79	9.72	
1100.00	1100.00	89.74	2.36	2.36	Hognose Viper 23 Fed 2H (p)	49.93	44.57	9.32	
1150.00	1150.00	89.74	2.48	2.48	Hognose Viper 23 Fed 2H (p)	49.93	44.34	8.94	
1200.00	1200.00	89.74	2.59	2.59	Hognose Viper 23 Fed 2H (p)	49.93	44.12	8.60	
1250.00	1250.00	89.74	2.70	2.70	Hognose Viper 23 Fed 2H (p)	49.93	43.90	8.27	
1300.00	1300.00	89.74	2.81	2.81	Hognose Viper 23 Fed 2H (p)	49.93	43.68	7.98	
1350.00	1350.00	89.74	2.92	2.92	Hognose Viper 23 Fed 2H (p)	49.93	43.45	7.70	
1400.00	1400.00	89.74	3.03	3.03	Hognose Viper 23 Fed 2H (p)	49.93	43.23	7.45	
1450.00	1450.00	89.74	3.15	3.15	Hognose Viper 23 Fed 2H (p)	49.93	43.00	7.20	
1500.00	1500.00	89.74	3.26	3.26	Hognose Viper 23 Fed 2H (p)	49.93	42.78	6.98	
1550.00	1550.00	89.74	3.37	3.37	Hognose Viper 23 Fed 2H (p)	49.93	42.55	6.76	

SD Anti-Collision Report

Primary Well : Hognose Viper 23 Fed 2H (p) (TVD Relative to Drill Floor; All Azimuth Relative to GRID NORTH)										
TD (US ft)	TVD (US ft)	T Face to Sec (°)	S Major (US ft)	S Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk	
1600.00	1600.00	89.74	3.48	3.48	Hognose Viper 23 Fed 2H (p)	49.93	42.33	6.57		
1650.00	1650.00	89.74	3.60	3.60	Hognose Viper 23 Fed 2H (p)	49.93	42.10	6.37		
1700.00	1700.00	89.74	3.71	3.71	Hognose Viper 23 Fed 2H (p)	49.93	41.88	6.20		
1750.00	1750.00	89.74	3.82	3.82	Hognose Viper 23 Fed 2H (p)	49.93	41.65	6.03		
1800.00	1800.00	89.74	3.93	3.93	Hognose Viper 23 Fed 2H (p)	49.93	41.43	5.87		
1850.00	1850.00	89.74	4.05	4.05	Hognose Viper 23 Fed 2H (p)	49.93	41.20	5.72		
1900.00	1900.00	89.74	4.16	4.16	Hognose Viper 23 Fed 2H (p)	49.93	40.98	5.58		
1950.00	1950.00	89.74	4.27	4.27	Hognose Viper 23 Fed 2H (p)	49.93	40.75	5.44		
2000.00	2000.00	89.74	4.38	4.38	Hognose Viper 23 Fed 2H (p)	49.93	40.53	5.31		
2050.00	2050.00	89.74	4.50	4.50	Hognose Viper 23 Fed 2H (p)	49.93	40.30	5.18		
2100.00	2100.00	89.74	4.61	4.61	Hognose Viper 23 Fed 2H (p)	49.93	40.08	5.07		
2150.00	2150.00	89.74	4.72	4.72	Hognose Viper 23 Fed 2H (p)	49.93	39.85	4.95		
2200.00	2200.00	89.74	4.83	4.83	Hognose Viper 23 Fed 2H (p)	49.93	39.63	4.85		
2250.00	2250.00	89.74	4.95	4.95	Hognose Viper 23 Fed 2H (p)	49.93	39.40	4.74		
2300.00	2300.00	89.74	5.06	5.06	Hognose Viper 23 Fed 2H (p)	49.93	39.18	4.64		
2350.00	2350.00	89.74	5.17	5.17	Hognose Viper 23 Fed 2H (p)	49.93	38.95	4.55		
2400.00	2400.00	89.74	5.28	5.28	Hognose Viper 23 Fed 2H (p)	49.93	38.73	4.46		
2450.00	2450.00	89.74	5.40	5.40	Hognose Viper 23 Fed 2H (p)	49.93	38.50	4.37		
2500.00	2500.00	89.74	5.51	5.51	Hognose Viper 23 Fed 2H (p)	49.93	38.28	4.29		
2550.00	2550.00	89.74	5.62	5.62	Hognose Viper 23 Fed 2H (p)	49.93	38.05	4.20		
2600.00	2600.00	89.74	5.73	5.73	Hognose Viper 23 Fed 2H (p)	49.93	37.83	4.13		
2650.00	2650.00	89.74	5.85	5.85	Hognose Viper 23 Fed 2H (p)	49.93	37.60	4.05		
2700.00	2700.00	89.74	5.96	5.96	Hognose Viper 23 Fed 2H (p)	49.93	37.38	3.98		
2750.00	2750.00	89.74	6.07	6.07	Hognose Viper 23 Fed 2H (p)	49.93	37.15	3.91		
2800.00	2800.00	89.74	6.18	6.18	Hognose Viper 23 Fed 2H (p)	49.93	36.93	3.84		
2850.00	2850.00	89.74	6.30	6.30	Hognose Viper 23 Fed 2H (p)	49.93	36.70	3.78		
2900.00	2900.00	89.74	6.41	6.41	Hognose Viper 23 Fed 2H (p)	49.93	36.48	3.71		
2950.00	2950.00	89.74	6.52	6.52	Hognose Viper 23 Fed 2H (p)	49.93	36.25	3.65		
3000.00	3000.00	89.74	6.63	6.63	Hognose Viper 23 Fed 2H (p)	49.93	36.03	3.59		
3050.00	3050.00	89.74	6.74	6.74	Hognose Viper 23 Fed 2H (p)	49.93	35.81	3.53		
3100.00	3100.00	89.74	6.86	6.86	Hognose Viper 23 Fed 2H (p)	49.93	35.58	3.48		
3150.00	3150.00	89.74	6.97	6.97	Hognose Viper 23 Fed 2H (p)	49.93	35.36	3.43		
3200.00	3200.00	89.74	7.08	7.08	Hognose Viper 23 Fed 2H (p)	49.93	35.13	3.37		
3250.00	3250.00	89.74	7.19	7.19	Hognose Viper 23 Fed 2H (p)	49.93	34.91	3.32		
3300.00	3300.00	89.74	7.31	7.31	Hognose Viper 23 Fed 2H (p)	49.93	34.68	3.27		
3350.00	3350.00	89.74	7.42	7.42	Hognose Viper 23 Fed 2H (p)	49.93	34.46	3.23		

