

NM OIL CONSERVATION

ARTESIA DISTRICT New Mexico

Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102

Revised August 1, 2011

Submit one copy to appropriate

District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ APL Number 30-015-42710	² Pool Code 3713	³ Pool Name Avalon; Bone Spring, East
⁴ Property Code 313782	⁵ Property Name CERF 10 STATE	⁶ Well Number 9H
⁷ OGRID No. 6137	⁸ Operator Name DEVON ENERGY PRODUCTION COMPANY, L.P.	⁹ Elevation 3284.1

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	11	21 S	27 E		1195	SOUTH	150	WEST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	10	21 S	27 E		1905	SOUTH	330	WEST	EDDY

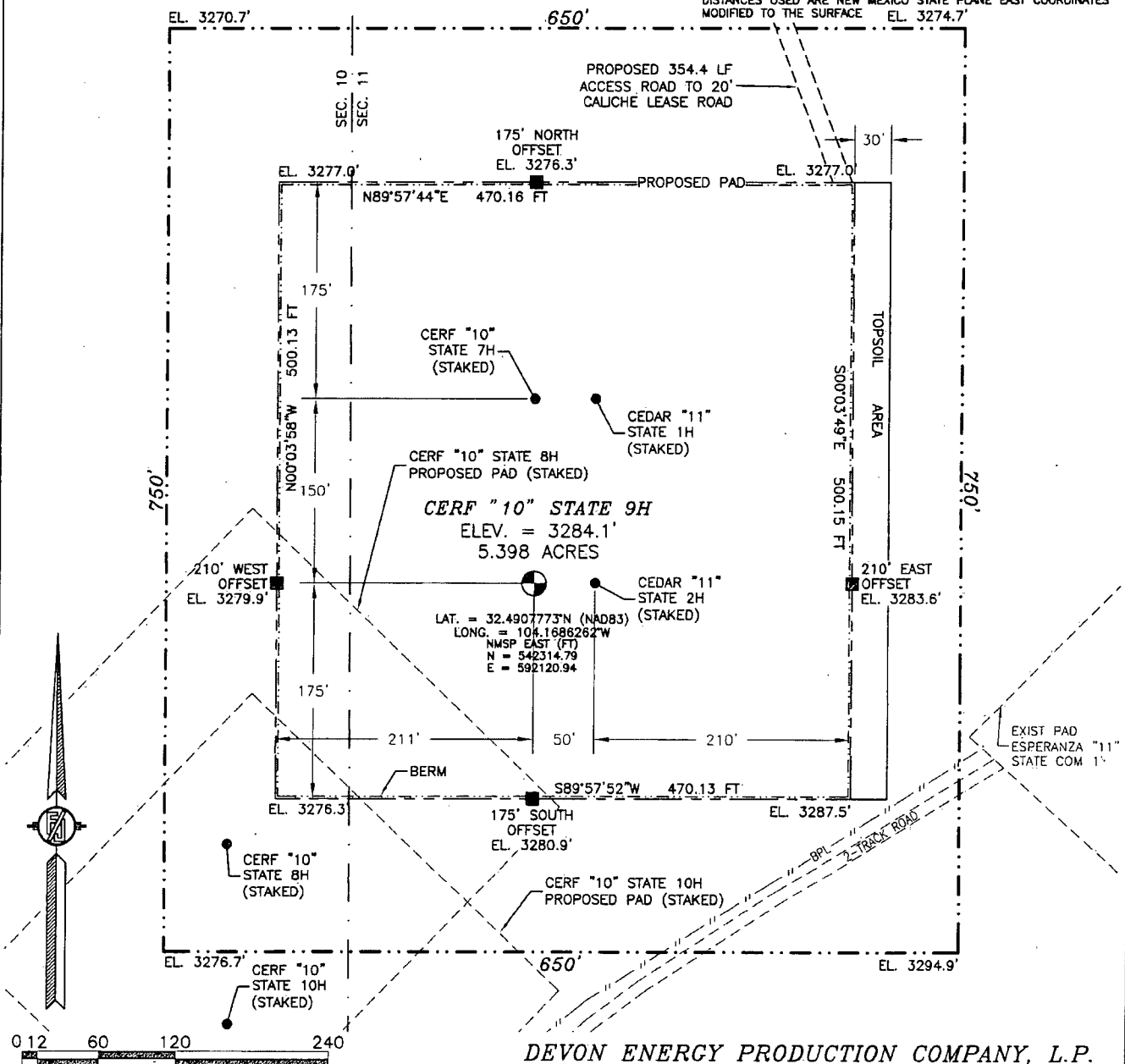
¹² Dedicated Acres 160.00	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

Project Area Lease Line Completion Interval		¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature: <i>Linda Good</i> Date: 10/6/2014 Printed Name: Linda Good E-mail Address: linda.good@dmv.com
¹⁸ SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. Date of Survey: 12797 Signature: <i>[Signature]</i> Seal of Professional Surveyor: EDDY COUNTY, N.M. Certificate Number: PLS 12797 SURVEY NO. 3109		

SECTION 11, TOWNSHIP 21 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP

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



SCALE 1" = 120'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CR 206 (ILLINOIS CAMP ROAD) AND CR 600 (RAINS ROAD) GO EAST ON CR 600 2.3 MILES PAST THE RAMBO BOOSTER STATION TO A CALICHE LEASE ROAD ON RIGHT, ACROSS FROM BORROW PIT, GO EAST 1.23 MILES TO TOP OF RIDGE, FOLLOW FLAGS ON RIGHT 354' TO NORTHEAST CORNER OF PAD.

DEVON ENERGY PRODUCTION COMPANY, L.P.

CERF "10" STATE 9H

LOCATED 1195 FT. FROM THE SOUTH LINE
AND 150 FT. FROM THE WEST LINE OF
SECTION 11, TOWNSHIP 21 SOUTH,
RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

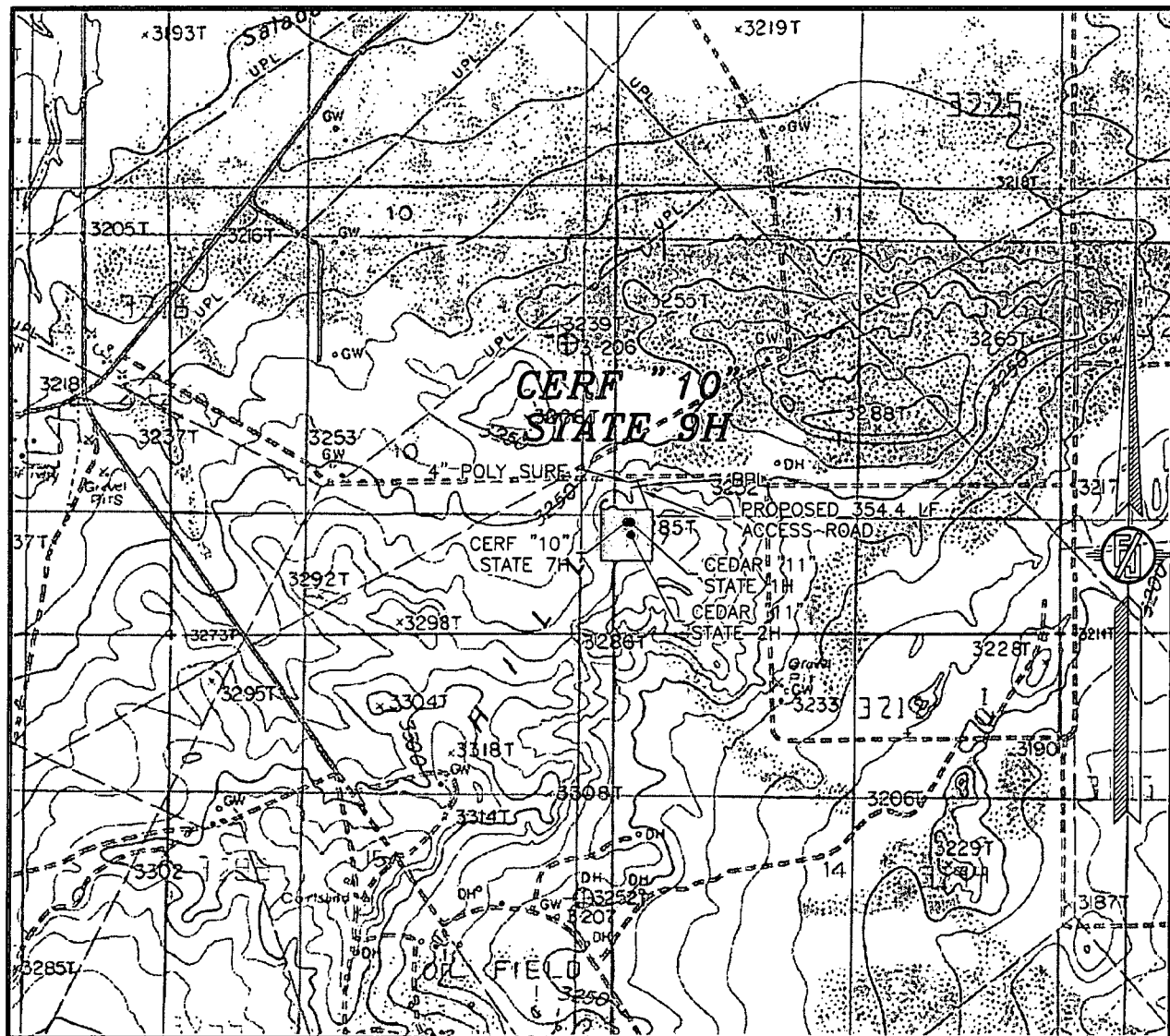
JULY 10, 2014

SURVEY NO. 3109

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

CARLSBAD, NEW MEXICO

SECTION 11, TOWNSHIP 21 SOUTH, RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 LOCATION VERIFICATION MAP



USGS QUAD MAP:
 CARLSBAD EAST

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

CERF "10" STATE 9H

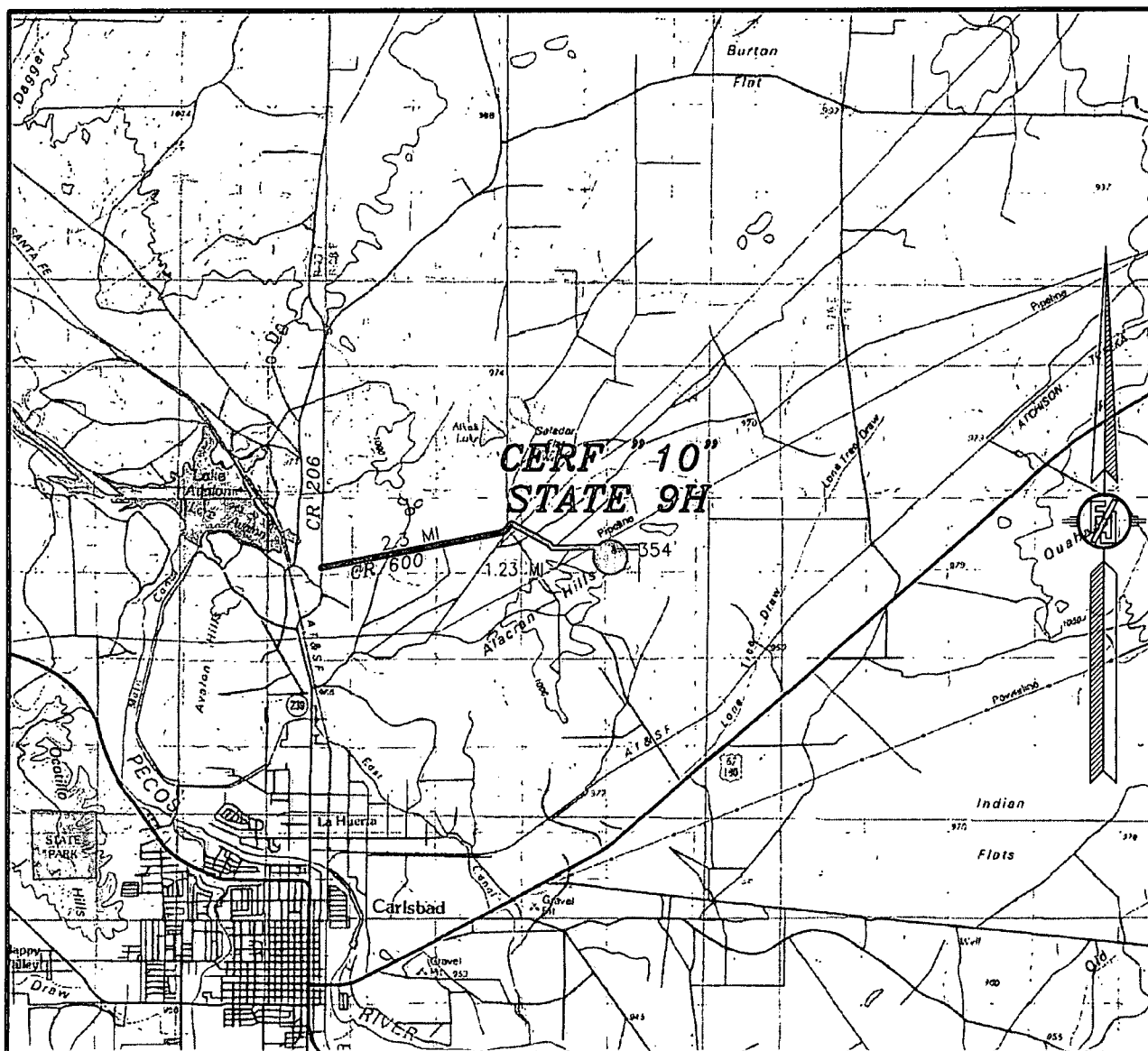
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JULY 10, 2014

