



May 1, 2018

Devon Energy Production Company, LP
Well: Thistle Unit 115H
County/Parish: Lea County, NM

HOBBS OCD

SEP 17 2018

RECEIVED

LEAM MWD: (OH) from 1,524' MD – 17,249' MD
Projection; 17,310' MD

This Borehole Survey taken between 04/10/18 and 04/26/18 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Date: May 1, 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 04/10/2018 through 04/26/2018, conduct or supervise the taking of MWD Survey from a depth of 1,524' MD to 17,310' 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 115H 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 115H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Site:	Thistle Unit Sec 22-27 Trac Pad	MD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Well:	Thistle Unit 115H	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
From:	Map	Easting:	777,932.69 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 17' 48.4331 N
		Longitude:	103° 34' 3.4563 W
		Grid Convergence:	0.41 °

Well	Thistle Unit 115H		
Well Position	+N/-S	0.00 usft	Northing: 472,471.65 usft
	+E/-W	0.00 usft	Easting: 779,372.98 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 17' 47.5714 N
		Longitude:	103° 33' 46.6834 W
		Ground Level:	3,713.20 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	HDGM	1/17/2018	(°) 6.82	(°) 60.07	(nT) 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	179.58

Survey Program	Date	5/7/2018		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
125.90	1,376.50	Survey #1 - Surface (OH)	MWD	MWD - Standard
1,524.00	17,249.00	Survey #2 (OH)	LEAM MWD+HDGM	MWD+HDGM
17,310.00	17,310.00	Survey #3 (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
125.90	0.90	198.52	125.89	-0.94	-0.31	0.94	0.71	0.71	0.00
155.50	0.60	246.52	155.49	-1.22	-0.53	1.22	2.26	-1.01	162.16
248.10	0.80	238.52	248.09	-1.75	-1.53	1.74	0.24	0.22	-8.64
337.40	0.50	184.52	337.38	-2.46	-2.09	2.45	0.73	-0.34	-60.47
431.90	0.70	182.52	431.88	-3.45	-2.15	3.44	0.21	0.21	-2.12
526.60	0.30	231.52	526.57	-4.18	-2.37	4.17	0.58	-0.42	51.74
621.00	0.60	174.52	620.97	-4.83	-2.51	4.81	0.53	0.32	-60.38
715.40	0.20	213.52	715.37	-5.46	-2.56	5.44	0.49	-0.42	41.31