5D Anti-Collision Report

Primary Well : Hognose Viper 23 Fed 1H (p) (TVD Relative to Drill Floor ; All Azimuth Relative to GRID NORTH)									
MD (US ft)	TVD (US ft)	T-Face to Sec (°)	S-Major (US ft)	S-Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SP	Risk
3400.00	3400.00	89.74	7.53	7.53	Hognose Viper 23 Fed 2H (p)	49.93	34.23	3.18	
3450.00	3450.00	89.74	7.64	7.64	Hognose Viper 23 Fed 2H (p)	49.93	34.01	3.14	
3500.00	3500.00	89.74	7.76	7.76	Hognose Viper 23 Fed 2H (p)	49.93	33.78	3.09	
3550.00	3550.00	89.74	7.87	7.87	Hognose Viper 23 Fed 2H (p)	49.93	33.56	3.05	
3600.00	3600.00	89.74	7.98	7.98	Hognose Viper 23 Fed 2H (p)	49.93	33.33	3.01	
3650.00	3650.00	89.74	8.09	8.09	Hognose Viper 23 Fed 2H (p)	49.93	33.11	2.97	
3700.00	3700.00	89.74	8.21	8.21	Hognose Viper 23 Fed 2H (p)	49.93	32.88	2.93	
3750.00	3750.00	89.74	8.32	8.32	Hognose Viper 23 Fed 2H (p)	49.93	32.66	2.89	
3800.00	3800.00	89.74	8.43	8.43	Hognose Viper 23 Fed 2H (p)	49.93	32.44	2.85	
3850.00	3850.00	89.74	8.54	8.54	Hognose Viper 23 Fed 2H (p)	49.93	32.21	2.82	
3900.00	3900.00	89.74	8.65	8.65	Hognose Viper 23 Fed 2H (p)	49.93	31.99	2.78	
3950.00	3950.00	89.74	8.77	8.77	Hognose Viper 23 Fed 2H (p)	49.93	31.76	2.75	
4000.00	4000.00	89.74	8.88	8.88	Hognose Viper 23 Fed 2H (p)	49.93	31.54	2.71	
4050.00	4050.00	89.74	8.99	8.99	Hognose Viper 23 Fed 2H (p)	49.93	31.31	2.68	
4100.00	4100.00	89.74	9.10	9.10	Hognose Viper 23 Fed 2H (p)	49.93	31.09	2.65	
4150.00	4150.00	89.84	9.22	9.22	Hognose Viper 23 Fed 2H (p)	50.35	31.31	2.64	
4200.00	4200.00	90.15	9.33	9.33	Hognose Viper 23 Fed 2H (p)	51.60	32.35	2.68	
4250.00	4250.00	90.64	9.44	9.44	Hognose Viper 23 Fed 2H (p)	53.70	34.26	2.76	
4300.00	4300.00	91.25	9.55	9.55	Hognose Viper 23 Fed 2H (p)	56.64	37.01	2.89	
4350.00	4350.00	91.96	9.67	9.67	Hognose Viper 23 Fed 2H (p)	60.42	40.62	3.05	
4400.00	4400.00	92.71	9.78	9.78	Hognose Viper 23 Fed 2H (p)	65.04	45.07	3.26	
4450.00	4450.00	93.46	9.89	9.89	Hognose Viper 23 Fed 2H (p)	70.51	50.39	3.50	
4500.00	4500.00	94.20	10.00	10.00	Hognose Viper 23 Fed 2H (p)	76.82	56.54	3.79	
4550.00	4550.00	94.90	10.12	10.12	Hognose Viper 23 Fed 2H (p)	83.96	63.55	4.11	
4600.00	4600.00	95.56	10.23	10.23	Hognose Viper 23 Fed 2H (p)	91.94	71.34	4.46	
4650.00	4650.00	96.15	10.34	10.34	Hognose Viper 23 Fed 2H (p)	100.54	79.73	4.83	
4700.00	4700.00	96.67	10.45	10.45	Hognose Viper 23 Fed 2H (p)	109.17	88.15	5.19	
4750.00	4750.00	97.10	10.57	10.57	Hognose Viper 23 Fed 2H (p)	117.81	96.58	5.55	
4800.00	4800.00	97.48	10.68	10.68	Hognose Viper 23 Fed 2H (p)	126.46	105.01	5.90	
4850.00	4850.00	97.81	10.79	10.79	Hognose Viper 23 Fed 2H (p)	135.11	113.45	6.24	
4900.00	4900.00	98.10	10.90	10.90	Hognose Viper 23 Fed 2H (p)	143.76	121.90	6.57	
4950.00	4950.00	98.35	11.02	11.02	Hognose Viper 23 Fed 2H (p)	152.42	130.34	6.90	
5000.00	5000.00	98.58	11.13	11.13	Hognose Viper 23 Fed 2H (p)	161.08	138.79	7.23	
5050.00	5050.00	98.79	11.24	11.24	Hognose Viper 23 Fed 2H (p)	169.75	147.24	7.54	
5100.00	5100.00	98.97	11.35	11.35	Hognose Viper 23 Fed 2H (p)	178.41	155.69	7.85	
5150.00	5150.00	99.14	11.47	11.47	Hognose Viper 23 Fed 2H (p)	187.08	164.15	8.16	

