

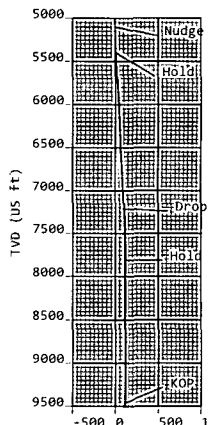
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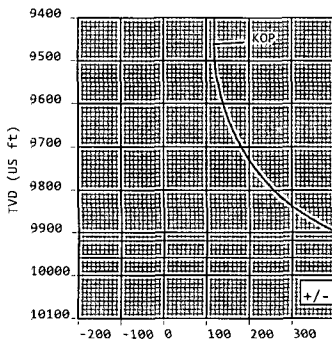
North Thistle 15-10
State Com 2H
Lea Co, NM



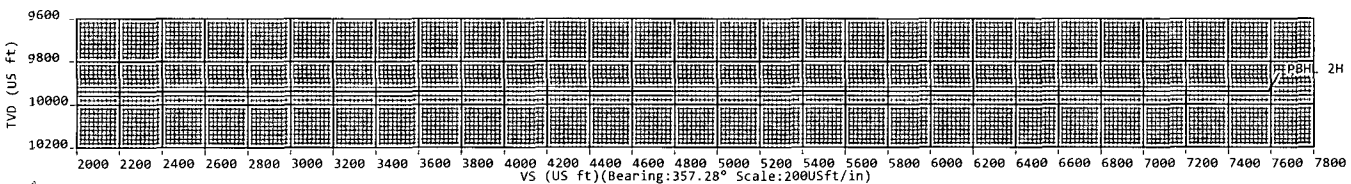
KB-3739
GL-3714



VS (US ft)(Bearing:357.28° Scale:500USft/in)



VS (US ft)(Bearing:357.28° Scale:100USft/in)



Plan Data for North Thistle 15-10 State Com 2H

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	475459.90	779588.20	0.00	0.00
5100.00	0.00	0.00	5100.00	0.00	0.00	475459.90	779588.20	0.00	0.00
5400.00	3.00	357.28	5399.86	7.84	-0.37	475467.74	779587.83	7.85	1.00
7218.00	3.00	357.28	7215.37	102.88	-4.89	475562.78	779583.31	103.00	0.00
7818.00	0.00	0.00	7815.10	118.57	-5.63	475578.47	779582.57	118.70	0.50
9464.44	0.00	0.00	9461.54	118.57	-5.63	475578.47	779582.57	118.70	0.00
10214.44	90.00	357.28	9939.00	595.49	-28.28	476055.39	779559.92	596.15	12.00
17206.93	90.00	357.28	9939.00	7580.12	-359.89	483040.02	779228.31	7588.49	0.00

Plan Data for North Thistle 15-10 State Com 2H

Site: North Thistle 15-10 State Com 1H, 2H Pad
Unit: USFeet TVD Reference:
Company Name: Devon Energy
Position: Northing: 475459.48USft Latitude: 32.304757°
Easting: 779538.27USft Longitude: -103.562363°
North Reference: Grid Grid Convergence: 0.41°
Elevation Above VRD: 3714.00USft

Plan Data for North Thistle 15-10 State Com 2H

Target Set Information:
Name: North Thistle 15-10 State Com 2H
Position offsets from Slot centre
Name TVD +N/-S +E/-W Northing Easting
(USft) (USft) (USft) (USft)
LP 9939.00 595.49 -28.28 476055.39 779559.92
PBHL 2H 9939.00 7580.12 -359.89 483040.02 779228.31

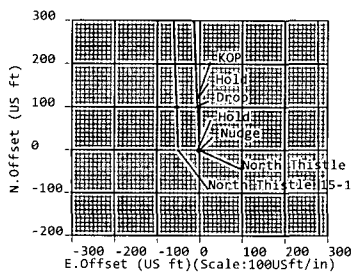
Plan Data for North Thistle 15-10 State Com 2H

Well: North Thistle 15-10 State Com 2H
Type: Main-Well
File Number:
Plan Folder: P1 Plan: P1-V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 357.66°
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
BGM 48219(nT) 7.27° 60.15° 2015-07-31

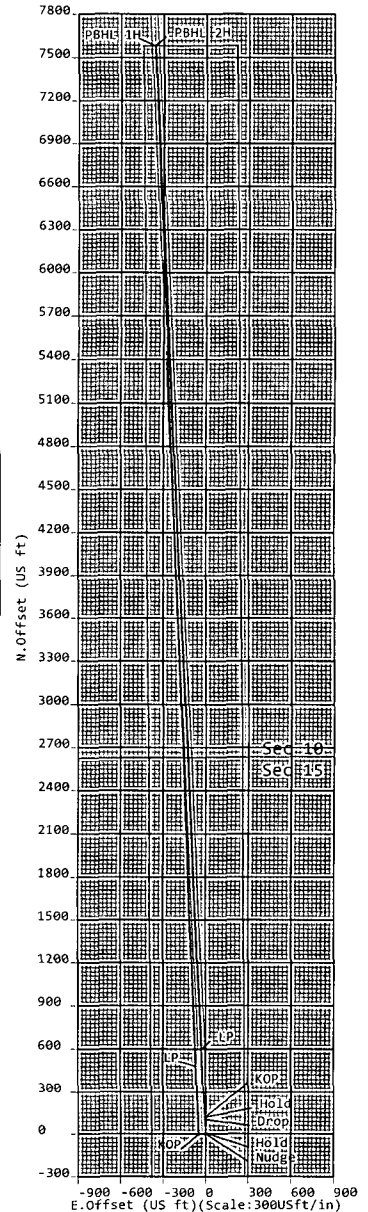


Weatherford

North Thistle 15-10 State Com 2H
North Thistle 15-10 State Com 1H Lateral
North Thistle 15-10 State Com 1H Pilot