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Well:	Thistle Unit 115H	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)
809.90	0.70	211.52	809.86	-6.09	-2.95	6.07	0.53	0.53	-2.12
904.30	0.40	157.52	904.26	-6.89	-3.12	6.86	0.60	-0.32	-57.20
1,093.30	0.60	184.52	1,093.25	-8.48	-2.95	8.46	0.16	0.11	14.29
1,187.70	0.60	151.52	1,187.65	-9.41	-2.75	9.39	0.36	0.00	-34.96
1,250.70	0.40	109.52	1,250.65	-9.77	-2.39	9.75	0.64	-0.32	-66.67
1,282.10	0.20	152.52	1,282.05	-9.86	-2.26	9.84	0.92	-0.64	136.94
1,376.50	0.60	182.52	1,376.44	-10.50	-2.21	10.48	0.46	0.42	31.78
1,524.00	0.70	182.10	1,523.93	-12.17	-2.27	12.15	0.07	0.07	-0.28
1,616.00	0.70	189.80	1,615.93	-13.28	-2.39	13.27	0.10	0.00	8.37
1,707.00	0.60	188.40	1,706.92	-14.30	-2.55	14.28	0.11	-0.11	-1.54
1,801.00	0.60	193.10	1,800.92	-15.27	-2.74	15.25	0.05	0.00	5.00
1,895.00	0.40	209.50	1,894.91	-16.03	-3.01	16.01	0.26	-0.21	17.45
1,990.00	0.30	73.50	1,989.91	-16.25	-2.93	16.23	0.68	-0.11	-143.16
2,085.00	1.40	60.60	2,084.90	-15.61	-1.69	15.60	1.17	1.16	-13.58
2,179.00	2.70	70.00	2,178.84	-14.29	1.40	14.30	1.42	1.38	10.00
2,273.00	3.20	77.30	2,272.71	-12.96	6.04	13.00	0.66	0.53	7.77
2,368.00	3.70	80.20	2,367.54	-11.85	11.64	11.94	0.56	0.53	3.05
2,463.00	4.40	82.90	2,462.30	-10.88	18.28	11.01	0.76	0.74	2.84
2,557.00	5.40	83.20	2,555.96	-9.91	26.25	10.10	1.06	1.06	0.32
2,651.00	6.20	81.50	2,649.48	-8.64	35.66	8.90	0.87	0.85	-1.81
2,746.00	6.90	77.10	2,743.86	-6.60	46.30	6.94	0.91	0.74	-4.63
2,841.00	7.80	73.50	2,838.07	-3.50	58.04	3.93	1.06	0.95	-3.79
2,935.00	7.70	72.20	2,931.22	0.24	70.15	0.28	0.21	-0.11	-1.38
3,030.00	8.20	71.00	3,025.30	4.39	82.62	-3.78	0.55	0.53	-1.26
3,124.00	8.50	72.00	3,118.31	8.72	95.57	-8.02	0.35	0.32	1.06
3,219.00	8.60	71.20	3,212.25	13.18	108.97	-12.38	0.16	0.11	-0.84
3,314.00	8.50	70.90	3,306.19	17.76	122.33	-16.87	0.12	-0.11	-0.32
3,410.00	8.30	74.70	3,401.17	21.91	135.71	-20.92	0.61	-0.21	3.96
3,505.00	8.10	78.30	3,495.20	25.08	148.88	-23.99	0.58	-0.21	3.79
3,598.00	7.90	78.20	3,587.29	27.71	161.55	-26.53	0.22	-0.22	-0.11
3,693.00	7.60	78.40	3,681.42	30.31	174.10	-29.04	0.32	-0.32	0.21
3,787.00	8.20	78.80	3,774.53	32.86	186.76	-31.49	0.64	0.64	0.43
3,882.00	8.80	78.00	3,868.49	35.69	200.52	-34.22	0.64	0.63	-0.84
3,977.00	8.50	78.00	3,962.41	38.66	214.49	-37.09	0.32	-0.32	0.00
4,072.00	7.90	78.90	4,056.43	41.38	227.77	-39.71	0.65	-0.63	0.95
4,167.00	7.30	78.00	4,150.60	43.89	240.08	-42.13	0.64	-0.63	-0.95
4,261.00	7.00	77.60	4,243.87	46.36	251.51	-44.52	0.32	-0.32	-0.43
4,356.00	7.50	78.70	4,338.11	48.82	263.25	-46.89	0.55	0.53	1.16
4,451.00	8.70	83.00	4,432.16	50.91	276.46	-48.88	1.41	1.26	4.53
4,546.00	9.30	86.10	4,525.99	52.31	291.25	-50.17	0.81	0.63	3.26
4,640.00	8.40	84.10	4,618.87	53.53	305.66	-51.29	1.01	-0.96	-2.13
4,735.00	8.20	77.90	4,712.88	55.66	319.18	-53.32	0.96	-0.21	-6.53
4,830.00	8.50	79.50	4,806.87	58.36	332.71	-55.92	0.40	0.32	1.68

