



HOBBS OCD

SEP 17 2018

RECEIVED

February 21, 2018

Devon Energy Production Company, LP
Well: Thistle Unit 114H
County/Parish: Lea County, NM

LEAM MWD: (OH) from 1,524' MD – 17,080' MD
Projection; 17,139' MD

This Borehole Survey taken between 02/05/2018 and 02/20/2018 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Date: February 21, 2018



Survey Certification Form

State of New Mexico

Lea County

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Services, that I did on the day(s) of 02/05/2018 through 02/20/2018, conduct or supervise the taking of MWD Survey from a depth of 1,524' MD to 17,139' MD; that the data is true, correct, complete and within the limitations of the tools as set forth by LEAM Drilling Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of Devon Energy Production Company, LP for the Thistle Unit 114H in Lea County, New Mexico; and that I reviewed this report and find that it conforms to the principals and procedures as set forth by LEAM Drilling Services.

A handwritten signature in black ink, appearing to read 'Randy W. Rakowitz', is written over a horizontal line.

Randy W. Rakowitz
MWD Operations Coordinator

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Thistle Unit 114H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3711.5' GE + 23.5' KB @ 3735.00usft
Site:	Thistle Unit Sec 22-27 Trac Pad	MD Reference:	3711.5' GE + 23.5' KB @ 3735.00usft
Well:	Thistle Unit 114H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Project	Lea County, NM (NAD-83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Thistle Unit Sec 22-27 Trac Pad				
Site Position:	Northing:	472,548.43 usft	Latitude:	32° 17' 48.4331 N	
From:	Map	Easting:	777,932.69 usft	Longitude:	103° 34' 3.4563 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.41 °

Well	Thistle Unit 114H					
Well Position	+N/-S	0.00 usft	Northing:	472,471.15 usft	Latitude:	32° 17' 47.5728 N
	+E/-W	0.00 usft	Easting:	779,283.03 usft	Longitude:	103° 33' 47.7313 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,711.50 usft	

Wellbore	OH					
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength	
			(°)	(°)	(nT)	
	HDGM	1/17/2018	6.82	60.07	48,121	

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	180.00	

Survey Program	Date	2/21/2018			
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
114.10	1,427.90	Survey #1 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,524.00	9,094.00	Survey #2 (OH)	LEAM MWD+HDGM	MWD+HDGM	
9,189.00	17,080.00	Survey #3 (OH)	MWD+IFR1	OWSG MWD + IFR1	
17,139.00	17,139.00	Survey #4 (OH)	Project	Projection	

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
114.10	0.30	357.51	114.10	0.30	-0.01	-0.30	0.26	0.26	0.00
209.20	0.10	329.51	209.20	0.62	-0.07	-0.62	0.23	-0.21	-29.44
326.00	0.30	344.51	326.00	1.00	-0.20	-1.00	0.18	0.17	12.84
420.50	0.40	318.51	420.50	1.49	-0.48	-1.49	0.20	0.11	-27.51
514.80	0.10	104.51	514.80	1.71	-0.62	-1.71	0.52	-0.32	154.83
609.30	0.20	146.51	609.30	1.55	-0.45	-1.55	0.15	0.11	44.44
703.70	0.20	86.51	703.69	1.43	-0.20	-1.43	0.21	0.00	-63.56