E.Offset (US ft)(Scale:100USft/in)



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

Sign Off: Russell Joyner

MAR 19 2015

5D Plan Report**Devon Energy****Field Name:** *Lea Co, NM Nad 83 NMEZ***Site Name:** *North Thistle 15-10 State Com 1H,2H Pad***Well Name:** *North Thistle 15-10 State Com 2H***Plan:** *P1:V1*

16 March 2015



North Thistle 15-10 State Com 2H

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 North Thistle 15- 10 State Com 1H,2H Pad	Units : US ft North Reference : Grid Convergence Angle : 0.41 Position Northing : 475459.48 US ft Latitude : 32° 18' 17.12" Easting : 779538.27 US ft Longitude : -103° 33' 44.51"		
	Elevation above Mean Sea Level: 3714.00 US ft Comment :		
Slot Name North Thistle 15- 10 State Com 2H	Position (Offsets relative to Site Centre) +N / -S : 0.42 US ft Northing : 475459.90 US ft Latitude : 32° 18' 17.12" +E / -W : 49.93 US ft Easting : 779588.20 US ft Longitude : -103° 33' 43.93" Slot TVD Reference : Ground Elevation Elevation above Mean Sea Level : 3714.00 US ft Comment :		
Well Name North Thistle 15- 10 State Com 2H	Type : Main well UWI : Plan : P1:V1 Rig Height <i>Kelly Bushing</i> : 25.00 US ft Comment : Relative to Mean Sea Level: 3739.00 US ft Closure Distance : 7588.66 US ft Closure Azimuth : 357.282° 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 : 48219.5nT Dec : 7.27° Dip : 60.15° Date : 31/Jul/2015		

Target Set

Name : North Thistle 15-10 **Number of Targets :** 1
State Com 2H

Comment :

Target Name: PBHL 2H Shape: Cuboid	Position (Relative to Slot centre) +N / -S : 7580.12US ft Northing : 483040.02 US ft Latitude : 32° 19' 32.16" +E / -W : -359.89 US ft Easting : 779228.31US ft Longitude : -103° 33' 47.48" TVD (Kelly Bushing) : 9939.00 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		
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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	
5100.00	0.00	0.00	5100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Nudge
5400.00	3.00	357.28	5399.86	7.84	-0.37	7.85	1.00	1.00	0.00	357.28	Hold
7218.00	3.00	357.28	7215.37	102.88	-4.89	103.00	0.00	0.00	0.00	0.00	Drop
7818.00	0.00	0.00	7815.10	118.57	-5.63	118.70	0.50	-0.50	0.00	180.00	Hold
9464.44	0.00	0.00	9461.54	118.57	-5.63	118.70	0.00	0.00	0.00	0.00	KOP
10214.44	90.00	357.28	9939.00	595.49	-28.28	596.16	12.00	12.00	0.00	357.28	LP
17206.93	90.00	357.28	9939.00	7580.12	-359.89	7588.66	0.00	0.00	0.00	0.00	PBHL 2H