LEAM Drilling Services

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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)
4,924.00	8.40	84.30	4,899.85	60.31	346.37	-57.77	0.76	-0.11	5.11
5,019.00	8.20	80.80	4,993.86	62.08	359.97	-59.44	0.57	-0.21	-3.68
5,113.00	6.90	78.60	5,087.04	64.27	372.12	-61.54	1.42	-1.38	-2.34
5,207.00	5.80	81.00	5,180.46	66.13	382.34	-63.33	1.20	-1.17	2.55
5,402.00	6.10	80.40	5,374.41	69.40	402.29	-66.45	0.16	0.15	-0.31
5,497.00	7.40	73.70	5,468.75	71.96	413.14	-68.93	1.60	1.37	-7.05
5,591.00	8.50	72.50	5,561.85	75.75	425.58	-72.63	1.18	1.17	-1.28
5,685.00	9.80	74.30	5,654.65	80.00	439.91	-76.77	1.42	1.38	1.91
5,780.00	10.00	73.70	5,748.23	84.50	455.61	-81.16	0.24	0.21	-0.63
5,874.00	10.10	72.50	5,840.79	89.27	471.30	-85.82	0.25	0.11	-1.28
5,968.00	10.30	74.10	5,933.31	94.05	487.24	-90.48	0.37	0.21	1.70
6,063.00	10.00	73.60	6,026.82	98.71	503.32	-95.02	0.33	-0.32	-0.53
6,158.00	9.20	73.40	6,120.49	103.21	518.51	-99.40	0.84	-0.84	-0.21
6,253.00	8.60	73.40	6,214.34	107.41	532.60	-103.50	0.63	-0.63	0.00
6,348.00	8.40	72.50	6,308.30	111.52	546.02	-107.52	0.25	-0.21	-0.95
6,442.00	8.10	70.90	6,401.33	115.75	558.83	-111.66	0.40	-0.32	-1.70
6,537.00	8.70	71.40	6,495.31	120.24	571.96	-116.04	0.64	0.63	0.53
6,631.00	8.90	74.80	6,588.20	124.41	585.72	-120.11	0.59	0.21	3.62
6,725.00	9.20	73.90	6,681.03	128.40	599.96	-124.00	0.35	0.32	-0.96
6,819.00	9.50	76.90	6,773.78	132.24	614.73	-127.73	0.61	0.32	3.19
6,914.00	9.80	78.30	6,867.44	135.66	630.28	-131.04	0.40	0.32	1.47
7,009.00	9.50	75.10	6,961.10	139.31	645.78	-134.58	0.65	-0.32	-3.37
7,104.00	9.00	73.70	7,054.86	143.42	660.48	-138.57	0.58	-0.53	-1.47
7,197.00	8.70	75.00	7,146.75	147.28	674.26	-142.33	0.39	-0.32	1.40
7,293.00	9.50	77.20	7,241.54	150.91	689.00	-145.86	0.91	0.83	2.29
7,387.00	10.70	80.40	7,334.09	154.09	705.17	-148.91	1.41	1.28	3.40
7,482.00	10.60	78.80	7,427.45	157.25	722.44	-151.95	0.33	-0.11	-1.68
7,577.00	10.40	78.30	7,520.86	160.69	739.40	-155.27	0.23	-0.21	-0.53
7,671.00	10.10	79.90	7,613.36	163.86	755.83	-158.31	0.44	-0.32	1.70
7,765.00	9.60	82.00	7,705.97	166.39	771.70	-160.73	0.65	-0.53	2.23
7,860.00	8.20	82.50	7,799.83	168.38	786.26	-162.61	1.48	-1.47	0.53
7,954.00	7.80	83.90	7,892.91	169.93	799.25	-164.07	0.47	-0.43	1.49
8,049.00	7.10	86.40	7,987.11	170.99	811.52	-165.03	0.81	-0.74	2.63
8,143.00	7.20	89.20	8,080.38	171.43	823.21	-165.39	0.39	0.11	2.98
8,237.00	6.40	85.30	8,173.72	171.94	834.32	-165.82	0.98	-0.85	-4.15
8,332.00	6.00	79.90	8,268.16	173.25	844.49	-167.05	0.74	-0.42	-5.68
8,427.00	4.70	79.00	8,362.75	174.86	853.20	-168.60	1.37	-1.37	-0.95
8,521.00	3.60	75.30	8,456.50	176.35	859.83	-170.04	1.20	-1.17	-3.94
8,615.00	2.00	75.10	8,550.38	177.52	864.27	-171.18	1.70	-1.70	-0.21
8,711.00	1.50	93.10	8,646.34	177.88	867.15	-171.52	0.77	-0.52	18.75
8,805.00	0.40	75.50	8,740.33	177.90	868.69	-171.52	1.20	-1.17	-18.72
8,900.00	0.30	288.40	8,835.33	178.06	868.78	-171.68	0.71	-0.11	-154.84
8,995.00	0.70	280.80	8,930.32	178.24	867.97	-171.88	0.43	0.42	-8.00