SURVEY NO. 3109

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

SECTION 11, TOWNSHIP 21 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

CERF "10" STATE 9H

LOCATED 1195 FT. FROM THE SOUTH LINE
AND 150 FT. FROM THE WEST LINE OF
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RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

DIRECTIONS TO LOCATION

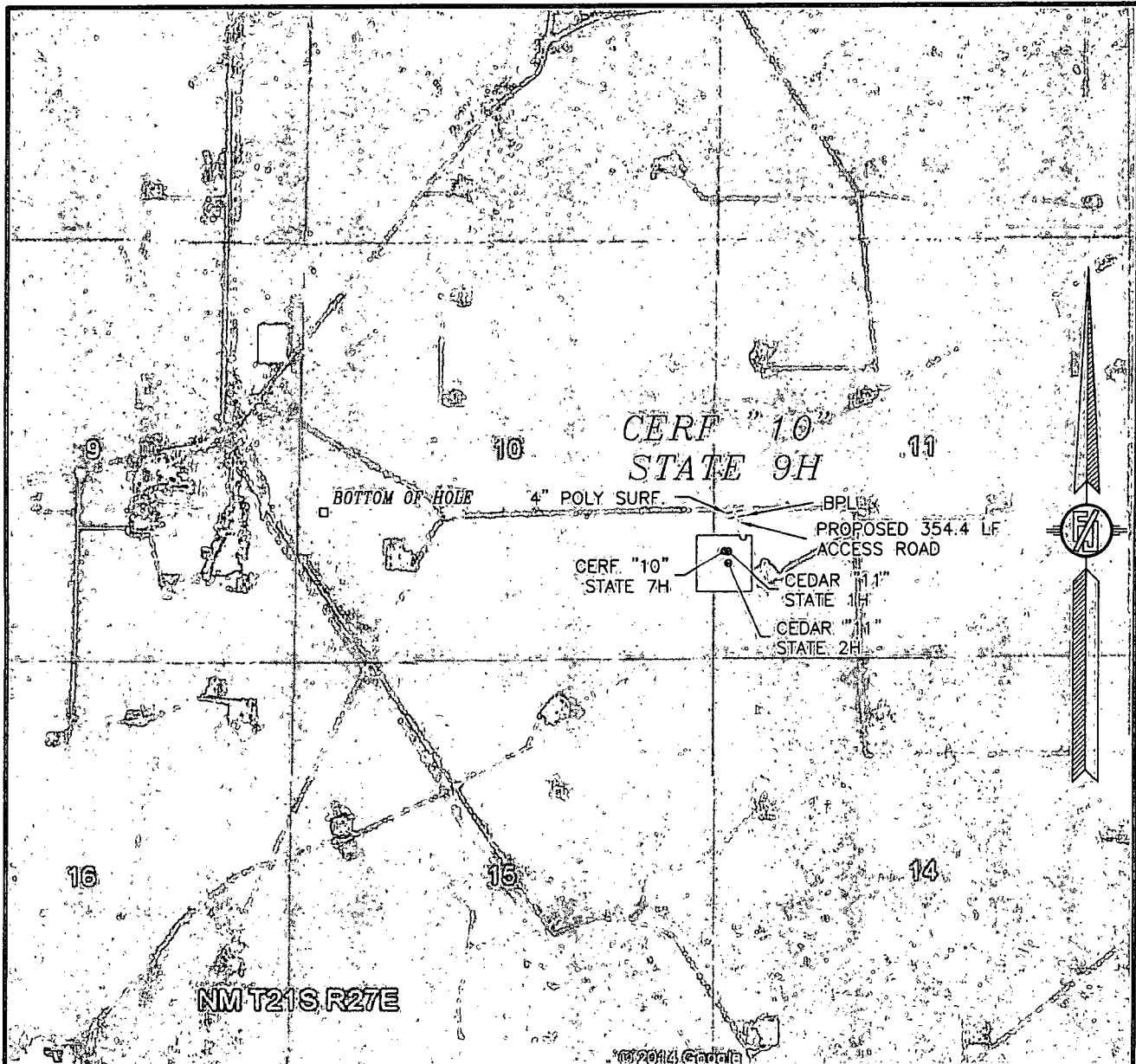
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JULY 10, 2014

SURVEY NO. 3109

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

SECTION 11, TOWNSHIP 21 SOUTH, RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 AERIAL PHOTO



NOT TO SCALE
 AERIAL PHOTO:
 GOOGLE EARTH
 APRIL 2013

DEVON ENERGY PRODUCTION COMPANY, L.P.

CERF "10" STATE 9H

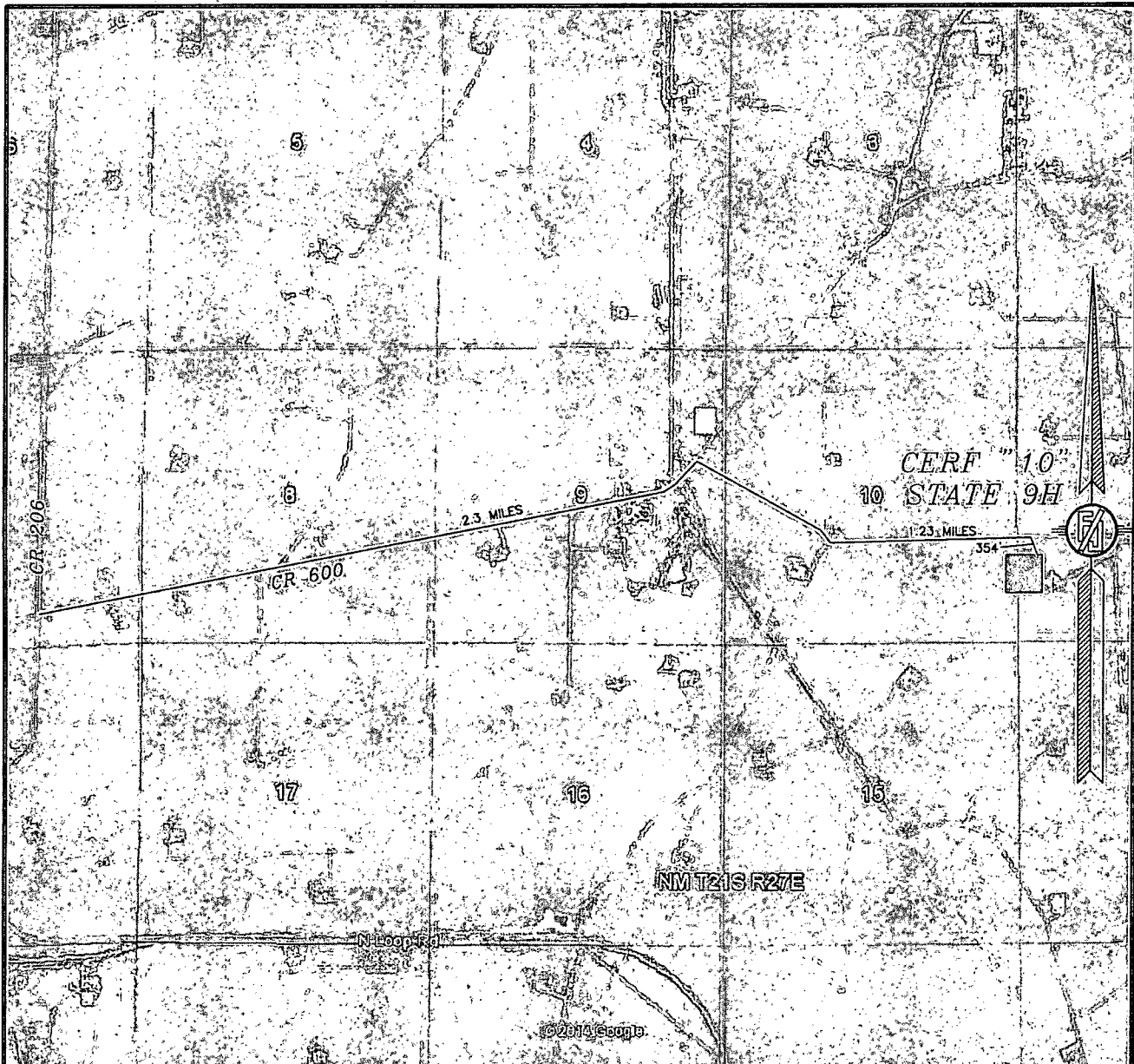
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JULY 10, 2014

SURVEY NO. 3109

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

SECTION 11, TOWNSHIP 21 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
ACCESS AERIAL ROUTE MAP



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
APRIL 2013

DEVON ENERGY PRODUCTION COMPANY, L.P.

CERF "10" STATE 9H

LOCATED 1195 FT. FROM THE SOUTH LINE
AND 150 FT. FROM THE WEST LINE OF
SECTION 11, TOWNSHIP 21 SOUTH,
RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JULY 10, 2014

SURVEY NO. 3109

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

Devon Energy, Cerf 10 State 9H

1. Geologic Formations

TVD of target	7,645'	Pilot hole depth	N/A
MD at TD:	12,263'	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	Surface	Water at 120'	
Top Salt	180	Barren	
Base Salt	350	Barren	
Tansil	380	Barren	
Yates	490	Barren	
Seven Rivers	600	Barren	
Capitan	770	Barren	
Base of Capitan	2,250	Barren	
Delaware	2,970	Oil	
Lower Brushy Canyon	5,160	Oil	
Bone Spring Lime	5,350	Oil	
1st Bone Spring Sand	6,560	Oil	
2 nd Bone Spring Lime	6,800	Oil	
2 nd Bone Spring Sand	7,240	Oil	
3 rd Bone Spring Lime	7,720	Oil	

*H₂S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn	SF Collapse	SF Burst	SF Tension
	From	To							
26"	0	120'	20"	94	J55	BTC	8.68	35.22	124.29
17.5"	0	770'	13.375"	48	H40	STC	1.92	4.32	8.71
12.25"	0	2900'	9.625"	40	J55	LTC	1.89	2.91	4.48
8.75"	0	6,966'	5.5"	17	HCP-110	BTC	2.63	3.26	4.80
8.75"	6,966'	12,263'	5.5"	17	HCP-110	BTC	2.40	2.97	6.31
BLM Minimum Safety Factor							1.125	1.00	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Must have table for contingency casing

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	Y
If yes, does production casing cement tie back a minimum of 50' above the Reef?	Y
Is well within the designated 4 string boundary.	Y
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

Devon Energy, Cerf 10 State 9H

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	H ₂ O gal/s k	Yld ft ³ / sack	500# Comp. Strength (hours)	Slurry Description
20" Surf.	340	14.8	6.32	1.33	7	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
13-3/8" 1 st Inter.	720	14.8	6.32	1.33	7	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
9-5/8" 2 nd Inter. Single Stage Option	550	12.9	9.81	1.85	17	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	330	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
9-5/8" 2 nd Inter. Two Stage Option	470	12.9	9.81	1.85	17	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	220	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
	DV/ECP Tool 820'					
	220	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
5-1/2" Prod. Single Stage	670	10.4	3.17	16.95	16	Lead: Tuned Light ® + 0.125 lbs/sack Poly-E-Flake
	1340	14.5	5.31	1.2	25	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
5-1/2" Prod. Two Stage Option	350	12.5	10.86	1.96	30	1 st Lead: (65:35) Class H Cement: Poz (Fly Ash) + 6% BWOC Bentonite + 0.25% BWOC HR-601 + 0.125 lbs/sack Poly-E-Flake
	1340	14.5	5.31	1.2	25	1 st Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
	DV/ECP Tool 5000'					
	490	11.9	12.89	2.26	22	2 nd Stage 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
	120	14.8	6.32	1.33	6	2 nd stage Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake

DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Devon Energy, Cerf 10 State 9H

Casing String	TOC	% Excess
Surface	0'	100%
Intermediate	0'	75%
Intermediate – 2 Stage Option	1 st Stage = 820' / 2 nd Stage = 0'	75%
Production	600'	25%
Production – 2 Stage Option	1 st Stage = 5000' / 2 nd Stage = 600'	25%

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Devon Energy, Cerf 10 State 9H

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
Y	Are anchors required by manufacturer?
Y	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. 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 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 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.