5D Anti-Collision Report

Primary Well : Hognose Viper 23 Fed 2H (p) (TVD Relative to Drill Floor, All Azimuth Relative to GRID NORTH)									
MD (US ft)	TVD (US ft)	T-Face to Sec (°)	S-Major (US ft)	S-Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
5200.00	5200.00	99.29	11.58	11.58	Hognose Viper 23 Fed 2H (p)	195.74	172.60	8.46	
5250.00	5250.00	99.43	11.69	11.69	Hognose Viper 23 Fed 2H (p)	204.41	181.06	8.75	
5300.00	5300.00	99.56	11.80	11.80	Hognose Viper 23 Fed 2H (p)	213.08	189.51	9.04	
5350.00	5350.00	99.68	11.91	11.91	Hognose Viper 23 Fed 2H (p)	221.75	197.97	9.32	
5400.00	5400.00	99.79	12.03	12.03	Hognose Viper 23 Fed 2H (p)	230.43	206.43	9.60	
5450.00	5450.00	99.89	12.14	12.14	Hognose Viper 23 Fed 2H (p)	239.10	214.88	9.87	
5500.00	5500.00	99.99	12.25	12.25	Hognose Viper 23 Fed 2H (p)	247.77	223.34	10.14	
5550.00	5550.00	100.08	12.36	12.36	Hognose Viper 23 Fed 2H (p)	256.45	231.80	10.40	
5600.00	5600.00	100.16	12.48	12.48	Hognose Viper 23 Fed 2H (p)	265.12	240.25	10.66	
5650.00	5650.00	100.24	12.59	12.59	Hognose Viper 23 Fed 2H (p)	273.80	248.71	10.91	
5700.00	5700.00	100.31	12.70	12.70	Hognose Viper 23 Fed 2H (p)	282.47	257.17	11.16	
5750.00	5750.00	100.38	12.81	12.81	Hognose Viper 23 Fed 2H (p)	291.15	265.62	11.41	
5800.00	5800.00	100.44	12.93	12.93	Hognose Viper 23 Fed 2H (p)	299.82	274.08	11.65	
5850.00	5850.00	100.50	13.04	13.04	Hognose Viper 23 Fed 2H (p)	308.50	282.54	11.88	
5900.00	5900.00	100.56	13.15	13.15	Hognose Viper 23 Fed 2H (p)	317.18	291.00	12.11	
5950.00	5950.00	100.61	13.26	13.26	Hognose Viper 23 Fed 2H (p)	325.85	299.45	12.34	
6000.00	6000.00	100.67	13.38	13.38	Hognose Viper 23 Fed 2H (p)	334.53	307.91	12.57	
6050.00	6050.00	100.72	13.49	13.49	Hognose Viper 23 Fed 2H (p)	343.21	316.37	12.79	
6100.00	6100.00	100.76	13.60	13.60	Hognose Viper 23 Fed 2H (p)	351.89	324.82	13.00	
6150.00	6150.00	100.81	13.71	13.71	Hognose Viper 23 Fed 2H (p)	360.57	333.28	13.21	
6200.00	6200.00	100.85	13.83	13.83	Hognose Viper 23 Fed 2H (p)	369.24	341.74	13.42	
6250.00	6250.00	100.89	13.94	13.94	Hognose Viper 23 Fed 2H (p)	377.92	350.19	13.63	
6300.00	6300.00	100.93	14.05	14.05	Hognose Viper 23 Fed 2H (p)	386.60	358.65	13.83	
6350.00	6350.00	100.96	14.16	14.16	Hognose Viper 23 Fed 2H (p)	395.28	367.11	14.03	
6400.00	6400.00	101.00	14.27	14.27	Hognose Viper 23 Fed 2H (p)	403.96	375.56	14.23	
6450.00	6450.00	101.03	14.39	14.39	Hognose Viper 23 Fed 2H (p)	412.64	384.02	14.42	
6500.00	6500.00	101.06	14.50	14.50	Hognose Viper 23 Fed 2H (p)	421.32	392.48	14.61	
6550.00	6550.00	101.10	14.61	14.61	Hognose Viper 23 Fed 2H (p)	430.00	400.93	14.79	
6600.00	6600.00	101.13	14.72	14.72	Hognose Viper 23 Fed 2H (p)	438.68	409.39	14.98	
6650.00	6650.00	101.15	14.84	14.84	Hognose Viper 23 Fed 2H (p)	447.36	417.84	15.16	
6700.00	6700.00	101.18	14.95	14.95	Hognose Viper 23 Fed 2H (p)	456.04	426.30	15.34	
6750.00	6750.00	101.21	15.06	15.06	Hognose Viper 23 Fed 2H (p)	464.72	434.76	15.51	
6800.00	6800.00	101.23	15.17	15.17	Hognose Viper 23 Fed 2H (p)	473.40	443.21	15.68	
6850.00	6850.00	101.26	15.29	15.29	Hognose Viper 23 Fed 2H (p)	482.08	451.67	15.85	
6900.00	6900.00	101.28	15.40	15.40	Hognose Viper 23 Fed 2H (p)	490.76	460.12	16.02	
6950.00	6950.00	101.30	15.51	15.51	Hognose Viper 23 Fed 2H (p)	499.44	468.58	16.18	