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Survey Report

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Site:	Thistle Unit Sec 22-27 Trac Pad	MD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
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9,089.00	1.00	268.90	9,024.31	178.34	866.59	-171.98	0.37	0.32	-12.66
9,154.00	0.90	245.10	9,089.30	178.11	865.56	-171.76	0.62	-0.15	-36.62
9,185.00	2.60	186.40	9,120.29	177.31	865.26	-170.96	7.31	5.48	-189.35
9,230.00	6.90	190.30	9,165.12	173.63	864.66	-167.29	9.58	9.56	8.67
9,278.00	11.20	181.00	9,212.52	166.13	864.06	-159.79	9.43	8.96	-19.38
9,323.00	14.20	178.90	9,256.41	156.24	864.09	-149.90	6.74	6.67	-4.67
9,373.00	16.80	180.60	9,304.59	142.88	864.13	-136.54	5.28	5.20	3.40
9,418.00	19.90	182.00	9,347.30	128.72	863.80	-122.39	6.96	6.89	3.11
9,468.00	21.70	179.60	9,394.04	110.97	863.57	-104.64	3.98	3.60	-4.80
9,513.00	25.40	180.40	9,435.28	93.00	863.56	-86.66	8.25	8.22	1.78
9,563.00	33.80	181.00	9,478.72	68.32	863.24	-61.99	16.81	16.80	1.20
9,608.00	42.30	180.80	9,514.12	40.62	862.81	-34.29	18.89	18.89	-0.44
9,658.00	52.10	179.60	9,548.05	3.98	862.71	2.35	19.68	19.60	-2.40
9,703.00	54.10	178.50	9,575.07	-32.00	863.31	38.33	4.86	4.44	-2.44
9,753.00	57.00	179.40	9,603.35	-73.22	864.06	79.55	5.99	5.80	1.80
9,798.00	64.50	180.40	9,625.32	-112.45	864.12	118.79	16.78	16.67	2.22
9,847.00	66.50	180.40	9,645.64	-157.04	863.81	163.37	4.08	4.08	0.00
9,892.00	67.00	180.30	9,663.41	-198.38	863.55	204.71	1.13	1.11	-0.22
9,942.00	70.30	180.80	9,681.61	-244.94	863.11	251.26	6.67	6.60	1.00
9,987.00	77.70	181.70	9,694.00	-288.16	862.16	294.47	16.56	16.44	2.00
10,051.00	86.70	180.80	9,702.68	-351.49	860.78	357.79	14.13	14.06	-1.41
10,098.00	90.30	180.30	9,703.91	-398.46	860.33	404.76	7.73	7.66	-1.06
10,145.00	90.40	180.80	9,703.62	-445.46	859.88	451.75	1.08	0.21	1.06
10,240.00	91.50	180.80	9,702.05	-540.43	858.55	546.71	1.16	1.16	0.00
10,335.00	91.60	180.70	9,699.48	-635.39	857.31	641.66	0.15	0.11	-0.11
10,429.00	92.40	180.70	9,696.20	-729.33	856.16	735.58	0.85	0.85	0.00
10,524.00	90.20	180.50	9,694.04	-824.29	855.17	830.54	2.33	-2.32	-0.21
10,619.00	89.90	179.30	9,693.96	-919.29	855.33	925.53	1.30	-0.32	-1.26
10,714.00	88.50	179.40	9,695.29	-1,014.27	856.41	1,020.52	1.48	-1.47	0.11
10,810.00	88.10	179.40	9,698.13	-1,110.22	857.41	1,116.48	0.42	-0.42	0.00
10,905.00	88.40	180.00	9,701.04	-1,205.18	857.91	1,211.43	0.71	0.32	0.63
10,998.00	87.60	180.00	9,704.28	-1,298.12	857.91	1,304.37	0.86	-0.86	0.00
11,104.00	88.50	178.90	9,707.89	-1,404.05	858.93	1,410.31	1.34	0.85	-1.04
11,198.00	90.60	179.10	9,708.63	-1,498.03	860.57	1,504.30	2.24	2.23	0.21
11,293.00	90.00	178.40	9,708.13	-1,593.00	862.64	1,599.28	0.97	-0.63	-0.74
11,387.00	89.90	178.40	9,708.21	-1,686.97	865.27	1,693.26	0.11	-0.11	0.00
11,481.00	89.40	178.20	9,708.79	-1,780.92	868.05	1,787.24	0.57	-0.53	-0.21
11,576.00	90.90	178.70	9,708.54	-1,875.88	870.62	1,882.22	1.66	1.58	0.53
11,670.00	91.40	178.70	9,706.65	-1,969.84	872.76	1,976.19	0.53	0.53	0.00
11,765.00	91.50	178.50	9,704.25	-2,064.78	875.08	2,071.14	0.24	0.11	-0.21
11,860.00	90.00	180.10	9,703.00	-2,159.76	876.24	2,166.13	2.31	-1.58	1.68
11,954.00	90.70	180.70	9,702.43	-2,253.76	875.58	2,260.11	0.98	0.74	0.64
12,049.00	90.00	180.50	9,701.85	-2,348.75	874.59	2,355.10	0.77	-0.74	-0.21
12,143.00	90.70	180.70	9,701.27	-2,442.74	873.60	2,449.08	0.77	0.74	0.21