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
5100.00	0.00	0.00	5100.00	0.00	0.00	0.00	0.00	475459.90	779588.20		Nudge
5200.00	1.00	357.28	5199.99	0.87	-0.04	0.87	1.00	475460.77	779588.16		
5300.00	2.00	357.28	5299.96	3.49	-0.17	3.49	1.00	475463.39	779588.03		
5400.00	3.00	357.28	5399.86	7.84	-0.37	7.85	1.00	475467.74	779587.83		Hold
5500.00	3.00	357.28	5499.73	13.07	-0.62	13.09	0.00	475472.97	779587.58		
5600.00	3.00	357.28	5599.59	18.30	-0.87	18.32	0.00	475478.20	779587.33		
5700.00	3.00	357.28	5699.45	23.53	-1.12	23.55	0.00	475483.43	779587.08		
5800.00	3.00	357.28	5799.31	28.75	-1.37	28.79	0.00	475488.65	779586.83		
5900.00	3.00	357.28	5899.18	33.98	-1.61	34.02	0.00	475493.88	779586.59		
6000.00	3.00	357.28	5999.04	39.21	-1.86	39.25	0.00	475499.11	779586.34		
6100.00	3.00	357.28	6098.90	44.44	-2.11	44.49	0.00	475504.34	779586.09		
6200.00	3.00	357.28	6198.77	49.66	-2.36	49.72	0.00	475509.56	779585.84		
6300.00	3.00	357.28	6298.63	54.89	-2.61	54.95	0.00	475514.79	779585.59		
6400.00	3.00	357.28	6398.49	60.12	-2.86	60.19	0.00	475520.02	779585.34		
6500.00	3.00	357.28	6498.36	65.35	-3.10	65.42	0.00	475525.25	779585.10		
6600.00	3.00	357.28	6598.22	70.58	-3.35	70.66	0.00	475530.48	779584.85		
6700.00	3.00	357.28	6698.08	75.80	-3.60	75.89	0.00	475535.70	779584.60		
6800.00	3.00	357.28	6797.94	81.03	-3.85	81.12	0.00	475540.93	779584.35		
6900.00	3.00	357.28	6897.81	86.26	-4.10	86.36	0.00	475546.16	779584.10		
7000.00	3.00	357.28	6997.67	91.49	-4.35	91.59	0.00	475551.39	779583.85		
7100.00	3.00	357.28	7097.53	96.71	-4.59	96.82	0.00	475556.61	779583.61		
7200.00	3.00	357.28	7197.40	101.94	-4.84	102.06	0.00	475561.84	779583.36		
7218.00	3.00	357.28	7215.37	102.88	-4.89	103.00	0.00	475562.78	779583.31		Drop
7300.00	2.59	357.28	7297.27	106.88	-5.08	107.00	0.50	475566.78	779583.12		
7400.00	2.09	357.28	7397.19	110.96	-5.27	111.08	0.50	475570.86	779582.93		
7500.00	1.59	357.28	7497.14	114.16	-5.42	114.29	0.50	475574.06	779582.78		
7600.00	1.09	357.28	7597.11	116.50	-5.53	116.63	0.50	475576.40	779582.67		
7700.00	0.59	357.28	7697.10	117.96	-5.60	118.10	0.50	475577.86	779582.60		
7800.00	0.09	357.28	7797.10	118.56	-5.63	118.69	0.50	475578.46	779582.57		
7818.00	0.00	0.00	7815.10	118.57	-5.63	118.70	0.50	475578.47	779582.57		Hold
7900.00	0.00	0.00	7897.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
8000.00	0.00	0.00	7997.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
8100.00	0.00	0.00	8097.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
8200.00	0.00	0.00	8197.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
8300.00	0.00	0.00	8297.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
8400.00	0.00	0.00	8397.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
8500.00	0.00	0.00	8497.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
8600.00	0.00	0.00	8597.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
8700.00	0.00	0.00	8697.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
8800.00	0.00	0.00	8797.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
8900.00	0.00	0.00	8897.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
9000.00	0.00	0.00	8997.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
9100.00	0.00	0.00	9097.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
9200.00	0.00	0.00	9197.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
9300.00	0.00	0.00	9297.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
9400.00	0.00	0.00	9397.10	118.57	-5.63	118.70	0.00	475578.47	779582.57		
9464.44	0.00	0.00	9461.54	118.57	-5.63	118.70	0.00	475578.47	779582.57		KOP