5D Anti-Collision Report

Primary Well : Hognose Viper 23 Fed 1H (p) (TVD Relative to Drill Floor, All Azimuth Relative to GRID NORTH)									
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	CS (US ft)	SF	Risk
7000.00	7000.00	101.33	15.62	15.62	Hognose Viper 23 Fed 2H (p)	508.12	477.03	16.35	
7050.00	7050.00	101.35	15.74	15.74	Hognose Viper 23 Fed 2H (p)	516.80	485.49	16.51	
7100.00	7100.00	101.37	15.85	15.85	Hognose Viper 23 Fed 2H (p)	525.48	493.94	16.66	
7150.00	7150.00	101.39	15.96	15.96	Hognose Viper 23 Fed 2H (p)	534.16	502.40	16.82	
7200.00	7200.00	101.41	16.07	16.07	Hognose Viper 23 Fed 2H (p)	542.84	510.85	16.97	
7250.00	7250.00	101.43	16.19	16.19	Hognose Viper 23 Fed 2H (p)	551.52	519.30	17.12	
7300.00	7300.00	101.45	16.30	16.30	Hognose Viper 23 Fed 2H (p)	560.20	527.76	17.27	
7350.00	7350.00	101.46	16.41	16.41	Hognose Viper 23 Fed 2H (p)	568.88	536.21	17.41	
7400.00	7400.00	101.48	16.52	16.52	Hognose Viper 23 Fed 2H (p)	577.56	544.67	17.56	
7450.00	7450.00	101.50	16.64	16.64	Hognose Viper 23 Fed 2H (p)	586.24	553.12	17.70	
7500.00	7500.00	101.51	16.75	16.75	Hognose Viper 23 Fed 2H (p)	594.92	561.57	17.84	
7550.00	7550.00	101.53	16.86	16.86	Hognose Viper 23 Fed 2H (p)	603.60	570.03	17.98	
7600.00	7600.00	101.54	16.97	16.97	Hognose Viper 23 Fed 2H (p)	612.28	578.48	18.11	
7650.00	7650.00	101.56	17.09	17.09	Hognose Viper 23 Fed 2H (p)	620.97	586.93	18.25	
7700.00	7700.00	101.57	17.20	17.20	Hognose Viper 23 Fed 2H (p)	629.65	595.39	18.38	
7750.00	7750.00	101.59	17.31	17.31	Hognose Viper 23 Fed 2H (p)	638.33	603.84	18.51	
7800.00	7800.00	101.60	17.42	17.42	Hognose Viper 23 Fed 2H (p)	647.01	612.29	18.64	
7850.00	7850.00	101.61	17.53	17.53	Hognose Viper 23 Fed 2H (p)	655.69	620.74	18.76	
7900.00	7900.00	101.63	17.65	17.65	Hognose Viper 23 Fed 2H (p)	664.37	629.20	18.89	
7950.00	7950.00	101.64	17.76	17.76	Hognose Viper 23 Fed 2H (p)	673.05	637.65	19.01	
8000.00	8000.00	101.65	17.87	17.87	Hognose Viper 23 Fed 2H (p)	681.73	646.10	19.13	
8050.00	8050.00	101.66	17.98	17.98	Hognose Viper 23 Fed 2H (p)	690.42	654.55	19.25	
8100.00	8100.00	101.67	18.10	18.10	Hognose Viper 23 Fed 2H (p)	699.10	663.01	19.37	
8150.00	8150.00	101.69	18.21	18.21	Hognose Viper 23 Fed 2H (p)	707.78	671.46	19.49	
8200.00	8200.00	101.70	18.32	18.32	Hognose Viper 23 Fed 2H (p)	716.46	679.91	19.60	
8250.00	8250.00	101.71	18.43	18.43	Hognose Viper 23 Fed 2H (p)	725.14	688.36	19.72	
8300.00	8300.00	101.72	18.55	18.55	Hognose Viper 23 Fed 2H (p)	733.82	696.81	19.83	
8350.00	8350.00	101.73	18.66	18.66	Hognose Viper 23 Fed 2H (p)	742.50	705.27	19.94	
8400.00	8400.00	101.74	18.77	18.77	Hognose Viper 23 Fed 2H (p)	751.18	713.72	20.05	
8450.00	8450.00	101.75	18.88	18.88	Hognose Viper 23 Fed 2H (p)	759.87	722.17	20.16	
8500.00	8500.00	101.76	19.00	19.00	Hognose Viper 23 Fed 2H (p)	768.55	730.62	20.26	
8550.00	8550.00	101.77	19.11	19.11	Hognose Viper 23 Fed 2H (p)	777.23	739.07	20.37	
8600.00	8600.00	101.78	19.22	19.22	Hognose Viper 23 Fed 2H (p)	785.91	747.52	20.47	
8650.00	8650.00	101.79	19.33	19.33	Hognose Viper 23 Fed 2H (p)	794.59	755.97	20.57	
8700.00	8700.00	101.79	19.45	19.45	Hognose Viper 23 Fed 2H (p)	803.27	764.42	20.68	
8750.00	8750.00	101.80	19.56	19.56	Hognose Viper 23 Fed 2H (p)	811.96	772.87	20.78	