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Thistle Unit 115H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Site:	Thistle Unit Sec 22-27 Trac Pad	MD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Well:	Thistle Unit 115H	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)
12,239.00	90.60	180.80	9,700.18	-2,538.73	872.35	2,545.05	0.15	-0.10	0.10
12,333.00	90.60	181.00	9,699.20	-2,632.71	870.87	2,639.02	0.21	0.00	0.21
12,428.00	89.30	180.10	9,699.28	-2,727.70	869.96	2,734.01	1.66	-1.37	-0.95
12,522.00	89.20	180.00	9,700.51	-2,821.69	869.88	2,827.99	0.15	-0.11	-0.11
12,617.00	89.60	180.30	9,701.51	-2,916.69	869.63	2,922.98	0.53	0.42	0.32
12,712.00	88.70	179.60	9,702.92	-3,011.68	869.71	3,017.97	1.20	-0.95	-0.74
12,806.00	88.70	179.60	9,705.05	-3,105.65	870.37	3,111.95	0.00	0.00	0.00
12,905.00	89.90	179.80	9,706.26	-3,204.64	870.88	3,210.94	1.23	1.21	0.20
13,000.00	90.00	180.00	9,706.34	-3,299.64	871.05	3,305.93	0.24	0.11	0.21
13,094.00	89.90	180.30	9,706.42	-3,393.64	870.80	3,399.93	0.34	-0.11	0.32
13,189.00	89.00	180.10	9,707.34	-3,488.63	870.47	3,494.92	0.97	-0.95	-0.21
13,283.00	90.50	179.40	9,707.75	-3,582.63	870.88	3,588.91	1.76	1.60	-0.74
13,378.00	90.30	178.90	9,707.08	-3,677.61	872.29	3,683.91	0.57	-0.21	-0.53
13,473.00	89.20	178.70	9,707.50	-3,772.59	874.28	3,778.90	1.18	-1.16	-0.21
13,568.00	90.50	178.50	9,707.75	-3,867.56	876.60	3,873.88	1.38	1.37	-0.21
13,663.00	90.60	179.60	9,706.83	-3,962.54	878.18	3,968.87	1.16	0.11	1.16
13,757.00	91.10	180.00	9,705.44	-4,056.53	878.50	4,062.86	0.68	0.53	0.43
13,852.00	91.70	180.50	9,703.12	-4,151.50	878.09	4,157.82	0.82	0.63	0.53
13,947.00	90.80	181.00	9,701.05	-4,246.47	876.85	4,252.78	1.08	-0.95	0.53
14,042.00	89.80	180.10	9,700.55	-4,341.46	875.94	4,347.76	1.42	-1.05	-0.95
14,136.00	89.60	179.40	9,701.04	-4,435.46	876.35	4,441.76	0.77	-0.21	-0.74
14,231.00	88.80	179.10	9,702.37	-4,530.44	877.59	4,536.75	0.90	-0.84	-0.32
14,326.00	89.20	179.30	9,704.03	-4,625.41	878.91	4,631.73	0.47	0.42	0.21
14,421.00	88.50	179.40	9,705.93	-4,720.39	879.99	4,726.71	0.74	-0.74	0.11
14,517.00	89.30	181.20	9,707.78	-4,816.37	879.49	4,822.68	2.05	0.83	1.88
14,612.00	89.60	181.20	9,708.69	-4,911.34	877.50	4,917.64	0.32	0.32	0.00
14,706.00	89.40	179.10	9,709.51	-5,005.33	877.25	5,011.63	2.24	-0.21	-2.23
14,801.00	89.70	179.80	9,710.25	-5,100.32	878.17	5,106.62	0.80	0.32	0.74
14,895.00	89.70	179.40	9,710.75	-5,194.32	878.82	5,200.62	0.43	0.00	-0.43
14,990.00	89.60	179.10	9,711.33	-5,289.31	880.07	5,295.62	0.33	-0.11	-0.32
15,085.00	89.50	178.50	9,712.07	-5,384.28	882.06	5,390.61	0.64	-0.11	-0.63
15,180.00	89.60	178.00	9,712.82	-5,479.24	884.96	5,485.58	0.54	0.11	-0.53
15,274.00	89.50	177.70	9,713.56	-5,573.17	888.48	5,579.53	0.34	-0.11	-0.32
15,369.00	90.00	177.30	9,713.97	-5,668.08	892.63	5,674.47	0.67	0.53	-0.42
15,463.00	89.80	178.70	9,714.14	-5,762.02	895.91	5,768.43	1.50	-0.21	1.49
15,558.00	90.50	178.40	9,713.89	-5,856.98	898.31	5,863.41	0.80	0.74	-0.32
15,652.00	88.60	178.90	9,714.63	-5,950.95	900.53	5,957.39	2.09	-2.02	0.53
15,746.00	87.90	178.50	9,717.50	-6,044.88	902.66	6,051.34	0.86	-0.74	-0.43
15,840.00	87.80	177.80	9,721.02	-6,138.77	905.69	6,145.24	0.75	-0.11	-0.74
15,935.00	87.70	177.10	9,724.75	-6,233.60	909.91	6,240.10	0.74	-0.11	-0.74
16,029.00	88.50	178.00	9,727.87	-6,327.46	913.93	6,333.99	1.28	0.85	0.96
16,124.00	88.50	177.70	9,730.36	-6,422.36	917.49	6,428.91	0.32	0.00	-0.32
16,218.00	89.60	179.10	9,731.91	-6,516.31	920.12	6,522.88	1.89	1.17	1.49