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
9500.00	4.27	357.28	9497.06	119.89	-5.70	120.03	12.00	475579.79	779582.50	
9600.00	16.27	357.28	9595.28	137.66	-6.54	137.82	12.00	475597.56	779581.66	
9700.00	28.27	357.28	9687.66	175.44	-8.33	175.64	12.00	475635.34	779579.87	
9800.00	40.27	357.28	9770.15	231.58	-11.00	231.84	12.00	475691.48	779577.20	
9900.00	52.27	357.28	9839.15	303.63	-14.42	303.97	12.00	475763.53	779573.78	
10000.00	64.27	357.28	9891.65	388.43	-18.45	388.86	12.00	475848.33	779569.75	
10100.00	76.27	357.28	9925.35	482.28	-22.90	482.82	12.00	475942.18	779565.30	
10200.00	88.27	357.28	9938.78	581.08	-27.59	581.73	12.00	476040.98	779560.61	
10214.44	90.00	357.28	9939.00	595.49	-28.28	596.16	12.00	476055.39	779559.92	LP
10300.00	90.00	357.28	9939.00	680.96	-32.33	681.73	0.00	476140.86	779555.87	
10400.00	90.00	357.28	9939.00	780.85	-37.08	781.73	0.00	476240.75	779551.12	
10500.00	90.00	357.28	9939.00	880.74	-41.82	881.73	0.00	476340.64	779546.38	
10600.00	90.00	357.28	9939.00	980.62	-46.56	981.73	0.00	476440.52	779541.64	
10700.00	90.00	357.28	9939.00	1080.51	-51.30	1081.73	0.00	476540.41	779536.90	
10800.00	90.00	357.28	9939.00	1180.40	-56.05	1181.73	0.00	476640.30	779532.15	
10900.00	90.00	357.28	9939.00	1280.29	-60.79	1281.73	0.00	476740.19	779527.41	
11000.00	90.00	357.28	9939.00	1380.17	-65.53	1381.73	0.00	476840.07	779522.67	
11100.00	90.00	357.28	9939.00	1480.06	-70.27	1481.73	0.00	476939.96	779517.93	
11200.00	90.00	357.28	9939.00	1579.95	-75.02	1581.73	0.00	477039.85	779513.18	
11300.00	90.00	357.28	9939.00	1679.84	-79.76	1681.73	0.00	477139.74	779508.44	
11400.00	90.00	357.28	9939.00	1779.72	-84.50	1781.73	0.00	477239.62	779503.70	
11500.00	90.00	357.28	9939.00	1879.61	-89.24	1881.73	0.00	477339.51	779498.96	
11600.00	90.00	357.28	9939.00	1979.50	-93.99	1981.73	0.00	477439.40	779494.21	
11700.00	90.00	357.28	9939.00	2079.39	-98.73	2081.73	0.00	477539.29	779489.47	
11800.00	90.00	357.28	9939.00	2179.27	-103.47	2181.73	0.00	477639.17	779484.73	
11900.00	90.00	357.28	9939.00	2279.16	-108.21	2281.73	0.00	477739.06	779479.99	
12000.00	90.00	357.28	9939.00	2379.05	-112.96	2381.73	0.00	477838.95	779475.24	
12100.00	90.00	357.28	9939.00	2478.94	-117.70	2481.73	0.00	477938.84	779470.50	
12200.00	90.00	357.28	9939.00	2578.82	-122.44	2581.73	0.00	478038.72	779465.76	
12300.00	90.00	357.28	9939.00	2678.71	-127.18	2681.73	0.00	478138.61	779461.02	
12400.00	90.00	357.28	9939.00	2778.60	-131.93	2781.73	0.00	478238.50	779456.27	
12500.00	90.00	357.28	9939.00	2878.49	-136.67	2881.73	0.00	478338.39	779451.53	
12600.00	90.00	357.28	9939.00	2978.37	-141.41	2981.73	0.00	478438.27	779446.79	
12700.00	90.00	357.28	9939.00	3078.26	-146.15	3081.73	0.00	478538.16	779442.05	
12800.00	90.00	357.28	9939.00	3178.15	-150.89	3181.73	0.00	478638.05	779437.31	
12900.00	90.00	357.28	9939.00	3278.04	-155.64	3281.73	0.00	478737.94	779432.56	
13000.00	90.00	357.28	9939.00	3377.92	-160.38	3381.73	0.00	478837.82	779427.82	
13100.00	90.00	357.28	9939.00	3477.81	-165.12	3481.73	0.00	478937.71	779423.08	
13200.00	90.00	357.28	9939.00	3577.70	-169.86	3581.73	0.00	479037.60	779418.34	
13300.00	90.00	357.28	9939.00	3677.59	-174.61	3681.73	0.00	479137.49	779413.59	
13400.00	90.00	357.28	9939.00	3777.47	-179.35	3781.73	0.00	479237.37	779408.85	
13500.00	90.00	357.28	9939.00	3877.36	-184.09	3881.73	0.00	479337.26	779404.11	
13600.00	90.00	357.28	9939.00	3977.25	-188.83	3981.73	0.00	479437.15	779399.37	
13700.00	90.00	357.28	9939.00	4077.14	-193.58	4081.73	0.00	479537.04	779394.62	
13800.00	90.00	357.28	9939.00	4177.02	-198.32	4181.73	0.00	479636.92	779389.88	
13900.00	90.00	357.28	9939.00	4276.91	-203.06	4281.73	0.00	479736.81	779385.14	
14000.00	90.00	357.28	9939.00	4376.80	-207.80	4381.73	0.00	479836.70	779380.40	
14100.00	90.00	357.28	9939.00	4476.69	-212.55	4481.73	0.00	479936.59	779375.65	
14200.00	90.00	357.28	9939.00	4576.57	-217.29	4581.73	0.00	480036.47	779370.91	
14300.00	90.00	357.28	9939.00	4676.46	-222.03	4681.73	0.00	480136.36	779366.17	
14400.00	90.00	357.28	9939.00	4776.35	-226.77	4781.73	0.00	480236.25	779361.43	
14500.00	90.00	357.28	9939.00	4876.24	-231.52	4881.73	0.00	480336.14	779356.68	
14600.00	90.00	357.28	9939.00	4976.12	-236.26	4981.73	0.00	480436.02	779351.94	
14700.00	90.00	357.28	9939.00	5076.01	-241.00	5081.73	0.00	480535.91	779347.20	
14800.00	90.00	357.28	9939.00	5175.90	-245.74	5181.73	0.00	480635.80	779342.46	
14900.00	90.00	357.28	9939.00	5275.79	-250.49	5281.73	0.00	480735.69	779337.71	
15000.00	90.00	357.28	9939.00	5375.67	-255.23	5381.73	0.00	480835.57	779332.97	
15100.00	90.00	357.28	9939.00	5475.56	-259.97	5481.73	0.00	480935.46	779328.23	
15200.00	90.00	357.28	9939.00	5575.45	-264.71	5581.73	0.00	481035.35	779323.49	