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Well:	Thistle Unit 114H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
825.10	0.20	110.51	825.09	1.37	0.21	-1.37	0.07	0.00	19.77
924.00	0.20	129.51	923.99	1.20	0.51	-1.20	0.07	0.00	19.21
1,049.90	0.10	94.51	1,049.89	1.05	0.79	-1.05	0.10	-0.08	-27.80
1,144.60	0.50	58.51	1,144.59	1.26	1.22	-1.26	0.45	0.42	-38.01
1,175.90	0.40	50.51	1,175.89	1.40	1.42	-1.40	0.38	-0.32	-25.56
1,207.40	0.50	39.51	1,207.39	1.57	1.60	-1.57	0.42	0.32	-34.92
1,238.90	0.50	33.51	1,238.89	1.79	1.76	-1.79	0.17	0.00	-19.05
1,270.40	0.40	96.51	1,270.39	1.90	1.94	-1.90	1.52	-0.32	200.00
1,364.90	0.50	58.51	1,364.89	2.07	2.62	-2.07	0.33	0.11	-40.21
1,414.00	0.50	33.51	1,413.98	2.36	2.92	-2.36	0.44	0.00	-50.92
1,427.90	0.30	73.51	1,427.88	2.43	2.99	-2.43	2.39	-1.44	287.77
1,524.00	0.50	41.60	1,523.98	2.81	3.51	-2.81	0.30	0.21	-33.20
1,616.00	0.70	12.70	1,615.98	3.66	3.90	-3.66	0.39	0.22	-31.41
1,708.00	0.50	337.40	1,707.97	4.58	3.87	-4.58	0.45	-0.22	-38.37
1,801.00	0.50	357.70	1,800.97	5.36	3.70	-5.36	0.19	0.00	21.83
1,896.00	0.50	332.40	1,895.96	6.14	3.49	-6.14	0.23	0.00	-26.63
1,990.00	0.60	351.50	1,989.96	6.99	3.23	-6.99	0.22	0.11	20.32
2,085.00	0.60	340.30	2,084.95	7.95	2.99	-7.95	0.12	0.00	-11.79
2,180.00	0.70	309.50	2,179.95	8.79	2.37	-8.79	0.38	0.11	-32.42
2,274.00	0.70	337.80	2,273.94	9.68	1.71	-9.68	0.36	0.00	30.11
2,368.00	0.90	336.20	2,367.93	10.89	1.20	-10.89	0.21	0.21	-1.70
2,463.00	0.90	327.50	2,462.92	12.20	0.49	-12.20	0.14	0.00	-9.16
2,558.00	1.00	326.90	2,557.91	13.53	-0.36	-13.53	0.11	0.11	-0.63
2,652.00	1.00	316.70	2,651.89	14.81	-1.37	-14.81	0.19	0.00	-10.85
2,747.00	0.70	312.90	2,746.88	15.81	-2.36	-15.81	0.32	-0.32	-4.00
2,842.00	0.80	322.30	2,841.88	16.73	-3.19	-16.73	0.17	0.11	9.89
2,936.00	0.70	325.10	2,935.87	17.72	-3.92	-17.72	0.11	-0.11	2.98
3,031.00	0.70	297.20	3,030.86	18.46	-4.77	-18.46	0.36	0.00	-29.37
3,126.00	0.20	292.80	3,125.86	18.79	-5.44	-18.79	0.53	-0.53	-4.63
3,221.00	0.40	130.90	3,220.86	18.64	-5.34	-18.64	0.62	0.21	-170.42
3,316.00	0.10	113.50	3,315.86	18.39	-5.02	-18.39	0.32	-0.32	-18.32
3,411.00	0.20	176.40	3,410.86	18.19	-4.93	-18.19	0.19	0.11	66.21
3,506.00	0.10	285.60	3,505.86	18.04	-5.00	-18.04	0.26	-0.11	114.95
3,602.00	0.10	318.20	3,601.85	18.13	-5.14	-18.13	0.06	0.00	33.96
3,696.00	0.30	357.40	3,695.85	18.44	-5.20	-18.44	0.25	0.21	41.70
3,791.00	0.00	78.30	3,790.85	18.69	-5.21	-18.69	0.32	-0.32	0.00
3,885.00	1.10	147.90	3,884.85	17.92	-4.73	-17.92	1.17	1.17	0.00
3,980.00	1.20	163.60	3,979.83	16.19	-3.97	-16.19	0.35	0.11	16.53
4,074.00	0.90	168.70	4,073.81	14.53	-3.55	-14.53	0.33	-0.32	5.43
4,169.00	0.70	168.60	4,168.80	13.23	-3.28	-13.23	0.21	-0.21	-0.11
4,262.00	0.70	160.90	4,261.80	12.13	-2.99	-12.13	0.10	0.00	-8.28
4,357.00	0.80	155.40	4,356.79	10.98	-2.52	-10.98	0.13	0.11	-5.79
4,453.00	1.30	134.10	4,452.77	9.61	-1.46	-9.61	0.65	0.52	-22.19

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Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey

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4,547.00	1.50	130.00	4,546.74	8.08	0.25	-8.08	0.24	0.21	-4.36
4,642.00	1.50	131.50	4,641.71	6.46	2.13	-6.46	0.04	0.00	1.58
4,737.00	1.80	126.10	4,736.67	4.75	4.27	-4.75	0.36	0.32	-5.68
4,832.00	2.20	123.80	4,831.61	2.86	6.99	-2.86	0.43	0.42	-2.42
4,926.00	1.70	158.50	4,925.56	0.56	9.00	-0.56	1.34	-0.53	36.91
5,022.00	1.40	165.30	5,021.53	-1.90	9.82	1.90	0.37	-0.31	7.08
5,116.00	1.20	154.00	5,115.50	-3.89	10.54	3.89	0.34	-0.21	-12.02
5,130.00	1.40	153.80	5,129.50	-4.18	10.68	4.18	1.43	1.43	-1.43
5,222.00	1.10	157.20	5,221.48	-6.00	11.52	6.00	0.34	-0.33	3.70
5,316.00	0.90	155.10	5,315.46	-7.50	12.18	7.50	0.22	-0.21	-2.23
5,411.00	0.80	162.90	5,410.45	-8.81	12.69	8.81	0.16	-0.11	8.21
5,506.00	0.60	135.30	5,505.45	-9.80	13.24	9.80	0.41	-0.21	-29.05
5,600.00	2.00	102.20	5,599.42	-10.50	15.19	10.50	1.63	1.49	-35.21
5,695.00	3.30	86.00	5,694.32	-10.66	19.53	10.66	1.57	1.37	-17.05
5,790.00	3.20	67.80	5,789.17	-9.47	24.72	9.47	1.09	-0.11	-19.16
5,885.00	3.10	38.60	5,884.03	-6.46	28.77	6.46	1.67	-0.11	-30.74
5,979.00	4.50	19.90	5,977.83	-1.00	31.61	1.00	1.97	1.49	-19.89
6,074.00	5.40	18.90	6,072.47	6.73	34.33	-6.73	0.95	0.95	-1.05
6,168.00	4.80	17.00	6,166.10	14.68	36.91	-14.68	0.66	-0.64	-2.02
6,262.00	5.20	19.80	6,259.74	22.45	39.51	-22.45	0.50	0.43	2.98
6,357.00	5.90	21.40	6,354.29	31.04	42.75	-31.04	0.75	0.74	1.68
6,451.00	6.10	23.50	6,447.78	40.12	46.50	-40.12	0.32	0.21	2.23
6,545.00	6.10	27.20	6,541.25	49.14	50.78	-49.14	0.42	0.00	3.94
6,640.00	6.10	30.30	6,635.71	57.99	55.63	-57.99	0.35	0.00	3.26
6,735.00	6.80	33.10	6,730.11	67.06	61.25	-67.06	0.81	0.74	2.95
6,830.00	7.50	38.80	6,824.37	76.60	68.20	-76.60	1.05	0.74	6.00
6,924.00	6.90	41.60	6,917.63	85.61	75.80	-85.61	0.74	-0.64	2.98
7,018.00	6.00	38.40	7,011.03	93.68	82.60	-93.68	1.03	-0.96	-3.40
7,113.00	6.20	38.40	7,105.50	101.59	88.87	-101.59	0.21	0.21	0.00
7,208.00	6.50	43.70	7,199.91	109.50	95.77	-109.50	0.69	0.32	5.58
7,303.00	6.90	49.10	7,294.26	117.12	103.80	-117.12	0.79	0.42	5.68
7,398.00	6.60	48.90	7,388.61	124.45	112.23	-124.45	0.32	-0.32	-0.21
7,493.00	6.00	48.40	7,483.03	131.33	120.05	-131.33	0.63	-0.63	-0.53
7,587.00	5.60	49.70	7,576.55	137.56	127.22	-137.56	0.45	-0.43	1.38
7,682.00	5.50	52.30	7,671.11	143.35	134.36	-143.35	0.28	-0.11	2.74
7,776.00	4.70	50.50	7,764.73	148.55	140.90	-148.55	0.87	-0.85	-1.91
7,872.00	4.20	49.50	7,860.44	153.33	146.61	-153.33	0.53	-0.52	-1.04
7,966.00	4.60	47.40	7,954.17	158.12	152.00	-158.12	0.46	0.43	-2.23
8,061.00	4.40	48.80	8,048.87	163.10	157.54	-163.10	0.24	-0.21	1.47
8,155.00	3.80	50.40	8,142.63	167.46	162.66	-167.46	0.65	-0.64	1.70
8,251.00	3.10	53.50	8,238.46	171.03	167.19	-171.03	0.75	-0.73	3.23
8,345.00	2.60	56.90	8,332.34	173.71	171.02	-173.71	0.56	-0.53	3.62
8,440.00	2.40	67.10	8,427.25	175.66	174.66	-175.66	0.51	-0.21	10.74
8,535.00	2.20	71.40	8,522.17	177.02	178.22	-177.02	0.28	-0.21	4.53