5D Anti-Collision Report

Primary Well: Hognose Viper 23 Fed 2H (p) (TVD Relative to Drill Floor, All Azimuth Relative to GRID NORTH)									
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
8800.00	8800.00	101.81	19.67	19.67	Hognose Viper 23 Fed 2H (p)	820.64	781.33	20.88	
8850.00	8850.00	101.82	19.78	19.78	Hognose Viper 23 Fed 2H (p)	828.90	789.27	20.92	
8900.00	8900.00	101.83	19.89	19.89	Hognose Viper 23 Fed 2H (p)	835.97	796.02	20.92	
8950.00	8950.00	101.84	20.01	20.01	Hognose Viper 23 Fed 2H (p)	841.84	801.55	20.90	
9000.00	9000.00	101.85	20.12	20.12	Hognose Viper 23 Fed 2H (p)	846.48	805.89	20.85	
9050.00	9050.00	101.85	20.23	20.23	Hognose Viper 23 Fed 2H (p)	849.90	809.03	20.80	
9100.00	9100.00	101.85	20.34	20.34	Hognose Viper 23 Fed 2H (p)	852.07	810.95	20.72	
9150.00	9150.00	101.85	20.46	20.46	Hognose Viper 23 Fed 2H (p)	853.01	811.67	20.63	
9200.00	9200.00	101.85	20.57	20.57	Hognose Viper 23 Fed 2H (p)	853.05	811.50	20.53	
9250.00	9250.00	101.85	20.68	20.68	Hognose Viper 23 Fed 2H (p)	853.05	811.29	20.43	
9300.00	9300.00	101.85	20.79	20.79	Hognose Viper 23 Fed 2H (p)	853.05	811.07	20.32	
9350.00	9350.00	101.85	20.91	20.91	Hognose Viper 23 Fed 2H (p)	853.05	810.85	20.22	
9400.00	9400.00	101.85	21.02	21.02	Hognose Viper 23 Fed 2H (p)	853.05	810.64	20.11	
9450.00	9450.00	101.85	21.13	21.13	Hognose Viper 23 Fed 2H (p)	853.05	810.42	20.01	
9500.00	9500.00	101.85	21.24	21.24	Hognose Viper 23 Fed 2H (p)	853.05	810.21	19.91	
9550.00	9550.00	101.85	21.36	21.36	Hognose Viper 23 Fed 2H (p)	853.05	809.99	19.81	
9600.00	9600.00	101.85	21.47	21.47	Hognose Viper 23 Fed 2H (p)	853.05	809.78	19.71	
9650.00	9650.00	101.85	21.58	21.58	Hognose Viper 23 Fed 2H (p)	853.05	809.56	19.62	
9700.00	9700.00	101.85	21.69	21.69	Hognose Viper 23 Fed 2H (p)	853.05	809.34	19.52	
9750.00	9750.00	101.85	21.81	21.81	Hognose Viper 23 Fed 2H (p)	853.05	809.13	19.42	
9800.00	9800.00	101.85	21.92	21.92	Hognose Viper 23 Fed 2H (p)	853.05	808.91	19.33	
9850.00	9850.00	101.85	22.03	22.03	Hognose Viper 23 Fed 2H (p)	853.05	808.69	19.23	
9900.00	9900.00	101.85	22.14	22.14	Hognose Viper 23 Fed 2H (p)	853.05	808.48	19.14	
9950.00	9950.00	101.85	22.26	22.26	Hognose Viper 23 Fed 2H (p)	853.05	808.26	19.05	
10000.00	10000.00	101.85	22.37	22.37	Hognose Viper 23 Fed 2H (p)	853.05	808.05	18.96	
10050.00	10050.00	101.85	22.48	22.48	Hognose Viper 23 Fed 2H (p)	853.05	807.83	18.86	
10100.00	10100.00	101.85	22.59	22.59	Hognose Viper 23 Fed 2H (p)	853.05	807.61	18.77	
10150.00	10150.00	101.85	22.71	22.71	Hognose Viper 23 Fed 2H (p)	853.05	807.39	18.69	
10200.00	10200.00	101.85	22.82	22.82	Hognose Viper 23 Fed 2H (p)	853.05	807.18	18.60	
10250.00	10250.00	101.85	22.93	22.93	Hognose Viper 23 Fed 2H (p)	853.05	806.96	18.51	
10300.00	10300.00	101.85	23.04	23.04	Hognose Viper 23 Fed 2H (p)	853.05	806.74	18.42	
10350.00	10350.00	101.85	23.15	23.15	Hognose Viper 23 Fed 2H (p)	853.05	806.53	18.34	
10400.00	10400.00	101.85	23.27	23.27	Hognose Viper 23 Fed 2H (p)	853.05	806.31	18.25	
10450.00	10450.00	101.85	23.38	23.38	Hognose Viper 23 Fed 2H (p)	853.05	806.09	18.17	
10500.00	10500.00	101.85	23.49	23.49	Hognose Viper 23 Fed 2H (p)	853.05	805.88	18.08	
10550.00	10550.00	101.85	23.60	23.60	Hognose Viper 23 Fed 2H (p)	853.05	805.66	18.00	