SD 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
15300.00	90.00	357.28	9939.00	5675.34	-269.46	5681.73	0.00	481135.24	779318.74	
15400.00	90.00	357.28	9939.00	5775.22	-274.20	5781.73	0.00	481235.12	779314.00	
15500.00	90.00	357.28	9939.00	5875.11	-278.94	5881.73	0.00	481335.01	779309.26	
15600.00	90.00	357.28	9939.00	5975.00	-283.68	5981.73	0.00	481434.90	779304.52	
15700.00	90.00	357.28	9939.00	6074.89	-288.42	6081.73	0.00	481534.79	779299.78	
15800.00	90.00	357.28	9939.00	6174.77	-293.17	6181.73	0.00	481634.67	779295.03	
15900.00	90.00	357.28	9939.00	6274.66	-297.91	6281.73	0.00	481734.56	779290.29	
16000.00	90.00	357.28	9939.00	6374.55	-302.65	6381.73	0.00	481834.45	779285.55	
16100.00	90.00	357.28	9939.00	6474.44	-307.39	6481.73	0.00	481934.34	779280.81	
16200.00	90.00	357.28	9939.00	6574.32	-312.14	6581.73	0.00	482034.22	779276.06	
16300.00	90.00	357.28	9939.00	6674.21	-316.88	6681.73	0.00	482134.11	779271.32	
16400.00	90.00	357.28	9939.00	6774.10	-321.62	6781.73	0.00	482234.00	779266.58	
16500.00	90.00	357.28	9939.00	6873.99	-326.36	6881.73	0.00	482333.89	779261.84	
16600.00	90.00	357.28	9939.00	6973.87	-331.11	6981.73	0.00	482433.77	779257.09	
16700.00	90.00	357.28	9939.00	7073.76	-335.85	7081.73	0.00	482533.66	779252.35	
16800.00	90.00	357.28	9939.00	7173.65	-340.59	7181.73	0.00	482633.55	779247.61	
16900.00	90.00	357.28	9939.00	7273.53	-345.33	7281.73	0.00	482733.43	779242.87	
17000.00	90.00	357.28	9939.00	7373.42	-350.08	7381.73	0.00	482833.32	779238.12	
17100.00	90.00	357.28	9939.00	7473.31	-354.82	7481.73	0.00	482933.21	779233.38	
17200.00	90.00	357.28	9939.00	7573.20	-359.56	7581.73	0.00	483033.10	779228.64	
17206.93	90.00	357.28	9939.00	7580.12	-359.89	7588.66	0.00	483040.02	779228.31	PBHL 2H

5D Anti-Collision Report

Devon Energy**Field Name:** *Lea Co, NM Nad 83 NMEZ***Site Name:** *North Thistle 15-10 State Com 1H,2H Pad***Well Name:** *North Thistle 15-10 State Com 2H*

16 March 2015




Weatherford

North Thistle 15-10 State Com 2H

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 North Thistle 15-10 State Com 1H, 2H Pad	<table style="width: 100%;"> <tr> <td>Units : US ft</td> <td>North Reference : Grid</td> <td>Convergence Angle : 0.41</td> </tr> <tr> <td rowspan="2" style="text-align: center;">Position</td> <td>Northing : 475459.48 US ft</td> <td>Latitude : 32° 18' 17.12"</td> </tr> <tr> <td>Easting : 779538.27 US ft</td> <td>Longitude : -103° 33' 44.51"</td> </tr> </table> Elevation above Mean Sea Level: 3714.00 US ft Comment :	Units : US ft	North Reference : Grid	Convergence Angle : 0.41	Position	Northing : 475459.48 US ft	Latitude : 32° 18' 17.12"	Easting : 779538.27 US ft	Longitude : -103° 33' 44.51"																
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Slot Name North Thistle 15-10 State Com 2H	<table style="width: 100%;"> <tr> <th colspan="3" style="text-align: center;">Position (Offsets relative to Site Centre)</th> </tr> <tr> <td>+N / -S : 0.42 US ft</td> <td>Northing : 475459.90 US ft</td> <td>Latitude : 32° 18' 17.12"</td> </tr> <tr> <td>+E / -W : 49.93 US ft</td> <td>Easting : 779588.20 US ft</td> <td>Longitude : -103° 33' 43.93"</td> </tr> </table> Slot TVD Reference : Ground Elevation Elevation above Mean Sea Level : 3714.00 US ft Comment :	Position (Offsets relative to Site Centre)			+N / -S : 0.42 US ft	Northing : 475459.90 US ft	Latitude : 32° 18' 17.12"	+E / -W : 49.93 US ft	Easting : 779588.20 US ft	Longitude : -103° 33' 43.93"															
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Well Name North Thistle 15-10 State Com 2H	<table style="width: 100%;"> <tr> <td>Type : Main well</td> <td>UWI :</td> <td>Plan : Working Plan</td> </tr> <tr> <td>Rig Height <i>Kelly Bushing</i> : 25.00 US ft</td> <td colspan="2">Comment :</td> </tr> <tr> <td colspan="3">Relative to Mean Sea Level: 3739.00 US ft</td> </tr> <tr> <td>Closure Distance : 7588.66 US ft</td> <td colspan="2">Closure Azimuth : 357.282°</td> </tr> <tr> <td colspan="3">Vertical Section (Position of Origin Relative to Slot)</td> </tr> <tr> <td colspan="3" style="text-align: center;">+N / -S : 0.00 US ft +E / -W : 0.00 US ft Az : 357.28°</td> </tr> <tr> <td colspan="3">Magnetic Parameters</td> </tr> <tr> <td>Model : BGGM</td> <td>Field Strength : 48219.5nT</td> <td>Dec : 7.27° Dip : 60.15° Date : 31/Jul/2015</td> </tr> </table>	Type : Main well	UWI :	Plan : Working Plan	Rig Height <i>Kelly Bushing</i> : 25.00 US ft	Comment :		Relative to Mean Sea Level: 3739.00 US ft			Closure Distance : 7588.66 US ft	Closure Azimuth : 357.282°		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 : 48219.5nT	Dec : 7.27° Dip : 60.15° Date : 31/Jul/2015
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Collision / Uncertainty Analysis