Devon Energy, Cerf 10 State 9H

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 each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP. Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns See attached schematic.
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5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	770'	FW Gel	8.6-8.8	28-34	N/C
770'	2900'	Saturated Brine	10.0-10.2	28-34	N/C
2900'	12,263'	Cut Brine	8.5-9.3	28-34	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing	
x	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned	Interval
Resistivity	Int. shoe to KOP
Density	Int. shoe to KOP
X CBL	Production casing
X Mud log	Intermediate shoe to TD
PEX	

Devon Energy, Cerf 10 State 9H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	3823 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? No.

Will be pre-setting casing? No.

Attachments

Directional Plan

5D Plan Report

Devon Energy**Field Name:** *Eddy Co, NM (Nad 83 NME)***Site Name:** *Cedar 11 State 2H, Cerf 10 State 9H Pad***Well Name:** *Cerf 10 State 9H***Plan:** *P1:V1*

15 September 2014



Cerf 10 State 9H

Field Name Eddy Co, NM (Nad 83 NME)	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 Cedar 11 State 2H, Cerf 10 State 9H Pad	Units : US ft	North Reference : Grid	Convergence Angle : 0.09	
	Position	Northing : 542315.08 US ft	Latitude : 32° 29' 26.80"	
		Easting : 592170.93 US ft	Longitude : -104° 10' 6.47"	
Elevation above Mean Sea Level: 3285.00 US ft				
Comment :				
Slot Name Cerf 10 State 9H	Position (Offsets relative to Site Centre)			
	+N / -S : -0.29 US ft		Northing : 542314.79 US ft	Latitude : 32° 29' 26.80"
	+E / -W : -49.99 US ft		Easting : 592120.94 US ft	Longitude : -104° 10' 7.05"
Slot TVD Reference : Ground Elevation				
Elevation above Mean Sea Level : 3284.00 US ft				
Comment :				
Well Name Cerf 10 State 9H	Type : Main well		UWI :	Plan : P1:V1
	Rig Height : Kelly Bushing : 25.00 US ft		Comment :	
	Relative to Mean Sea Level: 3309.00 US ft			
	Closure Distance : 5173.42 US ft		Closure Azimuth : 277.257°	
	Vertical Section (Position of Origin Relative to Slot)			
	+N / -S : 0.00 US ft		+E / -W : 0.00 US ft	Az : 270.00°
	Magnetic Parameters			
Model : BGGM	Field Strength : 48309.0nT	Dec : 7.61°	Dip : 60.23°	Date : 28/Feb/2015

Target Set

Name : Cerf 10 State 9H **Number of Targets :** 1

Comment :

Target Name: PBHL 9H Shape: Cuboid	Position (Relative to Slot centre)			
	+N / -S : 653.55 US ft		Northing : 542968.34 US ft	Latitude : 32° 29' 33.34"
	+E / -W : -5131.97 US ft		Easting : 586988.97 US ft	Longitude : -104° 11' 6.96"
	TVD (Kelly Bushing) : 7645.00 US ft			
	Orientation Azimuth : 0.00° Inclination : 0.00°			
Dimensions Length : 20.00 US ft		Breadth : 20.00 US ft		Height : 20.00 US ft

Well path created using minimum curvature

5D Plan Report

Salient Points (Relative to Slot centre, TVD relative to Kelly Bushing)											
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	-
2866.00	0.00	0.00	2866.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	Nudge
3866.00	10.00	330.00	3860.93	75.38	-43.52	43.52	1.00	1.00	0.00	330.00	Hold
7183.26	10.00	330.00	7127.79	574.24	-331.54	331.54	0.00	0.00	0.00	0.00	KOP
8033.44	90.00	270.00	7645.00	653.26	-902.33	902.33	10.00	9.41	-7.06	299.63	LP
12263.08	90.00	270.00	7645.00	653.55	-5131.97	5131.97	0.00	0.00	0.00	0.00	PBHL 9H

Interpolated Points (Relative to Slot centre, TVD relative to Kelly Bushing)											
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
2800.00	0.00	0.00	2800.00	0.00	0.00	-0.00	0.00	542314.79	592120.94		
2866.00	0.00	0.00	2866.00	0.00	0.00	-0.00	0.00	542314.79	592120.94		Nudge
2900.00	0.34	330.00	2900.00	0.09	-0.05	0.05	1.00	542314.88	592120.89		
3000.00	1.34	330.00	2999.99	1.36	-0.78	0.78	1.00	542316.15	592120.16		
3100.00	2.34	330.00	3099.93	4.14	-2.39	2.39	1.00	542318.93	592118.55		
3200.00	3.34	330.00	3199.81	8.43	-4.87	4.87	1.00	542323.22	592116.07		
3300.00	4.34	330.00	3299.59	14.23	-8.21	8.21	1.00	542329.02	592112.73		
3400.00	5.34	330.00	3399.23	21.54	-12.43	12.43	1.00	542336.33	592108.51		
3500.00	6.34	330.00	3498.71	30.35	-17.52	17.52	1.00	542345.14	592103.42		
3600.00	7.34	330.00	3597.99	40.66	-23.48	23.48	1.00	542355.45	592097.46		
3700.00	8.34	330.00	3697.06	52.47	-30.30	30.30	1.00	542367.26	592090.64		
3800.00	9.34	330.00	3795.87	65.78	-37.98	37.98	1.00	542380.57	592082.96		
3866.00	10.00	330.00	3860.93	75.38	-43.52	43.52	1.00	542390.17	592077.42		Hold
3900.00	10.00	330.00	3894.41	80.50	-46.47	46.47	0.00	542395.29	592074.47		
4000.00	10.00	330.00	3992.90	95.53	-55.16	55.16	0.00	542410.32	592065.78		
4100.00	10.00	330.00	4091.38	110.57	-63.84	63.84	0.00	542425.36	592057.10		
4200.00	10.00	330.00	4189.86	125.61	-72.52	72.52	0.00	542440.40	592048.42		
4300.00	10.00	330.00	4288.34	140.65	-81.20	81.20	0.00	542455.44	592039.74		
4400.00	10.00	330.00	4386.82	155.69	-89.89	89.89	0.00	542470.48	592031.05		
4500.00	10.00	330.00	4485.30	170.73	-98.57	98.57	0.00	542485.52	592022.37		
4600.00	10.00	330.00	4583.78	185.76	-107.25	107.25	0.00	542500.55	592013.69		
4700.00	10.00	330.00	4682.26	200.80	-115.93	115.93	0.00	542515.59	592005.01		
4800.00	10.00	330.00	4780.74	215.84	-124.62	124.62	0.00	542530.63	591996.32		
4900.00	10.00	330.00	4879.22	230.88	-133.30	133.30	0.00	542545.67	591987.64		
5000.00	10.00	330.00	4977.70	245.92	-141.98	141.98	0.00	542560.71	591978.96		
5100.00	10.00	330.00	5076.18	260.96	-150.66	150.66	0.00	542575.75	591970.28		
5200.00	10.00	330.00	5174.66	276.00	-159.35	159.35	0.00	542590.79	591961.59		
5300.00	10.00	330.00	5273.15	291.03	-168.03	168.03	0.00	542605.82	591952.91		
5400.00	10.00	330.00	5371.63	306.07	-176.71	176.71	0.00	542620.86	591944.23		
5500.00	10.00	330.00	5470.11	321.11	-185.39	185.39	0.00	542635.90	591935.55		
5600.00	10.00	330.00	5568.59	336.15	-194.08	194.08	0.00	542650.94	591926.86		
5700.00	10.00	330.00	5667.07	351.19	-202.76	202.76	0.00	542665.98	591918.18		
5800.00	10.00	330.00	5765.55	366.23	-211.44	211.44	0.00	542681.02	591909.50		
5900.00	10.00	330.00	5864.03	381.26	-220.12	220.12	0.00	542696.05	591900.82		
6000.00	10.00	330.00	5962.51	396.30	-228.81	228.81	0.00	542711.09	591892.13		
6100.00	10.00	330.00	6060.99	411.34	-237.49	237.49	0.00	542726.13	591883.45		
6200.00	10.00	330.00	6159.47	426.38	-246.17	246.17	0.00	542741.17	591874.77		
6300.00	10.00	330.00	6257.95	441.42	-254.85	254.85	0.00	542756.21	591866.09		
6400.00	10.00	330.00	6356.43	456.46	-263.53	263.53	0.00	542771.25	591857.41		
6500.00	10.00	330.00	6454.91	471.49	-272.22	272.22	0.00	542786.28	591848.72		
6600.00	10.00	330.00	6553.40	486.53	-280.90	280.90	0.00	542801.32	591840.04		
6700.00	10.00	330.00	6651.88	501.57	-289.58	289.58	0.00	542816.36	591831.36		
6800.00	10.00	330.00	6750.36	516.61	-298.26	298.26	0.00	542831.40	591822.68		
6900.00	10.00	330.00	6848.84	531.65	-306.95	306.95	0.00	542846.44	591813.99		
7000.00	10.00	330.00	6947.32	546.69	-315.63	315.63	0.00	542861.48	591805.31		
7100.00	10.00	330.00	7045.80	561.72	-324.31	324.31	0.00	542876.51	591796.63		
7183.26	10.00	330.00	7127.79	574.24	-331.54	331.54	0.00	542889.03	591789.40		KOP
7200.00	10.92	322.30	7144.26	576.76	-333.24	333.24	10.00	542891.55	591787.70		
7300.00	18.73	296.78	7240.95	591.53	-353.41	353.41	10.00	542906.32	591767.53		