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8,630.00	1.50	70.70	8,617.12	178.01	181.12	-178.01	0.74	-0.74	-0.74
8,724.00	1.10	74.10	8,711.10	178.66	183.15	-178.66	0.43	-0.43	3.62
8,819.00	1.10	81.10	8,806.08	179.05	184.93	-179.05	0.14	0.00	7.37
8,914.00	0.90	84.60	8,901.07	179.26	186.57	-179.26	0.22	-0.21	3.68
9,009.00	0.60	89.00	8,996.06	179.34	187.81	-179.34	0.32	-0.32	4.63
9,079.00	0.40	96.40	9,066.06	179.32	188.42	-179.32	0.30	-0.29	10.57
9,094.00	0.40	98.60	9,081.06	179.31	188.53	-179.31	0.10	0.00	14.67
9,189.00	9.10	176.50	9,175.65	171.74	189.32	-171.74	9.50	9.16	82.00
9,284.00	17.90	180.00	9,267.94	149.60	189.77	-149.60	9.30	9.26	3.68
9,329.00	20.80	187.30	9,310.40	134.76	188.76	-134.76	8.38	6.44	16.22
9,378.00	22.10	176.50	9,356.02	116.92	188.22	-116.92	8.47	2.65	-22.04
9,423.00	23.70	172.80	9,397.48	99.50	189.87	-99.50	4.78	3.56	-8.22
9,472.00	25.70	171.00	9,441.99	79.23	192.76	-79.23	4.36	4.08	-3.67
9,517.00	29.00	168.40	9,481.96	58.90	196.48	-58.90	7.80	7.33	-5.78
9,566.00	33.80	169.60	9,523.77	33.84	201.34	-33.84	9.88	9.80	2.45
9,611.00	37.70	170.50	9,560.28	7.95	205.87	-7.95	8.74	8.67	2.00
9,661.00	42.30	173.10	9,598.58	-23.85	210.42	23.85	9.79	9.20	5.20
9,700.00	46.30	175.40	9,626.49	-50.94	213.12	50.94	11.05	10.26	5.90
9,756.00	52.10	179.10	9,663.07	-93.26	215.10	93.26	11.50	10.36	6.61
9,801.00	56.80	180.10	9,689.23	-129.86	215.34	129.86	10.60	10.44	2.22
9,852.00	63.00	181.20	9,714.79	-173.95	214.83	173.95	12.30	12.16	2.16
9,897.00	70.30	181.50	9,732.61	-215.23	213.85	215.23	16.23	16.22	0.67
9,946.00	78.40	181.90	9,745.82	-262.35	212.45	262.35	16.55	16.53	0.82
10,062.00	88.90	182.80	9,758.63	-377.38	207.72	377.38	9.08	9.05	0.78
10,156.00	92.60	182.80	9,757.40	-471.24	203.13	471.24	3.94	3.94	0.00
10,250.00	93.80	183.30	9,752.16	-564.96	198.14	564.96	1.38	1.28	0.53
10,345.00	93.60	183.50	9,746.03	-659.60	192.52	659.60	0.30	-0.21	0.21
10,442.00	95.00	183.30	9,738.75	-756.15	186.78	756.15	1.46	1.44	-0.21
10,536.00	96.10	180.70	9,729.66	-849.65	183.51	849.65	2.99	1.17	-2.77
10,631.00	93.30	178.20	9,721.88	-944.30	184.43	944.30	3.95	-2.95	-2.63
10,725.00	91.50	177.50	9,717.94	-1,038.15	187.95	1,038.15	2.05	-1.91	-0.74
10,820.00	90.00	178.40	9,716.70	-1,133.08	191.35	1,133.08	1.84	-1.58	0.95
10,915.00	90.00	178.70	9,716.70	-1,228.05	193.75	1,228.05	0.32	0.00	0.32
11,010.00	90.70	179.60	9,716.12	-1,323.03	195.16	1,323.03	1.20	0.74	0.95
11,104.00	90.80	180.00	9,714.89	-1,417.03	195.49	1,417.03	0.44	0.11	0.43
11,199.00	90.90	180.30	9,713.48	-1,512.01	195.24	1,512.01	0.33	0.11	0.32
11,293.00	90.30	180.10	9,712.49	-1,606.01	194.91	1,606.01	0.67	-0.64	-0.21
11,388.00	89.70	179.30	9,712.49	-1,701.01	195.41	1,701.01	1.05	-0.63	-0.84
11,482.00	90.10	179.30	9,712.66	-1,795.00	196.56	1,795.00	0.43	0.43	0.00
11,576.00	90.40	179.30	9,712.25	-1,888.99	197.71	1,888.99	0.32	0.32	0.00
11,671.00	90.50	178.70	9,711.50	-1,983.97	199.36	1,983.97	0.64	0.11	-0.63
11,766.00	90.50	177.90	9,710.67	-2,078.93	202.18	2,078.93	0.84	0.00	-0.84
11,860.00	90.00	177.70	9,710.26	-2,172.86	205.79	2,172.86	0.57	-0.53	-0.21