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Thistle Unit 115H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Site:	Thistle Unit Sec 22-27 Trac Pad	MD Reference:	3713.2' GE + 23.5' KB @ 3736.70usft
Well:	Thistle Unit 115H	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)
16,309.00	89.60	179.40	9,732.55	-6,607.30	921.31	6,613.87	0.33	0.00	0.33
16,403.00	91.70	179.10	9,731.48	-6,701.28	922.54	6,707.86	2.26	2.23	-0.32
16,498.00	90.60	179.60	9,729.58	-6,796.25	923.61	6,802.84	1.27	-1.16	0.53
16,593.00	89.30	180.30	9,729.66	-6,891.25	923.70	6,897.83	1.55	-1.37	0.74
16,687.00	87.90	179.80	9,731.96	-6,985.22	923.61	6,991.80	1.58	-1.49	-0.53
16,782.00	89.40	179.10	9,734.19	-7,080.18	924.53	7,086.77	1.74	1.58	-0.74
16,877.00	88.70	180.00	9,735.77	-7,175.16	925.27	7,181.75	1.20	-0.74	0.95
16,971.00	89.30	179.30	9,737.41	-7,269.15	925.85	7,275.74	0.98	0.64	-0.74
17,065.00	87.80	179.60	9,739.79	-7,363.11	926.75	7,369.71	1.63	-1.60	0.32
17,161.00	88.20	180.50	9,743.14	-7,459.05	926.66	7,465.64	1.03	0.42	0.94
17,249.00	90.50	180.80	9,744.14	-7,547.03	925.67	7,553.62	2.64	2.61	0.34
17,310.00	90.50	180.80	9,743.60	-7,608.03	924.82	7,614.60	0.00	0.00	0.00
Projeciton									