5D Anti-Collision Report

Primary Well : Hognose Viper 23 Fed 2H (p) (TVD Relative to Drill Floor; All Azimuth Relative to GRID NORTH)									
MD (US ft)	TVD (US ft)	T.Face to See (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	GC (US ft)	ES (US ft)	SF	Risk
10600.00	10600.00	101.85	23.72	23.72	Hognose Viper 23 Fed 2H (p)	853.05	805.44	17.92	
10650.00	10650.00	101.85	23.83	23.83	Hognose Viper 23 Fed 2H (p)	853.05	805.22	17.84	
10700.00	10700.00	104.43	23.94	23.93	Hognose Viper 23 Fed 2H (p)	852.80	804.76	17.75	
10750.00	10749.80	104.03	24.05	23.86	Hognose Viper 23 Fed 2H (p)	852.52	804.32	17.69	
10800.00	10798.88	103.45	24.15	23.80	Hognose Viper 23 Fed 2H (p)	852.52	804.14	17.62	
10850.00	10846.71	102.68	24.26	23.47	Hognose Viper 23 Fed 2H (p)	852.86	804.26	17.55	
10900.00	10892.76	101.77	24.36	23.16	Hognose Viper 23 Fed 2H (p)	853.59	804.76	17.48	
10950.00	10936.53	100.73	24.46	22.62	Hognose Viper 23 Fed 2H (p)	854.78	805.77	17.44	
11000.00	10977.54	99.58	24.58	22.10	Hognose Viper 23 Fed 2H (p)	856.46	807.23	17.40	
11050.00	11015.35	98.34	24.66	21.41	Hognose Viper 23 Fed 2H (p)	858.65	809.24	17.38	
11100.00	11049.52	97.03	24.80	20.80	Hognose Viper 23 Fed 2H (p)	861.38	811.58	17.30	
11150.00	11079.70	95.67	24.98	20.08	Hognose Viper 23 Fed 2H (p)	864.64	814.50	17.24	
11200.00	11105.55	94.26	25.14	19.44	Hognose Viper 23 Fed 2H (p)	868.41	818.01	17.23	
11250.00	11126.78	92.84	25.34	18.89	Hognose Viper 23 Fed 2H (p)	872.64	821.83	17.17	
11300.00	11143.17	91.41	25.54	18.41	Hognose Viper 23 Fed 2H (p)	877.30	826.06	17.12	
11350.00	11154.54	90.06	25.79	18.05	Hognose Viper 23 Fed 2H (p)	882.27	830.61	17.08	
11400.00	11160.76	89.01	26.03	17.88	Hognose Viper 23 Fed 2H (p)	887.36	835.11	16.98	
11450.00	11162.00	88.48	26.32	17.94	Hognose Viper 23 Fed 2H (p)	892.39	839.62	16.91	
11500.00	11162.00	88.45	26.62	18.00	Hognose Viper 23 Fed 2H (p)	897.40	844.00	16.81	
11550.00	11162.00	88.43	26.97	18.08	Hognose Viper 23 Fed 2H (p)	902.40	848.29	16.68	
11600.00	11162.00	88.40	27.31	18.15	Hognose Viper 23 Fed 2H (p)	907.40	852.65	16.57	
11650.00	11162.00	88.37	27.71	18.23	Hognose Viper 23 Fed 2H (p)	912.41	856.84	16.42	
11700.00	11162.00	88.34	28.11	18.32	Hognose Viper 23 Fed 2H (p)	917.41	860.99	16.26	
11750.00	11162.00	88.31	28.56	18.42	Hognose Viper 23 Fed 2H (p)	922.42	865.13	16.10	
11800.00	11162.00	88.29	29.00	18.52	Hognose Viper 23 Fed 2H (p)	927.42	869.30	15.96	
11850.00	11162.00	88.26	29.50	18.63	Hognose Viper 23 Fed 2H (p)	932.42	873.27	15.76	
11900.00	11162.00	88.23	29.98	18.74	Hognose Viper 23 Fed 2H (p)	937.43	877.25	15.58	
11950.00	11162.00	88.21	30.52	18.87	Hognose Viper 23 Fed 2H (p)	942.43	881.20	15.39	
12000.00	11162.00	88.18	31.04	18.99	Hognose Viper 23 Fed 2H (p)	947.44	885.16	15.21	
12050.00	11162.00	88.16	31.61	19.13	Hognose Viper 23 Fed 2H (p)	952.45	889.09	15.03	
12100.00	11162.00	88.13	32.17	19.26	Hognose Viper 23 Fed 2H (p)	957.45	892.98	14.85	
12150.00	11162.00	88.11	32.77	19.41	Hognose Viper 23 Fed 2H (p)	962.46	896.75	14.65	
12200.00	11162.00	88.08	33.36	19.55	Hognose Viper 23 Fed 2H (p)	967.46	900.53	14.45	
12250.00	11162.00	88.06	33.99	19.71	Hognose Viper 23 Fed 2H (p)	972.47	904.28	14.26	
12300.00	11162.00	88.03	34.61	19.86	Hognose Viper 23 Fed 2H (p)	977.48	908.03	14.08	
12350.00	11162.00	88.01	35.27	20.02	Hognose Viper 23 Fed 2H (p)	982.48	911.75	13.89	