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Thistle Unit 114H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3711.5' GE + 23.5' KB @ 3735.00usft
Site:	Thistle Unit Sec 22-27 Trac Pad	MD Reference:	3711.5' GE + 23.5' KB @ 3735.00usft
Well:	Thistle Unit 114H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,955.00	90.40	179.30	9,709.93	-2,267.82	208.28	2,267.82	1.74	0.42	1.68
12,049.00	91.00	180.00	9,708.78	-2,361.81	208.85	2,361.81	0.98	0.64	0.74
12,144.00	91.40	180.50	9,706.79	-2,456.79	208.44	2,456.79	0.67	0.42	0.53
12,239.00	90.70	181.40	9,705.05	-2,551.76	206.86	2,551.76	1.20	-0.74	0.95
12,334.00	91.00	182.10	9,703.64	-2,646.70	203.96	2,646.70	0.80	0.32	0.74
12,427.00	90.70	182.10	9,702.26	-2,739.63	200.55	2,739.63	0.32	-0.32	0.00
12,522.00	89.30	181.50	9,702.26	-2,834.58	197.57	2,834.58	1.60	-1.47	-0.63
12,617.00	88.90	181.70	9,703.75	-2,929.53	194.92	2,929.53	0.47	-0.42	0.21
12,711.00	88.70	181.70	9,705.72	-3,023.47	192.13	3,023.47	0.21	-0.21	0.00
12,806.00	89.20	182.40	9,707.46	-3,118.39	188.73	3,118.39	0.91	0.53	0.74
12,900.00	91.10	182.40	9,707.22	-3,212.30	184.79	3,212.30	2.02	2.02	0.00
12,994.00	90.70	179.40	9,705.74	-3,306.27	183.32	3,306.27	3.22	-0.43	-3.19
13,089.00	90.20	179.10	9,704.99	-3,401.26	184.56	3,401.26	0.61	-0.53	-0.32
13,183.00	90.00	178.00	9,704.83	-3,495.23	186.94	3,495.23	1.19	-0.21	-1.17
13,278.00	90.90	177.90	9,704.08	-3,590.16	190.34	3,590.16	0.95	0.95	-0.11
13,372.00	90.70	178.00	9,702.77	-3,684.09	193.70	3,684.09	0.24	-0.21	0.11
13,468.00	90.60	178.40	9,701.68	-3,780.04	196.72	3,780.04	0.43	-0.10	0.42
13,562.00	90.00	178.20	9,701.19	-3,874.00	199.51	3,874.00	0.67	-0.64	-0.21
13,657.00	90.00	178.20	9,701.19	-3,968.95	202.49	3,968.95	0.00	0.00	0.00
13,752.00	89.40	178.20	9,701.69	-4,063.90	205.47	4,063.90	0.63	-0.63	0.00
13,846.00	89.30	177.90	9,702.75	-4,157.84	208.67	4,157.84	0.34	-0.11	-0.32
13,941.00	88.40	178.00	9,704.66	-4,252.76	212.07	4,252.76	0.95	-0.95	0.11
14,035.00	89.20	178.40	9,706.63	-4,346.69	215.02	4,346.69	0.95	0.85	0.43
14,130.00	89.50	178.40	9,707.71	-4,441.65	217.67	4,441.65	0.32	0.32	0.00
14,225.00	90.00	178.90	9,708.12	-4,536.62	219.91	4,536.62	0.74	0.53	0.53
14,320.00	89.40	178.90	9,708.62	-4,631.60	221.74	4,631.60	0.63	-0.63	0.00
14,414.00	89.00	179.30	9,709.93	-4,725.58	223.21	4,725.58	0.60	-0.43	0.43
14,509.00	89.50	178.40	9,711.18	-4,820.55	225.12	4,820.55	1.08	0.53	-0.95
14,603.00	89.50	179.10	9,712.00	-4,914.52	227.17	4,914.52	0.74	0.00	0.74
14,698.00	89.50	180.00	9,712.82	-5,009.52	227.91	5,009.52	0.95	0.00	0.95
14,793.00	88.70	180.00	9,714.32	-5,104.50	227.91	5,104.50	0.84	-0.84	0.00
14,887.00	88.40	180.30	9,716.70	-5,198.47	227.67	5,198.47	0.45	-0.32	0.32
14,982.00	88.10	180.30	9,719.60	-5,293.43	227.17	5,293.43	0.32	-0.32	0.00
15,076.00	89.50	181.20	9,721.56	-5,387.40	225.94	5,387.40	1.77	1.49	0.96
15,172.00	89.30	181.50	9,722.57	-5,483.36	223.68	5,483.36	0.38	-0.21	0.31
15,267.00	90.00	180.50	9,723.15	-5,578.35	222.02	5,578.35	1.28	0.74	-1.05
15,363.00	90.50	180.80	9,722.73	-5,674.34	220.93	5,674.34	0.61	0.52	0.31
15,457.00	90.20	181.00	9,722.16	-5,768.32	219.46	5,768.32	0.38	-0.32	0.21
15,552.00	90.60	181.70	9,721.49	-5,863.29	217.22	5,863.29	0.85	0.42	0.74
15,646.00	90.60	180.80	9,720.51	-5,957.27	215.17	5,957.27	0.96	0.00	-0.96
15,741.00	90.10	180.70	9,719.93	-6,052.26	213.92	6,052.26	0.54	-0.53	-0.11
15,835.00	90.50	180.50	9,719.44	-6,146.25	212.94	6,146.25	0.48	0.43	-0.21
15,929.00	91.10	181.20	9,718.12	-6,240.23	211.55	6,240.23	0.98	0.64	0.74