5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Kelly Bushing)										
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
7400.00	27.94	286.74	7332.71	605.54	-390.27	390.27	10.00	542920.33	591730.67	
7500.00	37.53	281.47	7416.75	618.38	-442.68	442.68	10.00	542933.17	591678.26	
7600.00	47.27	278.11	7490.51	629.64	-509.06	509.06	10.00	542944.43	591611.88	
7700.00	57.09	275.68	7551.76	639.00	-587.39	587.39	10.00	542953.79	591533.55	
7800.00	66.94	273.73	7598.64	646.17	-675.29	675.29	10.00	542960.96	591445.65	
7900.00	76.81	272.05	7629.71	650.92	-770.09	770.09	10.00	542965.71	591350.85	
8000.00	86.69	270.51	7644.04	653.11	-868.91	868.91	10.00	542967.90	591252.03	
8033.44	90.00	270.00	7645.00	653.26	-902.33	902.33	10.00	542968.05	591218.61	LP
8100.00	90.00	270.00	7645.00	653.27	-968.89	968.89	0.00	542968.06	591152.05	
8200.00	90.00	270.00	7645.00	653.27	-1068.89	1068.89	0.00	542968.06	591052.05	
8300.00	90.00	270.00	7645.00	653.28	-1168.89	1168.89	0.00	542968.07	590952.05	
8400.00	90.00	270.00	7645.00	653.29	-1268.89	1268.89	0.00	542968.08	590852.05	
8500.00	90.00	270.00	7645.00	653.29	-1368.89	1368.89	0.00	542968.08	590752.05	
8600.00	90.00	270.00	7645.00	653.30	-1468.89	1468.89	0.00	542968.09	590652.05	
8700.00	90.00	270.00	7645.00	653.31	-1568.89	1568.89	0.00	542968.10	590552.05	
8800.00	90.00	270.00	7645.00	653.31	-1668.89	1668.89	0.00	542968.10	590452.05	
8900.00	90.00	270.00	7645.00	653.32	-1768.89	1768.89	0.00	542968.11	590352.05	
9000.00	90.00	270.00	7645.00	653.33	-1868.89	1868.89	0.00	542968.12	590252.05	
9100.00	90.00	270.00	7645.00	653.33	-1968.89	1968.89	0.00	542968.12	590152.05	
9200.00	90.00	270.00	7645.00	653.34	-2068.89	2068.89	0.00	542968.13	590052.05	
9300.00	90.00	270.00	7645.00	653.35	-2168.89	2168.89	0.00	542968.14	589952.05	
9400.00	90.00	270.00	7645.00	653.35	-2268.89	2268.89	0.00	542968.14	589852.05	
9500.00	90.00	270.00	7645.00	653.36	-2368.89	2368.89	0.00	542968.15	589752.05	
9600.00	90.00	270.00	7645.00	653.37	-2468.89	2468.89	0.00	542968.16	589652.05	
9700.00	90.00	270.00	7645.00	653.37	-2568.89	2568.89	0.00	542968.16	589552.05	
9800.00	90.00	270.00	7645.00	653.38	-2668.89	2668.89	0.00	542968.17	589452.05	
9900.00	90.00	270.00	7645.00	653.39	-2768.89	2768.89	0.00	542968.18	589352.05	
10000.00	90.00	270.00	7645.00	653.40	-2868.89	2868.89	0.00	542968.19	589252.05	
10100.00	90.00	270.00	7645.00	653.40	-2968.89	2968.89	0.00	542968.19	589152.05	
10200.00	90.00	270.00	7645.00	653.41	-3068.89	3068.89	0.00	542968.20	589052.05	
10300.00	90.00	270.00	7645.00	653.42	-3168.89	3168.89	0.00	542968.21	588952.05	
10400.00	90.00	270.00	7645.00	653.42	-3268.89	3268.89	0.00	542968.21	588852.05	
10500.00	90.00	270.00	7645.00	653.43	-3368.89	3368.89	0.00	542968.22	588752.05	
10600.00	90.00	270.00	7645.00	653.44	-3468.89	3468.89	0.00	542968.23	588652.05	
10700.00	90.00	270.00	7645.00	653.44	-3568.89	3568.89	0.00	542968.23	588552.05	
10800.00	90.00	270.00	7645.00	653.45	-3668.89	3668.89	0.00	542968.24	588452.05	
10900.00	90.00	270.00	7645.00	653.46	-3768.89	3768.89	0.00	542968.25	588352.05	
11000.00	90.00	270.00	7645.00	653.46	-3868.89	3868.89	0.00	542968.25	588252.05	
11100.00	90.00	270.00	7645.00	653.47	-3968.89	3968.89	0.00	542968.26	588152.05	
11200.00	90.00	270.00	7645.00	653.48	-4068.89	4068.89	0.00	542968.27	588052.05	
11300.00	90.00	270.00	7645.00	653.48	-4168.89	4168.89	0.00	542968.27	587952.05	
11400.00	90.00	270.00	7645.00	653.49	-4268.89	4268.89	0.00	542968.28	587852.05	
11500.00	90.00	270.00	7645.00	653.50	-4368.89	4368.89	0.00	542968.29	587752.05	
11600.00	90.00	270.00	7645.00	653.50	-4468.89	4468.89	0.00	542968.29	587652.05	
11700.00	90.00	270.00	7645.00	653.51	-4568.89	4568.89	0.00	542968.30	587552.05	
11800.00	90.00	270.00	7645.00	653.52	-4668.89	4668.89	0.00	542968.31	587452.05	
11900.00	90.00	270.00	7645.00	653.53	-4768.89	4768.89	0.00	542968.32	587352.05	
12000.00	90.00	270.00	7645.00	653.53	-4868.89	4868.89	0.00	542968.32	587252.05	
12100.00	90.00	270.00	7645.00	653.54	-4968.89	4968.89	0.00	542968.33	587152.05	
12200.00	90.00	270.00	7645.00	653.55	-5068.89	5068.89	0.00	542968.34	587052.05	
12263.08	90.00	270.00	7645.00	653.55	-5131.97	5131.97	0.00	542968.34	586988.97	PBHL 9H

5D Anti-Collision Report**Devon Energy****Field Name:** *Eddy Co, NM (Nad 83 NME)***Site Name:** *Cedar 11 State 2H, Cerf 10 State 9H Pad***Well Name:** *Cerf 10 State 9H*

15 September 2014





Weatherford

Cerf 10 State 9H

Field Name Eddy Co, NM (Nad 83 NME)	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 Cedar 11 State 2H, Cerf 10 State 9H Pad	Units : US ft	North Reference : Grid	Convergence Angle : 0.09	
	Position	Northing : 542315.08 US ft	Latitude : 32° 29' 26.80"	
		Easting : 592170.93 US ft	Longitude : -104° 10' 6.47"	
	Elevation above Mean Sea Level: 3285.00 US ft			
Comment :				
Slot Name Cerf 10 State 9H	Position (Offsets relative to Site Centre)			
	+N / -S : -0.29 US ft	Northing : 542314.79 US ft	Latitude : 32° 29' 26.80"	
	+E / -W : -49.99 US ft	Easting : 592120.94 US ft	Longitude : -104° 10' 7.05"	
	Slot TVD Reference : Ground Elevation			
Elevation above Mean Sea Level : 3284.00 US ft				
Comment :				
Well Name Cerf 10 State 9H	Type : Main well		UWI :	Plan : Working Plan
	Rig Height Kelly Bushing : 25.00 US ft		Comment :	
	Relative to Mean Sea Level: 3309.00 US ft			
	Closure Distance : 5173.42 US ft		Closure Azimuth : 277.257°	
	Vertical Section (Position of Origin Relative to Slot)			
	+N / -S : 0.00 US ft		+E / -W : 0.00 US ft	Az : 270.00°
	Magnetic Parameters			
	Model : BGGM	Field Strength : 48309.0nT	Dec : 7.61°	Dip : 60.23° Date : 28/Feb/2015

Collision / Uncertainty Analysis

Primary Well	Start MD (US ft)	End MD (US ft)	Collision Risk Interval	No. of Std Deviations in Error Computation
Cerf 10 State 9H (p)	0.00	12263.08	100.00	2

Secondary Well Names

Cerf 10 State 7H (p)
Cedar 11 State 2H (p)
Cedar 11 State 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 Pedal Curve (Independent Uncertainty), Well path created using minimum curvature.

5D Anti-Collision Report

Anti-Collision Proximity Summary (TVD Relative to Kelly Bushing)

Secondary Well Name	Pri MD (US ft)	Sec MD (US ft)	TVD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
Cedar 11 State 2H (p)	1757.23	1756.90	1757.23	53.26	44.09	5.81	
Cedar 11 State 1H (p)	3894.14	3871.08	3888.64	157.22	138.48	8.39	
Cerf 10 State 7H (p)	6628.32	6694.59	6581.29	299.78	265.71	8.80	

Primary Well: Cerf 10 State 9H (p) (TVD Relative to Kelly Bushing; 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	89.67	0.00	0.00	Cedar 11 State 2H (p)	49.99	48.46	32.58	
100.00	100.00	89.67	0.11	0.11	Cedar 11 State 2H (p)	49.99	48.24	28.57	
200.00	200.00	89.67	0.34	0.34	Cedar 11 State 2H (p)	49.99	47.79	22.74	
300.00	300.00	89.67	0.56	0.56	Cedar 11 State 2H (p)	49.99	47.34	18.88	
400.00	400.00	89.67	0.79	0.79	Cedar 11 State 2H (p)	49.99	46.89	16.14	
500.00	500.00	89.67	1.01	1.01	Cedar 11 State 2H (p)	49.99	46.44	14.10	
600.00	600.00	89.67	1.24	1.24	Cedar 11 State 2H (p)	49.99	45.99	12.51	
700.00	700.00	89.67	1.46	1.46	Cedar 11 State 2H (p)	49.99	45.55	11.25	
800.00	800.00	89.67	1.69	1.69	Cedar 11 State 2H (p)	49.99	45.10	10.21	
900.00	900.00	89.67	1.91	1.91	Cedar 11 State 2H (p)	49.99	44.65	9.35	
1000.00	1000.00	89.67	2.14	2.14	Cedar 11 State 2H (p)	49.99	44.20	8.63	
1100.00	1100.00	89.67	2.36	2.36	Cedar 11 State 2H (p)	49.99	43.75	8.01	
1200.00	1200.00	89.67	2.59	2.59	Cedar 11 State 2H (p)	49.99	43.30	7.47	
1300.00	1300.00	89.67	2.81	2.81	Cedar 11 State 2H (p)	49.99	42.85	7.00	
1400.00	1400.00	89.67	3.03	3.03	Cedar 11 State 2H (p)	49.99	42.40	6.58	
1500.00	1500.00	89.67	3.26	3.26	Cedar 11 State 2H (p)	49.99	41.95	6.22	
1600.00	1600.00	88.73	3.48	3.48	Cedar 11 State 2H (p)	50.48	42.00	5.95	
1700.00	1700.00	86.21	3.71	3.71	Cedar 11 State 2H (p)	51.93	43.02	5.83	
1800.00	1800.00	82.36	3.93	3.93	Cedar 11 State 2H (p)	54.52	45.16	5.83	
1900.00	1900.00	77.61	4.16	4.16	Cedar 11 State 2H (p)	58.48	48.69	5.97	
2000.00	2000.00	72.44	4.38	4.38	Cedar 11 State 2H (p)	64.07	53.83	6.26	
2100.00	2100.00	67.30	4.61	4.61	Cedar 11 State 2H (p)	71.46	60.79	6.70	
2200.00	2200.00	62.49	4.83	4.83	Cedar 11 State 2H (p)	80.76	69.66	7.27	
2300.00	2300.00	58.19	5.06	5.06	Cedar 11 State 2H (p)	92.02	80.48	7.98	
2400.00	2400.00	54.47	5.28	5.28	Cedar 11 State 2H (p)	105.22	93.26	8.80	
2500.00	2500.00	51.30	5.51	5.51	Cedar 11 State 2H (p)	120.34	107.94	9.70	
2600.00	2600.00	48.67	5.73	5.73	Cedar 11 State 2H (p)	136.69	123.85	10.64	
2700.00	2700.00	46.59	5.96	5.96	Cedar 11 State 2H (p)	153.26	139.97	11.53	
2800.00	2800.00	18.21	6.18	6.18	Cedar 11 State 1H (p)	158.18	144.31	11.40	
2900.00	2900.00	48.24	6.41	6.41	Cedar 11 State 1H (p)	158.12	143.80	11.04	