Primary Well	Start MD (US ft)	End MD (US ft)	Collision Risk Interval	No. of Std Deviations in Error Computation
North Thistle 15-10 State Com 2H (p)	0.00	17206.93	100.00	2

Secondary Well Names

North Thistle 15-10 State Com 1H Pilot (p)
 North Thistle 15-10 State Com 1H Lateral (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
North Thistle 15-10 State Com 1H Pilot (p)	5455.08	5454.87	5454.87	50.66	25.77	2.04	
North Thistle 15-10 State Com 1H Lateral (p)	17206.93	17722.09	9939.00	356.00	242.38	3.13	

Primary Well : North Thistle 15-10 State Com 2H (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	269.52	0.00	0.00	North Thistle 15-10 State Com 1H Pilot (p)	49.93	49.31	80.70	
100.00	100.00	269.52	0.11	0.11	North Thistle 15-10 State Com 1H Pilot (p)	49.93	49.09	59.49	
200.00	200.00	269.52	0.34	0.34	North Thistle 15-10 State Com 1H Pilot (p)	49.93	48.64	38.74	
300.00	300.00	269.52	0.56	0.56	North Thistle 15-10 State Com 1H Pilot (p)	49.93	48.19	28.72	
400.00	400.00	269.52	0.79	0.79	North Thistle 15-10 State Com 1H Pilot (p)	49.93	47.74	22.82	
500.00	500.00	269.52	1.01	1.01	North Thistle 15-10 State Com 1H Pilot (p)	49.93	47.29	18.93	
600.00	600.00	269.52	1.24	1.24	North Thistle 15-10 State Com 1H Pilot (p)	49.93	46.84	16.17	
700.00	700.00	269.52	1.46	1.46	North Thistle 15-10 State Com 1H Pilot (p)	49.93	46.40	14.12	
800.00	800.00	269.52	1.69	1.69	North Thistle 15-10 State Com 1H Pilot (p)	49.93	45.95	12.53	
900.00	900.00	269.52	1.91	1.91	North Thistle 15-10 State Com 1H Pilot (p)	49.93	45.50	11.26	
1000.00	1000.00	269.52	2.14	2.14	North Thistle 15-10 State Com 1H Pilot (p)	49.93	45.05	10.22	
1100.00	1100.00	269.52	2.36	2.36	North Thistle 15-10 State Com 1H Pilot (p)	49.93	44.60	9.36	
1200.00	1200.00	269.52	2.59	2.59	North Thistle 15-10 State Com 1H Pilot (p)	49.93	44.15	8.63	
1300.00	1300.00	269.52	2.81	2.81	North Thistle 15-10 State Com 1H Pilot (p)	49.93	43.70	8.01	
1400.00	1400.00	269.52	3.03	3.03	North Thistle 15-10 State Com 1H Pilot (p)	49.93	43.25	7.47	
1500.00	1500.00	269.52	3.26	3.26	North Thistle 15-10 State Com 1H Pilot (p)	49.93	42.80	7.00	
1600.00	1600.00	269.52	3.48	3.48	North Thistle 15-10 State Com 1H Pilot (p)	49.93	42.35	6.58	

5D Anti-Collision Report

Primary Well : North Thistle 15-10 State Com 2H (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
1700.00	1700.00	269.52	3.71	3.71	North Thistle 15-10 State Com 1H Pilot (p)	49.93	41.90	6.22	
1800.00	1800.00	269.52	3.93	3.93	North Thistle 15-10 State Com 1H Pilot (p)	49.93	41.45	5.89	
1900.00	1900.00	269.52	4.16	4.16	North Thistle 15-10 State Com 1H Pilot (p)	49.93	41.00	5.59	
2000.00	2000.00	269.52	4.38	4.38	North Thistle 15-10 State Com 1H Pilot (p)	49.93	40.55	5.32	
2100.00	2100.00	269.52	4.61	4.61	North Thistle 15-10 State Com 1H Pilot (p)	49.93	40.10	5.08	
2200.00	2200.00	269.52	4.83	4.83	North Thistle 15-10 State Com 1H Pilot (p)	49.93	39.65	4.86	
2300.00	2300.00	269.52	5.06	5.06	North Thistle 15-10 State Com 1H Pilot (p)	49.93	39.20	4.65	
2400.00	2400.00	269.52	5.28	5.28	North Thistle 15-10 State Com 1H Pilot (p)	49.93	38.75	4.47	
2500.00	2500.00	269.52	5.51	5.51	North Thistle 15-10 State Com 1H Pilot (p)	49.93	38.30	4.29	
2600.00	2600.00	269.52	5.73	5.73	North Thistle 15-10 State Com 1H Pilot (p)	49.93	37.85	4.13	
2700.00	2700.00	269.52	5.96	5.96	North Thistle 15-10 State Com 1H Pilot (p)	49.93	37.40	3.99	
2800.00	2800.00	269.52	6.18	6.18	North Thistle 15-10 State Com 1H Pilot (p)	49.93	36.95	3.85	
2900.00	2900.00	269.52	6.41	6.41	North Thistle 15-10 State Com 1H Pilot (p)	49.93	36.50	3.72	
3000.00	3000.00	269.52	6.63	6.63	North Thistle 15-10 State Com 1H Pilot (p)	49.93	36.06	3.60	
3100.00	3100.00	269.52	6.86	6.86	North Thistle 15-10 State Com 1H Pilot (p)	49.93	35.61	3.49	
3200.00	3200.00	269.52	7.08	7.08	North Thistle 15-10 State Com 1H Pilot (p)	49.93	35.16	3.38	
3300.00	3300.00	269.52	7.31	7.31	North Thistle 15-10 State Com 1H Pilot (p)	49.93	34.71	3.28	
3400.00	3400.00	269.52	7.53	7.53	North Thistle 15-10 State Com 1H Pilot (p)	49.93	34.26	3.19	
3500.00	3500.00	269.52	7.76	7.76	North Thistle 15-10 State Com 1H Pilot (p)	49.93	33.81	3.10	
3600.00	3600.00	269.52	7.98	7.98	North Thistle 15-10 State Com 1H Pilot (p)	49.93	33.36	3.01	