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Thistle Unit 114H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3711.5' GE + 23.5' KB @ 3735.00usft
Site:	Thistle Unit Sec 22-27 Trac Pad	MD Reference:	3711.5' GE + 23.5' KB @ 3735.00usft
Well:	Thistle Unit 114H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,023.00	90.00	179.30	9,717.22	-6,334.22	211.14	6,334.22	2.34	-1.17	-2.02
16,117.00	90.00	179.40	9,717.22	-6,428.21	212.20	6,428.21	0.11	0.00	0.11
16,212.00	90.00	178.70	9,717.22	-6,523.20	213.78	6,523.20	0.74	0.00	-0.74
16,307.00	89.00	178.20	9,718.05	-6,618.16	216.35	6,618.16	1.18	-1.05	-0.53
16,401.00	88.50	177.70	9,720.10	-6,712.08	219.71	6,712.08	0.75	-0.53	-0.53
16,496.00	88.10	178.40	9,722.92	-6,806.98	222.94	6,806.98	0.85	-0.42	0.74
16,591.00	87.90	178.60	9,726.24	-6,901.89	225.42	6,901.89	0.30	-0.21	0.21
16,685.00	87.40	178.70	9,730.09	-6,995.78	227.64	6,995.78	0.54	-0.53	0.11
16,780.00	86.90	178.90	9,734.81	-7,090.64	229.62	7,090.64	0.57	-0.53	0.21
16,874.00	86.40	179.10	9,740.31	-7,184.47	231.26	7,184.47	0.57	-0.53	0.21
16,970.00	86.10	178.70	9,746.59	-7,280.24	233.10	7,280.24	0.52	-0.31	-0.42
17,064.00	86.00	179.10	9,753.06	-7,374.00	234.90	7,374.00	0.44	-0.11	0.43
17,080.00	86.00	179.30	9,754.18	-7,389.96	235.12	7,389.96	1.25	0.00	1.25
17,139.00	86.00	179.30	9,758.29	-7,448.81	235.84	7,448.81	0.00	0.00	0.00
Projection									