SD Anti-Collision Report

Primary Well: Cerf 10 State 9H (p) (TVD Relative to Kelly Bushing; 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
3000.00	2999.99	48.65	6.63	6.62	Cedar 11 State 1H (p)	157.14	142.38	10.64	
3100.00	3099.93	49.55	6.85	6.84	Cedar 11 State 1H (p)	155.05	139.86	10.21	
3200.00	3199.81	50.83	7.07	7.06	Cedar 11 State 1H (p)	152.78	137.14	9.77	
3300.00	3299.59	52.41	7.29	7.27	Cedar 11 State 1H (p)	151.10	135.02	9.40	
3400.00	3399.23	54.29	7.52	7.48	Cedar 11 State 1H (p)	150.07	133.54	9.08	
3500.00	3498.71	56.45	7.75	7.69	Cedar 11 State 1H (p)	149.77	132.81	8.83	
3600.00	3597.99	58.85	7.99	7.90	Cedar 11 State 1H (p)	150.27	132.86	8.63	
3700.00	3697.06	61.46	8.23	8.10	Cedar 11 State 1H (p)	151.66	133.82	8.50	
3800.00	3795.87	64.24	8.49	8.31	Cedar 11 State 1H (p)	154.02	135.73	8.42	
3900.00	3894.41	67.09	8.76	8.53	Cedar 11 State 1H (p)	157.46	138.69	8.39	
4000.00	3992.90	69.59	9.03	8.76	Cedar 11 State 1H (p)	162.46	143.20	8.44	
4100.00	4091.38	71.55	9.32	8.98	Cedar 11 State 1H (p)	169.01	149.27	8.56	
4200.00	4189.86	73.15	9.61	9.21	Cedar 11 State 1H (p)	176.58	156.28	8.70	
4300.00	4288.34	74.61	9.90	9.45	Cedar 11 State 1H (p)	184.29	163.43	8.83	
4400.00	4386.82	75.95	10.21	9.68	Cedar 11 State 1H (p)	192.12	170.68	8.96	
4500.00	4485.30	77.19	10.52	9.92	Cedar 11 State 1H (p)	200.04	178.03	9.09	
4600.00	4583.78	78.34	10.83	10.16	Cedar 11 State 1H (p)	208.05	185.45	9.21	
4700.00	4682.26	79.40	11.15	10.40	Cedar 11 State 1H (p)	216.13	192.95	9.33	
4800.00	4780.74	80.38	11.47	10.64	Cedar 11 State 1H (p)	224.28	200.51	9.44	
4900.00	4879.22	81.29	11.79	10.88	Cedar 11 State 1H (p)	232.49	208.11	9.54	
5000.00	4977.70	82.14	12.12	11.12	Cedar 11 State 1H (p)	240.76	215.76	9.63	
5100.00	5076.18	82.94	12.45	11.36	Cedar 11 State 1H (p)	249.08	223.43	9.71	
5200.00	5174.66	83.68	12.79	11.60	Cedar 11 State 1H (p)	257.44	231.14	9.79	
5300.00	5273.15	84.38	13.12	11.84	Cedar 11 State 1H (p)	265.84	238.88	9.86	
5400.00	5371.63	85.03	13.46	12.09	Cedar 11 State 1H (p)	274.28	246.66	9.93	
5500.00	5470.11	85.65	13.81	12.33	Cedar 11 State 1H (p)	282.75	254.47	10.00	
5600.00	5568.59	86.23	14.15	12.57	Cedar 11 State 1H (p)	291.25	262.31	10.07	
5700.00	5667.07	86.77	14.50	12.82	Cedar 11 State 1H (p)	299.78	270.18	10.13	
5800.00	5765.55	87.29	14.84	13.06	Cedar 11 State 1H (p)	308.34	278.07	10.19	
5900.00	5864.03	87.78	15.19	13.31	Cedar 11 State 1H (p)	316.91	285.98	10.24	
6000.00	5962.51	88.24	15.55	13.55	Cedar 11 State 1H (p)	325.51	293.91	10.30	
6100.00	6060.99	88.68	15.90	13.80	Cedar 11 State 1H (p)	334.13	301.86	10.35	
6200.00	6159.47	89.09	16.25	14.05	Cedar 11 State 1H (p)	342.77	309.82	10.40	
6300.00	6257.95	89.49	16.61	14.29	Cedar 11 State 1H (p)	351.43	317.80	10.45	
6400.00	6356.43	56.46	16.97	14.54	Cerf 10 State 7H (p)	344.30	311.06	10.36	
6500.00	6454.91	45.40	17.32	14.79	Cerf 10 State 7H (p)	318.47	284.91	9.49	

5D Anti-Collision Report

Primary Well: Cerf 10 State 9H (p) (TVD Relative to Kelly Bushing; 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
6600.00	6553.40	34.66	17.68	15.04	Cerf 10 State 7H (p)	301.53	267.43	8.84	
6700.00	6651.88	25.58	18.04	15.28	Cerf 10 State 7H (p)	303.11	269.44	9.00	
6800.00	6750.36	18.43	18.40	15.53	Cerf 10 State 7H (p)	327.54	295.42	10.20	
6900.00	6848.84	91.50	18.77	15.78	Cedar 11 State 1H (p)	403.66	365.92	10.70	
7000.00	6947.32	91.79	19.13	16.03	Cedar 11 State 1H (p)	412.41	373.97	10.73	
7100.00	7045.80	92.07	19.49	16.28	Cedar 11 State 1H (p)	421.16	382.02	10.76	
7200.00	7144.26	99.84	19.85	16.50	Cedar 11 State 1H (p)	430.15	390.29	10.79	
7300.00	7240.95	124.64	19.97	16.58	Cedar 11 State 1H (p)	449.18	408.58	11.06	
7400.00	7332.71	133.20	20.09	16.49	Cedar 11 State 1H (p)	486.66	445.59	11.85	
7500.00	7416.75	135.80	20.23	16.04	Cedar 11 State 1H (p)	544.80	503.49	13.19	
7600.00	7490.51	134.14	20.62	15.22	Cedar 11 State 1H (p)	619.44	577.88	14.90	
7700.00	7551.76	126.70	21.27	14.17	Cedar 11 State 1H (p)	705.85	664.17	16.93	
7800.00	7598.64	107.79	22.33	12.92	Cedar 11 State 1H (p)	799.49	757.57	19.07	
7900.00	7629.71	70.68	23.69	11.70	Cedar 11 State 1H (p)	896.37	854.26	21.29	
8000.00	7644.04	36.44	25.36	10.96	Cedar 11 State 1H (p)	993.15	950.85	23.48	
8100.00	7645.00	28.55	27.22	10.98	Cedar 11 State 1H (p)	1088.20	1045.67	25.59	
8200.00	7645.00	27.73	29.20	11.32	Cedar 11 State 1H (p)	1183.69	1141.01	27.74	
8300.00	7645.00	27.02	31.42	11.70	Cedar 11 State 1H (p)	1279.73	1236.97	29.93	
8400.00	7645.00	26.40	33.69	12.10	Cedar 11 State 1H (p)	1376.23	1333.38	32.12	
8500.00	7645.00	8.41	36.00	12.54	Cerf 10 State 7H (p)	1025.04	994.89	34.00	
8600.00	7645.00	8.41	38.34	13.00	Cerf 10 State 7H (p)	1025.04	993.63	32.64	
8700.00	7645.00	8.41	40.72	13.48	Cerf 10 State 7H (p)	1025.04	992.33	31.34	
8800.00	7645.00	8.41	43.14	13.97	Cerf 10 State 7H (p)	1025.04	991.01	30.12	
8900.00	7645.00	8.41	45.58	14.47	Cerf 10 State 7H (p)	1025.03	989.62	28.95	
9000.00	7645.00	8.41	48.12	15.03	Cerf 10 State 7H (p)	1025.03	988.30	27.90	
9100.00	7645.00	8.41	50.69	15.60	Cerf 10 State 7H (p)	1025.03	986.88	26.86	
9200.00	7645.00	8.41	53.27	16.17	Cerf 10 State 7H (p)	1025.03	985.55	25.96	
9300.00	7645.00	8.41	55.88	16.70	Cerf 10 State 7H (p)	1025.03	984.17	25.09	
9400.00	7645.00	8.41	58.49	17.34	Cerf 10 State 7H (p)	1025.03	982.58	24.14	
9500.00	7645.00	8.41	61.11	17.94	Cerf 10 State 7H (p)	1025.03	981.16	23.36	
9600.00	7645.00	8.41	63.75	18.53	Cerf 10 State 7H (p)	1025.03	979.67	22.60	
9700.00	7645.00	8.41	66.39	19.19	Cerf 10 State 7H (p)	1025.03	978.14	21.86	
9800.00	7645.00	8.41	69.04	19.75	Cerf 10 State 7H (p)	1025.03	976.68	21.20	
9900.00	7645.00	8.41	71.70	20.46	Cerf 10 State 7H (p)	1025.03	975.25	20.59	
10000.00	7645.00	8.41	74.37	21.08	Cerf 10 State 7H (p)	1025.03	973.68	19.96	
10100.00	7645.00	8.41	77.04	21.70	Cerf 10 State 7H (p)	1025.03	972.12	19.37	

5D Anti-Collision Report

Primary Well: Cerf 10 State 9H (p) (TVD Relative to Kelly Bushing; 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
10200.00	7645.00	8.41	79.72	22.40	Cerf 10 State 7H (p)	1025.03	970.58	18.82	
10300.00	7645.00	8.41	82.40	23.06	Cerf 10 State 7H (p)	1025.03	969.07	18.32	
10400.00	7645.00	8.41	85.09	23.69	Cerf 10 State 7H (p)	1025.03	967.46	17.80	
10500.00	7645.00	8.41	87.78	24.31	Cerf 10 State 7H (p)	1025.03	965.85	17.32	
10600.00	7645.00	8.41	90.47	25.03	Cerf 10 State 7H (p)	1025.03	964.26	16.87	
10700.00	7645.00	8.41	93.17	25.73	Cerf 10 State 7H (p)	1025.03	962.68	16.44	
10800.00	7645.00	8.41	95.87	26.42	Cerf 10 State 7H (p)	1025.03	961.10	16.03	
10900.00	7645.00	8.41	98.57	27.10	Cerf 10 State 7H (p)	1025.03	959.53	15.65	
11000.00	7645.00	8.41	101.28	27.78	Cerf 10 State 7H (p)	1025.03	957.96	15.28	
11100.00	7645.00	8.41	103.99	28.46	Cerf 10 State 7H (p)	1025.03	956.38	14.93	
11200.00	7645.00	8.41	106.70	29.13	Cerf 10 State 7H (p)	1025.03	954.80	14.60	
11300.00	7645.00	8.41	109.41	29.81	Cerf 10 State 7H (p)	1025.03	953.23	14.28	
11400.00	7645.00	8.41	112.13	30.49	Cerf 10 State 7H (p)	1025.03	951.65	13.97	
11500.00	7645.00	8.41	114.85	31.17	Cerf 10 State 7H (p)	1025.03	950.06	13.67	
11600.00	7645.00	8.41	117.57	31.85	Cerf 10 State 7H (p)	1025.03	948.44	13.38	
11700.00	7645.00	8.41	120.29	32.53	Cerf 10 State 7H (p)	1025.03	946.82	13.11	
11800.00	7645.00	8.41	123.01	33.21	Cerf 10 State 7H (p)	1025.03	945.20	12.84	
11900.00	7645.00	8.41	125.73	33.90	Cerf 10 State 7H (p)	1025.03	943.58	12.58	
12000.00	7645.00	8.41	128.46	34.62	Cerf 10 State 7H (p)	1025.03	941.95	12.34	
12100.00	7645.00	8.41	131.18	35.33	Cerf 10 State 7H (p)	1025.03	940.33	12.10	
12200.00	7645.00	8.41	133.91	36.04	Cerf 10 State 7H (p)	1025.03	938.70	11.87	
12263.08	7645.00	8.41	135.63	36.49	Cerf 10 State 7H (p)	1025.03	937.68	11.73	

Secondary Well: Cerf 10 State 7H (p) (TVD Relative to Kelly Bushing (Primary); All Azimuth Relative to GRID/NORTH)									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
0.00	1.00	0.00	359.78	0.00	0.00	149.97	148.45	98.35	
100.00	100.00	99.00	359.78	0.11	0.11	149.97	148.23	85.94	
200.00	200.00	199.00	359.78	0.34	0.34	149.97	147.78	68.37	
300.00	300.00	299.00	359.78	0.56	0.56	149.97	147.33	56.74	
400.00	400.00	399.00	359.78	0.78	0.78	149.97	146.88	48.50	
500.00	500.00	499.00	359.78	1.01	1.01	149.97	146.43	42.34	
600.00	600.00	599.00	359.78	1.23	1.23	149.97	145.98	37.57	
700.00	700.00	699.00	359.78	1.46	1.46	149.97	145.53	33.77	
800.00	800.00	799.00	359.78	1.68	1.68	149.97	145.08	30.67	
900.00	900.00	899.00	359.78	1.91	1.91	149.97	144.63	28.08	
1000.00	1000.00	999.00	359.78	2.13	2.13	149.97	144.18	25.90	
1100.00	1100.00	1099.00	359.78	2.36	2.36	149.97	143.73	24.04	
1200.00	1200.00	1199.00	359.78	2.58	2.58	149.97	143.28	22.42	
1300.00	1300.00	1299.00	359.78	2.81	2.81	149.97	142.83	21.01	
1400.00	1400.00	1399.00	359.78	3.03	3.03	149.97	142.38	19.76	
1500.00	1500.00	1499.00	359.78	3.26	3.26	149.97	141.93	18.66	
1600.00	1600.00	1599.00	359.78	3.48	3.48	149.97	141.48	17.67	
1700.00	1700.00	1699.00	359.78	3.71	3.71	149.97	141.03	16.78	
1800.00	1800.00	1799.00	359.78	3.93	3.93	149.97	140.58	15.98	