5D Anti-Collision Report

Primary Well : North Thistle 15-10 State Com 2H (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
3700.00	3700.00	269.52	8.20	8.20	North Thistle 15-10 State Com 1H Pilot (p)	49.93	32.91	2.93	
3800.00	3800.00	269.52	8.43	8.43	North Thistle 15-10 State Com 1H Pilot (p)	49.93	32.46	2.86	
3900.00	3900.00	269.52	8.65	8.65	North Thistle 15-10 State Com 1H Pilot (p)	49.93	32.01	2.79	
4000.00	4000.00	269.52	8.88	8.88	North Thistle 15-10 State Com 1H Pilot (p)	49.93	31.56	2.72	
4100.00	4100.00	269.52	9.10	9.10	North Thistle 15-10 State Com 1H Pilot (p)	49.93	31.11	2.65	
4200.00	4200.00	269.52	9.33	9.33	North Thistle 15-10 State Com 1H Pilot (p)	49.93	30.66	2.59	
4300.00	4300.00	269.52	9.55	9.55	North Thistle 15-10 State Com 1H Pilot (p)	49.93	30.21	2.53	
4400.00	4400.00	269.52	9.78	9.78	North Thistle 15-10 State Com 1H Pilot (p)	49.93	29.76	2.48	
4500.00	4500.00	269.52	10.00	10.00	North Thistle 15-10 State Com 1H Pilot (p)	49.93	29.31	2.42	
4600.00	4600.00	269.52	10.23	10.23	North Thistle 15-10 State Com 1H Pilot (p)	49.93	28.86	2.37	
4700.00	4700.00	269.52	10.45	10.45	North Thistle 15-10 State Com 1H Pilot (p)	49.93	28.41	2.32	
4800.00	4800.00	269.52	10.68	10.68	North Thistle 15-10 State Com 1H Pilot (p)	49.93	27.96	2.27	
4900.00	4900.00	269.52	10.90	10.90	North Thistle 15-10 State Com 1H Pilot (p)	49.93	27.51	2.23	
5000.00	5000.00	269.52	11.13	11.13	North Thistle 15-10 State Com 1H Pilot (p)	49.93	27.06	2.18	
5100.00	5100.00	269.52	11.35	11.35	North Thistle 15-10 State Com 1H Pilot (p)	49.93	26.61	2.14	
5200.00	5199.99	271.24	11.58	11.57	North Thistle 15-10 State Com 1H Pilot (p)	49.91	26.19	2.10	
5300.00	5299.96	268.23	11.80	11.79	North Thistle 15-10 State Com 1H Pilot (p)	49.92	25.74	2.07	
5400.00	5399.86	263.26	12.02	12.01	North Thistle 15-10 State Com 1H Pilot (p)	50.24	25.60	2.04	
5500.00	5499.73	257.43	12.25	12.23	North Thistle 15-10 State Com 1H Pilot (p)	51.12	26.05	2.04	
5600.00	5599.59	251.86	12.47	12.46	North Thistle 15-10 State Com 1H Pilot (p)	52.51	26.96	2.05	