5D Anti-Collision Report

Primary Well : Hognose Viper 23 Fed 1H (p) (TVD Relative to Drill Floor ; All Azimuth Relative to GRID NORTH)									
MD (US ft)	TVD (US ft)	T.Face to Set (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
12400.00	11162.00	87.98	35.92	20.19	Hognose Viper 23 Fed 2H (p)	987.49	915.48	13.71	
12450.00	11162.00	87.96	36.60	20.37	Hognose Viper 23 Fed 2H (p)	992.50	919.17	13.54	
12500.00	11162.00	87.94	37.26	20.56	Hognose Viper 23 Fed 2H (p)	997.50	922.87	13.36	
12550.00	11162.00	87.91	37.96	20.77	Hognose Viper 23 Fed 2H (p)	1002.51	926.53	13.19	
12600.00	11162.00	87.89	38.65	20.97	Hognose Viper 23 Fed 2H (p)	1007.52	930.18	13.03	
12650.00	11162.00	87.87	39.37	21.18	Hognose Viper 23 Fed 2H (p)	1012.53	933.74	12.85	
12700.00	11162.00	87.85	40.08	21.39	Hognose Viper 23 Fed 2H (p)	1017.53	937.31	12.68	
12750.00	11162.00	87.82	40.81	21.61	Hognose Viper 23 Fed 2H (p)	1022.54	940.85	12.52	
12800.00	11162.00	87.80	41.53	21.83	Hognose Viper 23 Fed 2H (p)	1027.55	944.39	12.36	
12850.00	11162.00	87.78	42.29	22.05	Hognose Viper 23 Fed 2H (p)	1032.56	947.91	12.20	
12900.00	11162.00	87.76	43.02	22.27	Hognose Viper 23 Fed 2H (p)	1037.57	951.44	12.05	
12950.00	11162.00	87.74	43.79	22.49	Hognose Viper 23 Fed 2H (p)	1042.57	954.94	11.90	
13000.00	11162.00	87.72	44.54	22.70	Hognose Viper 23 Fed 2H (p)	1047.58	958.44	11.75	
13050.00	11162.00	87.69	45.31	22.91	Hognose Viper 23 Fed 2H (p)	1052.59	961.92	11.61	
13100.00	11162.00	87.67	46.08	23.11	Hognose Viper 23 Fed 2H (p)	1057.60	965.41	11.47	
13150.00	11162.00	87.65	46.86	23.40	Hognose Viper 23 Fed 2H (p)	1062.61	968.88	11.34	
13200.00	11162.00	87.63	47.64	23.67	Hognose Viper 23 Fed 2H (p)	1067.62	972.36	11.21	
13250.00	11162.00	87.61	48.43	23.90	Hognose Viper 23 Fed 2H (p)	1072.63	975.83	11.08	
13300.00	11162.00	87.59	49.22	24.07	Hognose Viper 23 Fed 2H (p)	1077.64	979.33	10.96	
13350.00	11162.00	87.57	50.02	24.41	Hognose Viper 23 Fed 2H (p)	1082.65	982.88	10.85	
13400.00	11162.00	87.55	50.81	24.63	Hognose Viper 23 Fed 2H (p)	1087.66	986.39	10.74	
13450.00	11162.00	87.53	51.63	24.91	Hognose Viper 23 Fed 2H (p)	1092.67	989.77	10.62	
13500.00	11162.00	87.51	52.43	25.13	Hognose Viper 23 Fed 2H (p)	1097.68	993.13	10.50	
13550.00	11162.00	87.50	53.25	25.44	Hognose Viper 23 Fed 2H (p)	1102.69	996.50	10.38	
13600.00	11162.00	87.48	54.05	25.63	Hognose Viper 23 Fed 2H (p)	1107.70	999.89	10.28	
13650.00	11162.00	87.46	54.88	25.97	Hognose Viper 23 Fed 2H (p)	1112.71	1003.28	10.17	
13700.00	11162.00	87.44	55.70	26.21	Hognose Viper 23 Fed 2H (p)	1117.72	1006.67	10.07	
13750.00	11162.00	87.42	56.53	26.46	Hognose Viper 23 Fed 2H (p)	1122.73	1010.05	9.96	
13800.00	11162.00	87.40	57.35	26.79	Hognose Viper 23 Fed 2H (p)	1127.74	1013.44	9.87	
13850.00	11162.00	87.38	58.19	27.06	Hognose Viper 23 Fed 2H (p)	1132.75	1016.82	9.77	
13900.00	11162.00	87.37	59.02	27.31	Hognose Viper 23 Fed 2H (p)	1137.76	1020.20	9.68	
13950.00	11162.00	87.35	59.86	27.54	Hognose Viper 23 Fed 2H (p)	1142.77	1023.56	9.59	
14000.00	11162.00	87.33	60.69	27.83	Hognose Viper 23 Fed 2H (p)	1147.78	1026.94	9.50	
14050.00	11162.00	87.31	61.54	28.16	Hognose Viper 23 Fed 2H (p)	1152.79	1030.30	9.41	
14100.00	11162.00	87.30	62.38	28.46	Hognose Viper 23 Fed 2H (p)	1157.80	1033.66	9.33	
14150.00	11162.00	87.28	63.23	28.76	Hognose Viper 23 Fed 2H (p)	1162.82	1037.00	9.24	