5D Anti-Collision Report

Secondary Well : Cerr 10 State 7H (p) (TVD Relative to Kelly Bushing (Primary)) : All Azimuth Relative to GRID (NORTH)									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S Major (US ft)	S Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
1900.00	1900.00	1899.00	359.78	4.16	4.16	149.97	140.14	15.25	
2000.00	2000.00	1999.00	359.78	4.38	4.38	149.97	139.69	14.58	
2100.00	2100.00	2099.00	359.78	4.61	4.61	149.97	139.24	13.97	
2200.00	2200.00	2199.00	359.78	4.83	4.83	149.97	138.79	13.41	
2300.00	2300.00	2299.00	359.78	5.06	5.06	149.97	138.34	12.89	
2400.00	2400.00	2399.00	359.78	5.28	5.28	149.97	137.89	12.41	
2500.00	2498.08	2497.08	359.78	5.50	5.50	150.45	137.93	12.02	
2600.00	2595.46	2594.49	359.79	5.72	5.72	152.57	139.62	11.78	
2700.00	2692.69	2691.79	359.79	5.94	5.93	156.40	143.01	11.68	
2800.00	2789.69	2788.94	359.80	6.15	6.14	161.92	148.10	11.72	
2900.00	2886.39	2885.89	29.81	6.37	6.35	169.04	154.78	11.86	
3000.00	2982.79	2982.67	30.01	6.60	6.56	176.67	162.00	12.04	
3100.00	3078.88	3079.31	30.45	6.82	6.77	184.48	169.40	12.23	
3200.00	3174.63	3175.79	31.11	7.05	6.97	192.49	177.02	12.44	
3300.00	3270.00	3272.10	31.94	7.29	7.18	200.73	184.86	12.65	
3400.00	3364.96	3368.23	32.93	7.54	7.39	209.23	192.92	12.83	
3500.00	3460.99	3465.69	34.07	7.81	7.61	217.87	201.11	13.00	
3600.00	3559.05	3565.26	35.40	8.09	7.83	225.46	208.26	13.11	
3700.00	3657.14	3664.87	36.90	8.37	8.06	231.77	214.08	13.10	
3800.00	3755.25	3764.49	38.58	8.67	8.30	236.88	218.70	13.03	
3900.00	3853.34	3864.10	40.46	8.97	8.53	240.95	222.28	12.91	
4000.00	3951.42	3963.69	42.34	9.27	8.77	244.98	225.83	12.79	
4100.00	4049.51	4063.29	44.17	9.58	9.01	249.28	229.61	12.67	
4200.00	4147.59	4162.88	45.93	9.90	9.25	253.82	233.61	12.56	
4300.00	4245.67	4262.48	47.63	10.22	9.49	258.59	237.85	12.47	
4400.00	4343.76	4362.08	49.26	10.54	9.73	263.58	242.29	12.38	
4500.00	4441.84	4461.67	50.84	10.87	9.97	268.78	246.93	12.30	
4600.00	4539.92	4561.27	52.35	11.20	10.22	274.18	251.75	12.23	
4700.00	4638.00	4660.86	53.80	11.53	10.46	279.76	256.72	12.14	
4800.00	4736.09	4760.46	55.20	11.87	10.70	285.51	261.87	12.08	
4900.00	4834.17	4860.06	56.54	12.21	10.95	291.43	267.18	12.02	
5000.00	4932.25	4959.65	57.83	12.55	11.19	297.49	272.65	11.97	
5100.00	5030.34	5059.25	59.07	12.89	11.44	303.71	278.27	11.94	
5200.00	5128.42	5158.84	60.25	13.24	11.68	310.06	283.99	11.90	
5300.00	5226.50	5258.44	61.39	13.58	11.93	316.53	289.81	11.85	
5400.00	5324.58	5358.04	62.48	13.93	12.18	323.13	295.73	11.79	
5500.00	5422.67	5457.63	63.53	14.28	12.42	329.84	301.77	11.75	
5600.00	5520.75	5557.23	64.54	14.63	12.67	336.65	307.91	11.71	
5700.00	5618.83	5656.82	65.50	14.98	12.92	343.57	314.16	11.68	
5800.00	5716.92	5756.42	66.43	15.34	13.16	350.57	320.51	11.66	
5900.00	5815.00	5856.02	67.32	15.69	13.41	357.67	326.94	11.64	
6000.00	5913.08	5955.61	68.18	16.05	13.66	364.85	333.46	11.62	
6100.00	6011.16	6055.21	69.00	16.40	13.91	372.11	340.06	11.61	
6200.00	6140.49	6186.74	69.47	16.72	14.23	377.61	344.72	11.48	
6300.00	6297.41	6352.94	65.31	16.32	14.51	367.50	334.33	11.08	
6400.00	6414.26	6491.81	56.46	15.80	14.27	344.30	311.06	10.36	
6500.00	6490.08	6597.78	45.40	16.08	13.18	318.47	284.91	9.49	
6600.00	6537.08	6676.29	34.66	16.59	12.23	301.53	267.43	8.84	
6700.00	6566.39	6734.77	25.58	17.10	11.48	303.11	269.44	9.00	
6800.00	6585.18	6779.15	18.43	17.56	10.84	327.54	295.42	10.20	
6900.00	6597.63	6813.61	12.91	17.98	10.44	372.77	342.77	12.43	
7000.00	6606.14	6840.95	8.64	18.35	10.14	433.63	405.77	15.56	
7100.00	6612.14	6863.08	5.30	18.62	9.89	505.24	479.06	19.30	
7200.00	6616.49	6881.43	8.18	18.84	9.74	583.99	559.10	23.47	
7300.00	6620.71	6902.07	19.74	19.14	9.55	664.17	640.17	27.67	
7400.00	6624.83	6926.88	18.96	19.58	9.34	741.29	717.87	31.66	
7500.00	6628.22	6954.81	16.31	20.04	9.22	813.18	790.14	35.29	
7600.00	6630.39	6985.08	13.87	20.51	9.08	878.26	855.37	38.37	

5D Anti-Collision Report

Secondary Well: Cerr 10 State 7H (p) (TVD Relative to Kelly Bushing (Primary)); All Azimuth Relative to GRID NORTH									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S Major (US ft)	S Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
7700.00	6631.00	7025.51	11.81	21.15	9.12	935.30	912.32	40.70	
7800.00	6631.00	7113.41	9.94	22.91	9.43	980.30	956.89	41.86	
7900.00	6631.00	7208.21	8.89	24.81	9.80	1010.26	986.23	42.04	
8000.00	6631.00	7307.02	8.44	26.98	10.22	1024.10	999.29	41.26	
8100.00	6631.00	7407.00	8.42	29.29	10.68	1025.04	999.28	39.80	
8200.00	6631.00	7507.00	8.42	31.65	11.17	1025.04	998.27	38.30	
8300.00	6631.00	7607.00	8.42	34.04	11.68	1025.04	997.20	36.82	
8400.00	6631.00	7707.00	8.41	36.46	12.21	1025.04	996.08	35.40	
8500.00	6631.00	7807.00	8.41	38.92	12.78	1025.04	994.89	34.00	
8600.00	6631.00	7907.00	8.41	41.42	13.37	1025.04	993.63	32.64	
8700.00	6631.00	8007.00	8.41	44.00	13.97	1025.04	992.33	31.34	
8800.00	6631.00	8107.00	8.41	46.61	14.57	1025.04	991.01	30.12	
8900.00	6631.00	8207.00	8.41	49.23	15.15	1025.03	989.62	28.95	
9000.00	6631.00	8307.00	8.41	51.86	15.82	1025.03	988.30	27.90	
9100.00	6631.00	8407.00	8.41	54.50	16.45	1025.03	986.88	26.86	
9200.00	6631.00	8507.00	8.41	57.15	17.09	1025.03	985.55	25.96	
9300.00	6631.00	8607.00	8.41	59.81	17.74	1025.03	984.17	25.09	
9400.00	6631.00	8707.00	8.41	62.48	18.36	1025.03	982.58	24.14	
9500.00	6631.00	8807.00	8.41	65.15	19.05	1025.03	981.16	23.36	
9600.00	6631.00	8907.00	8.41	67.83	19.67	1025.03	979.67	22.60	
9700.00	6631.00	9007.00	8.41	70.52	20.39	1025.03	978.14	21.86	
9800.00	6631.00	9107.00	8.41	73.21	21.07	1025.03	976.68	21.20	
9900.00	6631.00	9207.00	8.41	75.90	21.74	1025.03	975.25	20.59	
10000.00	6631.00	9307.00	8.41	78.60	22.40	1025.03	973.68	19.96	
10100.00	6631.00	9407.00	8.41	81.31	23.06	1025.03	972.12	19.37	
10200.00	6631.00	9507.00	8.41	84.01	23.73	1025.03	970.58	18.82	
10300.00	6631.00	9607.00	8.41	86.72	24.41	1025.03	969.07	18.32	
10400.00	6631.00	9707.00	8.41	89.43	25.12	1025.03	967.46	17.80	
10500.00	6631.00	9807.00	8.41	92.15	25.83	1025.03	965.85	17.32	
10600.00	6631.00	9907.00	8.41	94.86	26.53	1025.03	964.26	16.87	
10700.00	6631.00	10007.00	8.41	97.58	27.24	1025.03	962.68	16.44	
10800.00	6631.00	10107.00	8.41	100.30	27.95	1025.03	961.10	16.03	
10900.00	6631.00	10207.00	8.41	103.03	28.65	1025.03	959.53	15.65	
11000.00	6631.00	10307.00	8.41	105.75	29.36	1025.03	957.96	15.28	
11100.00	6631.00	10407.00	8.41	108.47	30.07	1025.03	956.38	14.93	
11200.00	6631.00	10507.00	8.41	111.20	30.78	1025.03	954.80	14.60	
11300.00	6631.00	10607.00	8.41	113.93	31.49	1025.03	953.23	14.28	
11400.00	6631.00	10707.00	8.41	116.66	32.20	1025.03	951.65	13.97	
11500.00	6631.00	10807.00	8.41	119.39	32.91	1025.03	950.06	13.67	
11600.00	6631.00	10907.00	8.41	122.12	33.63	1025.03	948.44	13.38	
11700.00	6631.00	11007.00	8.41	124.85	34.34	1025.03	946.82	13.11	
11800.00	6631.00	11107.00	8.41	127.59	35.05	1025.03	945.20	12.84	
11900.00	6631.00	11207.00	8.41	130.32	35.77	1025.03	943.58	12.58	
12000.00	6631.00	11307.00	8.41	133.06	36.48	1025.03	941.95	12.34	
12100.00	6631.00	11407.00	8.41	135.79	37.20	1025.03	940.33	12.10	
12200.00	6631.00	11507.00	8.41	138.53	37.91	1025.03	938.70	11.87	
12263.08	6631.00	11569.49	8.41	140.24	38.36	1025.03	937.68	11.73	

Secondary Well: Cedar 11 State 2H (p) (TVD Relative to Kelly Bushing (Primary)); All Azimuth Relative to GRID NORTH									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S Major (US ft)	S Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
0.00	0.00	1.00	89.67	0.01	0.01	49.99	48.46	32.58	
100.00	100.00	101.00	89.67	0.12	0.12	49.99	48.24	28.57	
200.00	200.00	201.00	89.67	0.34	0.34	49.99	47.79	22.74	
300.00	300.00	301.00	89.67	0.56	0.56	49.99	47.34	18.88	
400.00	400.00	401.00	89.67	0.79	0.79	49.99	46.89	16.14	
500.00	500.00	501.00	89.67	1.01	1.01	49.99	46.44	14.10	
600.00	600.00	601.00	89.67	1.24	1.24	49.99	45.99	12.51	
700.00	700.00	701.00	89.67	1.46	1.46	49.99	45.55	11.25	