5D Anti-Collision Report

Primary Well : North Thistle 15-10 State Com 2H (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
5700.00	5699.45	246.62	12.69	12.68	North Thistle 15-10 State Com 1H Pilot (p)	54.37	28.42	2.10	
5800.00	5799.31	241.76	12.92	12.91	North Thistle 15-10 State Com 1H Pilot (p)	56.65	30.22	2.14	
5900.00	5899.18	237.30	13.15	13.13	North Thistle 15-10 State Com 1H Pilot (p)	59.31	32.46	2.21	
6000.00	5999.04	233.25	13.37	13.36	North Thistle 15-10 State Com 1H Pilot (p)	62.30	34.97	2.28	
6100.00	6098.90	229.59	13.60	13.58	North Thistle 15-10 State Com 1H Pilot (p)	65.57	37.78	2.36	
6200.00	6198.77	226.28	13.83	13.81	North Thistle 15-10 State Com 1H Pilot (p)	69.08	40.88	2.45	
6300.00	6298.63	223.31	14.05	14.03	North Thistle 15-10 State Com 1H Pilot (p)	72.79	44.09	2.54	
6400.00	6398.49	220.63	14.28	14.26	North Thistle 15-10 State Com 1H Pilot (p)	76.69	47.55	2.63	
6500.00	6498.36	218.21	14.51	14.49	North Thistle 15-10 State Com 1H Pilot (p)	80.73	51.21	2.73	
6600.00	6598.22	216.02	14.74	14.71	North Thistle 15-10 State Com 1H Pilot (p)	84.91	54.87	2.83	
6700.00	6698.08	214.05	14.97	14.94	North Thistle 15-10 State Com 1H Pilot (p)	89.20	58.72	2.93	
6800.00	6797.94	212.25	15.20	15.16	North Thistle 15-10 State Com 1H Pilot (p)	93.58	62.63	3.02	
6900.00	6897.81	210.62	15.43	15.39	North Thistle 15-10 State Com 1H Pilot (p)	98.05	66.64	3.12	
7000.00	6997.67	209.13	15.66	15.61	North Thistle 15-10 State Com 1H Pilot (p)	102.59	70.77	3.22	
7100.00	7097.53	207.77	15.89	15.84	North Thistle 15-10 State Com 1H Pilot (p)	107.19	74.99	3.33	
7200.00	7197.40	206.52	16.12	16.07	North Thistle 15-10 State Com 1H Pilot (p)	111.85	79.14	3.42	
7300.00	7297.27	205.43	16.33	16.27	North Thistle 15-10 State Com 1H Pilot (p)	116.29	83.12	3.51	
7400.00	7397.19	204.58	16.51	16.44	North Thistle 15-10 State Com 1H Pilot (p)	120.00	86.41	3.57	
7500.00	7497.14	203.96	16.68	16.62	North Thistle 15-10 State Com 1H Pilot (p)	122.92	88.95	3.62	
7600.00	7597.11	203.52	16.85	16.79	North Thistle 15-10 State Com 1H Pilot (p)	125.06	90.71	3.64	

5D Anti-Collision Report

Primary Well : North Thistle 15-10 State Com 2H (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
7700.00	7697.10	203.25	17.03	16.96	North Thistle 15-10 State Com 1H Pilot (p)	126.41	91.67	3.64	
7800.00	7797.10	203.14	17.20	17.13	North Thistle 15-10 State Com 1H Pilot (p)	126.95	91.82	3.61	
7900.00	7897.10	200.42	17.39	17.32	North Thistle 15-10 State Com 1H Pilot (p)	126.97	91.42	3.57	
8000.00	7997.10	200.42	17.62	17.55	North Thistle 15-10 State Com 1H Pilot (p)	126.97	90.97	3.53	
8100.00	8097.10	200.42	17.84	17.77	North Thistle 15-10 State Com 1H Pilot (p)	126.97	90.52	3.48	
8200.00	8197.10	200.42	18.06	18.00	North Thistle 15-10 State Com 1H Pilot (p)	126.97	90.07	3.44	
8300.00	8297.10	200.42	18.29	18.22	North Thistle 15-10 State Com 1H Pilot (p)	126.97	89.62	3.40	
8400.00	8397.10	200.42	18.51	18.45	North Thistle 15-10 State Com 1H Pilot (p)	126.97	89.17	3.36	
8500.00	8497.10	200.42	18.73	18.67	North Thistle 15-10 State Com 1H Pilot (p)	126.97	88.72	3.32	
8600.00	8597.10	200.42	18.96	18.89	North Thistle 15-10 State Com 1H Pilot (p)	126.97	88.27	3.28	
8700.00	8697.10	200.42	19.18	19.12	North Thistle 15-10 State Com 1H Pilot (p)	126.97	87.82	3.24	
8800.00	8797.10	200.42	19.40	19.34	North Thistle 15-10 State Com 1H Pilot (p)	126.97	87.37	3.21	
8900.00	8897.10	200.42	19.62	19.57	North Thistle 15-10 State Com 1H Pilot (p)	126.97	86.92	3.17	
9000.00	8997.10	200.42	19.85	19.79	North Thistle 15-10 State Com 1H Pilot (p)	126.97	86.47	3.13	
9100.00	9097.10	200.42	20.07	20.02	North Thistle 15-10 State Com 1H Pilot (p)	126.97	86.02	3.10	
9200.00	9197.10	200.42	20.29	20.24	North Thistle 15-10 State Com 1H Pilot (p)	126.97	85.57	3.07	
9300.00	9297.10	200.42	20.52	20.46	North Thistle 15-10 State Com 1H Pilot (p)	126.97	85.11	3.03	
9400.00	9397.10	200.42	20.74	20.69	North Thistle 15-10 State Com 1H Pilot (p)	126.97	84.66	3.00	
9500.00	9497.06	202.96	20.97	20.87	North Thistle 15-10 State Com 1H Pilot (p)	128.19	85.44	3.00	
9600.00	9595.28	200.93	21.21	20.69	North Thistle 15-10 State Com 1H Pilot (p)	144.74	101.59	3.35	