5D Anti-Collision Report

Primary Well: Hognose Viper 23 Fed 1H (p) (TVD Relative to Drill Floor; All Azimuth Relative to GRID NORTH)									
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	REL
14200.00	11162.00	87.26	64.07	29.06	Hognose Viper 23 Fed 2H (p)	1167.83	1040.33	9.16	
14250.00	11162.00	87.25	64.93	29.35	Hognose Viper 23 Fed 2H (p)	1172.84	1043.65	9.08	
14300.00	11162.00	87.23	65.77	29.64	Hognose Viper 23 Fed 2H (p)	1177.85	1046.98	9.00	
14350.00	11162.00	87.21	66.63	29.93	Hognose Viper 23 Fed 2H (p)	1182.86	1050.29	8.92	
14400.00	11162.00	87.20	67.48	30.22	Hognose Viper 23 Fed 2H (p)	1187.87	1053.61	8.85	
14450.00	11162.00	87.18	68.35	30.51	Hognose Viper 23 Fed 2H (p)	1192.89	1056.92	8.77	
14500.00	11162.00	87.16	69.20	30.80	Hognose Viper 23 Fed 2H (p)	1197.90	1060.24	8.70	
14550.00	11162.00	87.15	70.07	31.09	Hognose Viper 23 Fed 2H (p)	1202.91	1063.54	8.63	
14600.00	11162.00	87.13	70.92	31.38	Hognose Viper 23 Fed 2H (p)	1207.92	1066.85	8.56	
14650.00	11162.00	87.12	71.79	31.68	Hognose Viper 23 Fed 2H (p)	1212.94	1070.15	8.49	
14700.00	11162.00	87.10	72.65	31.97	Hognose Viper 23 Fed 2H (p)	1217.95	1073.46	8.43	
14750.00	11162.00	87.08	73.52	32.27	Hognose Viper 23 Fed 2H (p)	1222.96	1076.75	8.36	
14800.00	11162.00	87.07	74.39	32.56	Hognose Viper 23 Fed 2H (p)	1227.97	1080.05	8.30	
14850.00	11162.00	87.05	75.26	32.86	Hognose Viper 23 Fed 2H (p)	1232.99	1083.34	8.24	
14900.00	11162.00	87.04	76.12	33.16	Hognose Viper 23 Fed 2H (p)	1238.00	1086.64	8.18	
14950.00	11162.00	87.02	77.00	33.46	Hognose Viper 23 Fed 2H (p)	1243.01	1089.93	8.12	
15000.00	11162.00	87.01	77.87	33.77	Hognose Viper 23 Fed 2H (p)	1248.02	1093.21	8.06	
15050.00	11162.00	86.99	78.75	34.10	Hognose Viper 23 Fed 2H (p)	1253.04	1096.50	8.00	
15100.00	11162.00	86.98	79.62	34.41	Hognose Viper 23 Fed 2H (p)	1258.05	1099.79	7.95	
15150.00	11162.00	86.96	80.50	34.74	Hognose Viper 23 Fed 2H (p)	1263.06	1103.07	7.89	
15200.00	11162.00	86.95	81.37	35.06	Hognose Viper 23 Fed 2H (p)	1268.08	1106.35	7.84	
15250.00	11162.00	86.94	82.25	35.38	Hognose Viper 23 Fed 2H (p)	1273.09	1109.63	7.79	
15300.00	11162.00	86.92	83.13	35.70	Hognose Viper 23 Fed 2H (p)	1278.10	1112.91	7.74	
15350.00	11162.00	86.91	84.01	36.03	Hognose Viper 23 Fed 2H (p)	1283.12	1116.18	7.69	
15400.00	11162.00	86.89	84.89	36.35	Hognose Viper 23 Fed 2H (p)	1288.13	1119.46	7.64	
15450.00	11162.00	86.88	85.77	36.68	Hognose Viper 23 Fed 2H (p)	1293.14	1122.73	7.59	
15500.00	11162.00	86.87	86.65	37.00	Hognose Viper 23 Fed 2H (p)	1298.16	1126.00	7.54	
15550.00	11162.00	86.85	87.54	37.33	Hognose Viper 23 Fed 2H (p)	1303.17	1129.27	7.49	
15600.00	11162.00	86.84	88.42	37.65	Hognose Viper 23 Fed 2H (p)	1308.19	1132.54	7.45	
15650.00	11162.00	86.82	89.31	37.98	Hognose Viper 23 Fed 2H (p)	1313.20	1135.81	7.40	
15700.00	11162.00	86.81	90.19	38.31	Hognose Viper 23 Fed 2H (p)	1318.21	1139.08	7.36	
15715.04	11162.00	86.81	90.46	38.41	Hognose Viper 23 Fed 2H (p)	1319.72	1140.06	7.35	

Secondary Well: Hognose Viper 23 Fed 2H (p) (TVD Relative to Drill Floor (Primary); All Azimuth Relative to GRID NORTH)									
PR 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	REL
0.00	0.00	0.00	89.74	0.00	0.00	49.93	49.29	78.07	
50.00	50.00	50.00	89.74	0.08	0.08	49.93	49.14	62.85	
100.00	100.00	100.00	89.74	0.11	0.11	49.93	49.07	58.04	