SD Anti-Collision Report

Secondary Well: Cedar 11 State 2H(p) (TVD Relative to Kelly Bushing (Primary)); All Azimuth Relative to GRID NORTH									
Pri. MD (US ft)	TVD (US ft)	Sec. MD (US ft)	T. Face to Sec. (°)	S. Major (US ft)	S. Minor (US ft)	GC (US ft)	ES (US ft)	SF	Risk
800.00	800.00	801.00	89.67	1.69	1.69	49.99	45.10	10.21	
900.00	900.00	901.00	89.67	1.91	1.91	49.99	44.65	9.35	
1000.00	1000.00	1001.00	89.67	2.14	2.14	49.99	44.20	8.63	
1100.00	1100.00	1101.00	89.67	2.36	2.36	49.99	43.75	8.01	
1200.00	1200.00	1201.00	89.67	2.59	2.59	49.99	43.30	7.47	
1300.00	1300.00	1301.00	89.67	2.81	2.81	49.99	42.85	7.00	
1400.00	1400.00	1401.00	89.67	3.04	3.04	49.99	42.40	6.58	
1500.00	1499.98	1500.98	89.67	3.26	3.26	49.99	41.95	6.22	
1600.00	1599.52	1600.53	88.73	3.48	3.48	50.48	42.00	5.95	
1700.00	1698.97	1700.01	86.21	3.70	3.70	51.93	43.02	5.83	
1800.00	1798.24	1799.38	82.36	3.92	3.91	54.52	45.16	5.83	
1900.00	1897.23	1898.56	77.61	4.15	4.13	58.48	48.69	5.97	
2000.00	1995.86	1997.50	72.44	4.37	4.34	64.07	53.83	6.26	
2100.00	2094.04	2096.14	67.30	4.60	4.56	71.46	60.79	6.70	
2200.00	2191.70	2194.43	62.49	4.84	4.77	80.76	69.66	7.27	
2300.00	2288.74	2292.30	58.19	5.09	4.99	92.02	80.48	7.98	
2400.00	2385.09	2389.71	54.47	5.36	5.21	105.22	93.26	8.80	
2500.00	2480.67	2486.60	51.30	5.63	5.43	120.34	107.94	9.70	
2600.00	2577.48	2584.90	48.67	5.92	5.65	136.69	123.85	10.64	
2700.00	2674.46	2683.38	46.59	6.22	5.88	153.26	139.97	11.53	
2800.00	2771.45	2781.86	44.92	6.53	6.11	170.00	156.26	12.38	
2900.00	2868.44	2880.35	73.52	6.85	6.34	186.82	172.61	13.15	
3000.00	2965.54	2978.94	72.62	7.17	6.58	203.31	188.65	13.86	
3100.00	3062.75	3077.65	72.27	7.50	6.82	219.32	204.19	14.49	
3200.00	3160.03	3176.44	72.36	7.83	7.06	234.80	219.23	15.08	
3300.00	3257.37	3275.28	72.81	8.16	7.30	249.77	233.72	15.56	
3400.00	3354.73	3374.14	73.57	8.50	7.55	264.28	247.75	15.99	
3500.00	3452.08	3472.99	74.58	8.85	7.79	278.38	261.38	16.38	
3600.00	3549.39	3571.81	75.82	9.19	8.03	292.16	274.66	16.70	
3700.00	3646.64	3670.55	77.25	9.54	8.28	305.70	287.68	16.96	
3800.00	3743.78	3769.19	78.86	9.89	8.52	319.12	300.55	17.19	
3900.00	3840.81	3867.72	80.65	10.24	8.77	332.54	313.43	17.40	
4000.00	3937.80	3966.21	82.44	10.59	9.01	346.24	326.58	17.61	
4100.00	4034.80	4064.70	84.09	10.94	9.26	360.25	339.99	17.78	
4200.00	4131.80	4163.19	85.62	11.30	9.50	374.53	353.67	17.96	
4300.00	4228.79	4261.69	87.04	11.65	9.75	389.06	367.60	18.14	
4400.00	4325.79	4360.18	88.36	12.01	10.00	403.80	381.76	18.32	
4500.00	4422.78	4458.67	89.58	12.37	10.24	418.74	396.10	18.50	
4600.00	4519.78	4557.16	90.72	12.73	10.49	433.86	410.59	18.65	
4700.00	4616.78	4655.66	91.78	13.09	10.74	449.13	425.21	18.77	
4800.00	4713.77	4754.15	92.78	13.45	10.98	464.55	439.97	18.90	
4900.00	4810.77	4852.64	93.71	13.81	11.23	480.09	454.86	19.03	
5000.00	4907.76	4951.13	94.58	14.18	11.48	495.76	469.87	19.15	
5100.00	5004.76	5049.63	95.40	14.54	11.73	511.52	484.98	19.27	
5200.00	5101.76	5148.12	96.17	14.90	11.97	527.38	500.19	19.40	
5300.00	5198.75	5246.61	96.89	15.27	12.22	543.33	515.49	19.52	
5400.00	5295.75	5345.10	97.57	15.63	12.47	559.36	530.88	19.63	
5500.00	5392.74	5443.59	98.22	16.00	12.72	575.47	546.33	19.75	
5600.00	5489.74	5542.09	98.83	16.36	12.97	591.64	561.85	19.86	
5700.00	5586.74	5640.58	99.41	16.73	13.22	607.87	577.40	19.95	
5800.00	5683.73	5739.07	99.96	17.10	13.47	624.16	593.01	20.04	
5900.00	5780.73	5837.56	100.48	17.46	13.72	640.51	608.68	20.12	
6000.00	5877.72	5936.06	100.97	17.83	13.97	656.90	624.40	20.21	
6100.00	5974.72	6034.55	101.44	18.20	14.21	673.34	640.16	20.29	
6200.00	6071.72	6133.04	101.89	18.57	14.46	689.82	655.96	20.38	
6300.00	6168.71	6231.53	102.31	18.93	14.71	706.34	671.81	20.46	
6400.00	6265.71	6330.03	102.72	19.30	14.96	722.89	687.69	20.53	
6500.00	6334.48	6399.90	103.01	19.55	15.12	740.48	704.84	20.77	

5D Anti-Collision Report

Secondary Well : Cedar 11 State 2H (p) (TVD Relative to Kelly Bushing (Primary)) ; All Azimuth Relative to GRID NORTH									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
6600.00	6376.22	6442.72	103.25	19.66	15.18	764.42	728.59	21.33	
6700.00	6415.60	6483.72	103.53	19.68	15.20	795.19	759.31	22.16	
6800.00	6452.25	6522.62	103.84	19.67	15.24	832.37	796.52	23.22	
6900.00	6485.97	6559.26	104.17	19.69	15.28	875.49	839.79	24.53	
7000.00	6516.70	6593.55	104.49	19.70	15.25	924.05	888.61	26.08	
7100.00	6544.50	6625.48	104.82	19.73	15.20	977.55	942.37	27.79	
7200.00	6569.48	6655.07	112.38	19.75	15.12	1035.70	1000.84	29.71	
7300.00	6589.65	6679.69	134.76	19.76	15.02	1105.84	1071.24	31.96	
7400.00	6603.95	6697.60	139.41	19.75	14.94	1188.98	1154.50	34.48	
7500.00	6612.80	6708.91	133.55	19.76	14.88	1281.07	1246.63	37.19	
7600.00	6616.83	6714.12	106.10	19.77	14.83	1378.26	1343.72	39.91	
7700.00	6616.70	6713.94	46.31	19.77	14.83	1477.07	1442.33	42.52	
7800.00	6612.97	6709.13	17.93	19.76	14.88	1574.48	1539.54	45.06	
7900.00	6606.15	6700.40	8.20	19.75	14.93	1667.89	1632.61	47.28	
8000.00	6596.66	6688.42	3.69	19.75	14.98	1755.11	1719.46	49.24	
8100.00	6585.46	6674.52	2.59	19.76	15.04	1836.58	1800.56	50.99	
8200.00	6574.69	6661.35	2.48	19.75	15.09	1918.89	1882.46	52.67	
8300.00	6564.46	6649.04	2.37	19.75	15.13	2002.47	1965.64	54.38	
8400.00	6554.76	6637.52	2.27	19.74	15.17	2087.18	2050.00	56.13	
8500.00	6545.56	6626.72	2.18	19.74	15.19	2172.93	2135.42	57.93	
8600.00	6536.83	6616.58	2.09	19.73	15.21	2259.62	2221.81	59.76	
8700.00	6528.56	6607.05	2.01	19.71	15.23	2347.16	2309.08	61.62	
8800.00	6520.70	6598.08	1.94	19.70	15.24	2435.49	2397.15	63.53	
8900.00	6513.23	6589.63	1.87	19.70	15.25	2524.53	2485.96	65.46	
9000.00	6506.14	6581.66	1.80	19.70	15.26	2614.22	2575.46	67.44	
9100.00	6499.39	6574.12	1.74	19.69	15.27	2704.52	2665.59	69.48	
9200.00	6492.97	6566.99	1.68	19.69	15.27	2795.36	2756.27	71.52	
9300.00	6486.86	6560.25	1.63	19.69	15.28	2886.71	2847.42	73.46	
9400.00	6481.04	6553.85	1.57	19.69	15.28	2978.53	2939.08	75.50	
9500.00	6475.49	6547.77	1.52	19.69	15.27	3070.78	3031.26	77.69	
9600.00	6470.19	6542.00	1.48	19.68	15.27	3163.44	3123.74	79.68	
9700.00	6465.12	6536.50	1.43	19.68	15.26	3256.46	3216.60	81.69	
9800.00	6460.29	6531.27	1.39	19.68	15.26	3349.83	3309.90	83.90	
9900.00	6455.66	6526.29	1.35	19.67	15.25	3443.52	3403.48	86.00	
10000.00	6451.23	6521.53	1.32	19.67	15.24	3537.51	3497.33	88.05	
10100.00	6446.99	6516.99	1.28	19.67	15.23	3631.78	3591.47	90.10	
10200.00	6442.93	6512.64	1.25	19.67	15.23	3726.30	3685.91	92.25	
10300.00	6439.03	6508.49	1.21	19.67	15.22	3821.07	3780.58	94.36	
10400.00	6435.28	6504.51	1.18	19.67	15.21	3916.07	3875.49	96.50	
10500.00	6431.69	6500.69	1.15	19.67	15.21	4011.28	3970.63	98.68	
10600.00	6428.23	6497.03	1.13	19.67	15.21	4106.69	4065.95	100.79	
10700.00	6424.91	6493.52	1.10	19.67	15.21	4202.29	4161.47	102.94	
10800.00	6421.71	6490.15	1.07	19.68	15.21	4298.07	4257.18	105.10	
10900.00	6418.63	6486.91	1.05	19.68	15.20	4394.02	4353.05	107.26	
11000.00	6415.67	6483.79	1.02	19.68	15.20	4490.12	4449.07	109.38	
11100.00	6412.81	6480.78	1.00	19.68	15.20	4586.37	4545.24	111.52	
11200.00	6410.05	6477.89	0.98	19.68	15.20	4682.76	4641.56	113.66	
11300.00	6407.38	6475.10	0.96	19.68	15.20	4779.28	4738.02	115.81	
11400.00	6404.81	6472.41	0.94	19.68	15.20	4875.93	4834.60	117.96	
11500.00	6402.33	6469.82	0.92	19.68	15.20	4972.70	4931.30	120.10	
11600.00	6399.92	6467.31	0.90	19.68	15.20	5069.59	5028.11	122.24	
11700.00	6397.60	6464.89	0.88	19.68	15.19	5166.57	5125.03	124.35	
11800.00	6395.35	6462.55	0.87	19.68	15.19	5263.67	5222.04	126.46	
11900.00	6393.18	6460.28	0.85	19.67	15.19	5360.85	5319.16	128.57	
12000.00	6391.07	6458.09	0.83	19.67	15.19	5458.13	5416.36	130.68	
12100.00	6389.02	6455.97	0.82	19.67	15.19	5555.50	5513.66	132.79	
12200.00	6387.04	6453.92	0.80	19.67	15.19	5652.95	5611.05	134.89	
12263.08	6385.82	6452.65	0.79	19.67	15.18	5714.47	5672.52	136.22	

5D Anti-Collision Report

Secondary Well : Cedar 1 State 1H (p) (TVD Relative to Kelly Bushing (Primary) ; All Azimuth Relative to GRID NORTH)									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T ₁ Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
0.00	3.00	0.00	18.21	0.00	0.00	158.21	156.69	103.75	
100.00	100.00	97.00	18.21	0.11	0.11	158.18	156.44	90.71	
200.00	200.00	197.00	18.21	0.33	0.33	158.18	155.99	72.22	
300.00	300.00	297.00	18.21	0.56	0.56	158.18	155.55	59.95	
400.00	400.00	397.00	18.21	0.78	0.78	158.18	155.10	51.23	
500.00	500.00	497.00	18.21	1.01	1.01	158.18	154.65	44.72	
600.00	600.00	597.00	18.21	1.23	1.23	158.18	154.20	39.68	
700.00	700.00	697.00	18.21	1.45	1.45	158.18	153.75	35.66	
800.00	800.00	797.00	18.21	1.68	1.68	158.18	153.30	32.38	
900.00	900.00	897.00	18.21	1.90	1.90	158.18	152.85	29.66	
1000.00	1000.00	997.00	18.21	2.13	2.13	158.18	152.40	27.35	
1100.00	1100.00	1097.00	18.21	2.35	2.35	158.18	151.95	25.38	
1200.00	1200.00	1197.00	18.21	2.58	2.58	158.18	151.50	23.67	
1300.00	1300.00	1297.00	18.21	2.80	2.80	158.18	151.05	22.18	
1400.00	1400.00	1397.00	18.21	3.03	3.03	158.18	150.60	20.87	
1500.00	1500.00	1497.00	18.21	3.25	3.25	158.18	150.15	19.70	
1600.00	1600.00	1597.00	18.21	3.48	3.48	158.18	149.71	18.66	
1700.00	1700.00	1697.00	18.21	3.70	3.70	158.18	149.26	17.72	
1800.00	1800.00	1797.00	18.21	3.93	3.93	158.18	148.81	16.87	
1900.00	1900.00	1897.00	18.21	4.15	4.15	158.18	148.36	16.10	
2000.00	2000.00	1997.00	18.21	4.38	4.38	158.18	147.91	15.39	
2100.00	2100.00	2097.00	18.21	4.60	4.60	158.18	147.46	14.75	
2200.00	2200.00	2197.00	18.21	4.83	4.83	158.18	147.01	14.15	
2300.00	2300.00	2297.00	18.21	5.05	5.05	158.18	146.56	13.61	
2400.00	2400.00	2397.00	18.21	5.28	5.28	158.18	146.11	13.10	
2500.00	2500.00	2497.00	18.21	5.50	5.50	158.18	145.66	12.63	
2600.00	2600.00	2597.00	18.21	5.73	5.73	158.18	145.21	12.19	
2700.00	2700.00	2697.00	18.21	5.95	5.95	158.18	144.76	11.79	
2800.00	2800.00	2797.00	18.21	6.17	6.17	158.18	144.31	11.40	
2900.00	2900.00	2897.00	48.24	6.40	6.40	158.12	143.80	11.04	
3000.00	2999.99	2996.99	48.65	6.62	6.62	157.14	142.38	10.64	
3100.00	3099.76	3096.76	49.55	6.85	6.85	155.05	139.86	10.21	
3200.00	3197.21	3194.22	50.83	7.07	7.07	152.78	137.14	9.77	
3300.00	3294.67	3291.71	52.41	7.29	7.28	151.10	135.02	9.40	
3400.00	3392.09	3389.23	54.29	7.50	7.50	150.07	133.54	9.08	
3500.00	3489.44	3486.75	56.45	7.72	7.71	149.77	132.81	8.83	
3600.00	3586.67	3584.29	58.85	7.94	7.91	150.27	132.86	8.63	
3700.00	3683.76	3681.81	61.46	8.16	8.12	151.66	133.82	8.50	
3800.00	3780.65	3779.31	64.24	8.39	8.33	154.02	135.73	8.42	
3900.00	3877.32	3876.79	67.09	8.62	8.53	157.46	138.69	8.39	
4000.00	3973.79	3974.29	69.59	8.87	8.73	162.46	143.20	8.44	
4100.00	4069.99	4071.78	71.55	9.12	8.94	169.01	149.27	8.56	
4200.00	4167.68	4170.98	73.15	9.38	9.16	176.58	156.28	8.70	
4300.00	4265.77	4270.58	74.61	9.65	9.39	184.29	163.43	8.83	
4400.00	4363.85	4370.17	75.95	9.93	9.62	192.12	170.68	8.96	
4500.00	4461.93	4469.77	77.19	10.22	9.85	200.04	178.03	9.09	
4600.00	4560.01	4569.37	78.34	10.51	10.09	208.05	185.45	9.21	
4700.00	4658.10	4668.96	79.40	10.80	10.32	216.13	192.95	9.33	
4800.00	4756.18	4768.56	80.38	11.11	10.56	224.28	200.51	9.44	
4900.00	4854.26	4868.15	81.29	11.41	10.80	232.49	208.11	9.54	
5000.00	4952.35	4967.75	82.14	11.72	11.04	240.76	215.76	9.63	
5100.00	5050.43	5067.35	82.94	12.04	11.28	249.08	223.43	9.71	
5200.00	5148.51	5166.94	83.68	12.35	11.52	257.44	231.14	9.79	
5300.00	5246.59	5266.54	84.38	12.68	11.76	265.84	238.88	9.86	
5400.00	5344.68	5366.13	85.03	13.00	12.00	274.28	246.66	9.93	
5500.00	5442.76	5465.73	85.65	13.33	12.24	282.75	254.47	10.00	
5600.00	5540.84	5565.33	86.23	13.66	12.48	291.25	262.31	10.07	
5700.00	5638.93	5664.92	86.77	13.99	12.72	299.78	270.18	10.13	

SD Anti-Collision Report

Secondary Well: Cedar 11 State 1H (P) (TVD Relative to Kelly Bushing (Primary)) / All Azimuth Relative to GRID NORTH									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
5800.00	5737.01	5764.52	87.29	14.32	12.97	308.34	278.07	10.19	
5900.00	5835.09	5864.11	87.78	14.66	13.21	316.91	285.98	10.24	
6000.00	5933.18	5963.71	88.24	15.00	13.45	325.51	293.91	10.30	
6100.00	6031.26	6063.31	88.68	15.34	13.70	334.13	301.86	10.35	
6200.00	6129.34	6162.90	89.09	15.68	13.94	342.77	309.82	10.40	
6300.00	6227.42	6262.50	89.49	16.02	14.19	351.43	317.80	10.45	
6400.00	6325.51	6362.09	89.86	16.37	14.43	360.10	325.80	10.50	
6500.00	6423.59	6461.69	90.22	16.71	14.68	368.79	333.81	10.54	
6600.00	6521.67	6561.29	90.57	17.06	14.93	377.49	341.83	10.59	
6700.00	6619.76	6660.88	90.89	17.41	15.17	386.20	349.86	10.63	
6800.00	6717.84	6760.48	91.21	17.76	15.42	394.93	357.89	10.66	
6900.00	6815.92	6860.07	91.50	18.11	15.67	403.66	365.92	10.70	
7000.00	6914.00	6959.67	91.79	18.47	15.91	412.41	373.97	10.73	
7100.00	7012.09	7059.27	92.07	18.82	16.16	421.16	382.02	10.76	
7200.00	7110.15	7158.84	99.84	19.17	16.41	430.15	390.29	10.79	
7300.00	7206.45	7256.63	124.64	19.52	16.65	449.18	408.58	11.06	
7400.00	7261.17	7312.24	133.20	19.64	16.78	486.66	445.59	11.85	
7500.00	7302.88	7354.93	135.80	19.60	16.88	544.80	503.49	13.19	
7600.00	7333.16	7386.21	134.14	19.56	16.95	619.44	577.88	14.90	
7700.00	7352.51	7406.40	126.70	19.52	16.99	705.85	664.17	16.93	
7800.00	7362.38	7416.77	107.79	19.49	17.02	799.49	757.57	19.07	
7900.00	7364.40	7418.89	70.68	19.49	17.02	896.37	854.26	21.29	
8000.00	7360.02	7414.28	36.44	19.50	17.01	993.15	950.85	23.48	
8100.00	7351.71	7405.56	28.55	19.52	16.99	1088.20	1045.67	25.59	
8200.00	7344.00	7397.51	27.73	19.54	16.97	1183.69	1141.01	27.74	
8300.00	7337.09	7390.30	27.02	19.55	16.96	1279.73	1236.97	29.93	
8400.00	7330.86	7383.83	26.40	19.56	16.94	1376.23	1333.38	32.12	
8500.00	7325.21	7377.97	25.85	19.56	16.93	1473.10	1430.15	34.30	
8600.00	7320.08	7372.66	25.36	19.57	16.92	1570.30	1527.28	36.49	
8700.00	7315.39	7367.81	24.93	19.57	16.91	1667.78	1624.70	38.72	
8800.00	7311.09	7363.38	24.54	19.58	16.90	1765.48	1722.34	40.92	
8900.00	7307.13	7359.30	24.19	19.59	16.89	1863.40	1820.16	43.10	
9000.00	7303.48	7355.55	23.87	19.60	16.88	1961.49	1918.17	45.29	
9100.00	7300.10	7352.07	23.58	19.61	16.87	2059.73	2016.34	47.47	
9200.00	7296.97	7348.85	23.31	19.61	16.87	2158.11	2114.68	49.69	
9300.00	7294.05	7345.86	23.06	19.62	16.86	2256.62	2213.19	51.96	
9400.00	7291.33	7343.06	22.84	19.62	16.85	2355.23	2311.71	54.12	
9500.00	7288.78	7340.45	22.63	19.62	16.85	2453.94	2410.36	56.31	
9600.00	7286.40	7338.01	22.44	19.63	16.84	2552.74	2509.18	58.60	
9700.00	7284.16	7335.72	22.26	19.63	16.84	2651.62	2607.97	60.75	
9800.00	7282.05	7333.56	22.09	19.63	16.83	2750.56	2706.82	62.87	
9900.00	7280.06	7331.53	21.94	19.63	16.83	2849.58	2805.81	65.11	
10000.00	7278.19	7329.62	21.79	19.64	16.82	2948.65	2904.94	67.46	
10100.00	7276.42	7327.81	21.65	19.64	16.82	3047.77	3003.94	69.54	
10200.00	7274.74	7326.10	21.52	19.64	16.81	3146.94	3103.04	71.68	
10300.00	7273.15	7324.47	21.40	19.64	16.81	3246.16	3202.22	73.87	
10400.00	7271.64	7322.93	21.29	19.64	16.81	3345.42	3301.46	76.10	
10500.00	7270.21	7321.47	21.18	19.64	16.80	3444.72	3400.72	78.28	
10600.00	7268.84	7320.07	21.08	19.64	16.80	3544.06	3500.01	80.46	
10700.00	7267.54	7318.74	20.98	19.64	16.80	3643.42	3599.35	82.66	
10800.00	7266.30	7317.48	20.89	19.64	16.80	3742.82	3698.72	84.87	
10900.00	7265.11	7316.27	20.80	19.64	16.79	3842.25	3798.12	87.08	
11000.00	7263.98	7315.11	20.72	19.64	16.79	3941.70	3897.56	89.30	
11100.00	7262.89	7314.01	20.64	19.64	16.79	4041.18	3997.01	91.51	
11200.00	7261.85	7312.95	20.57	19.64	16.79	4140.67	4096.48	93.70	
11300.00	7260.86	7311.93	20.49	19.64	16.78	4240.20	4195.96	95.86	
11400.00	7259.90	7310.96	20.43	19.64	16.78	4339.74	4295.45	97.99	
11500.00	7258.98	7310.02	20.36	19.64	16.78	4439.30	4394.96	100.13	

5D Anti-Collision Report

Secondary Well: Cedar 11 State 1H (p) (TVD Relative to Kelly Bushing (Primary)); All Azimuth Relative to GRID NORTH									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S Major (US ft)	S Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
11600.00	7258.10	7309.12	20.30	19.64	16.78	4538.87	4494.49	102.27	
11700.00	7257.25	7308.26	20.24	19.64	16.77	4638.47	4594.04	104.40	
11800.00	7256.44	7307.43	20.18	19.64	16.77	4738.08	4693.60	106.53	
11900.00	7255.65	7306.63	20.12	19.64	16.77	4837.70	4793.18	108.66	
12000.00	7254.89	7305.85	20.07	19.64	16.77	4937.34	4892.78	110.79	
12100.00	7254.16	7305.11	20.02	19.64	16.77	5036.99	4992.38	112.91	
12200.00	7253.45	7304.39	19.97	19.63	16.77	5136.66	5092.00	115.03	
12263.08	7253.02	7303.95	19.94	19.63	16.76	5199.53	5154.85	116.37	

**Weatherford**

Weatherford Drilling Services

GeoDec4 v2.0.0.3

Report Date: September 15, 2014
Job Number: _____
Customer: Devon Energy
Well Name: Cerf 10 State #9H
API Number: _____
Rig Name: _____
Location: Eddy Co, NM Nad83 NME
Block: _____
Engineer: RWJ

NAD83 / New Mexico East (ftUS)	NAD83 (1986)
Projected Coordinate System	Geodetic Coordinate System
Datum: North American Datum 1983 (1986)	Datum: North American Datum 1983 (1986)
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
EPSG: 2257	EPSG: 4269
North: 542314.79 US Survey Foot	Latitude: 32.490777 Degree
East: 592120.94 US Survey Foot	Longitude: -104.168626 Degree
Convergence: 0.09°	
Declination: 7.62°	
Total Correction: 7.53°	
Datum Transformation: none	

Geodetic Location WGS84

MSL Elevation = 0 m
Latitude = 32° 29' 26.80" N
Longitude = 104° 10' 07.05" W

Magnetic Declination = 7.62 deg	[True North Offset]
Local Gravity = .9988 g	Checksum = 6564
Local Field Strength = 48319 nT	Magnetic Vector X = 23778 nT
Magnetic Dip = 60.23 deg	Magnetic Vector Y = 3180 nT
Magnetic Model = bggm2014.dat	Magnetic Vector Z = 41943 nT
Run Date = January 30, 2015	Magnetic Vector H = 23990 nT

Signed: _____ Date: _____

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