



November 17, 2015

HOBBS OCD

OCT 03 2016

RECEIVED

Devon Energy Production Company, L.P.
Well: Thistle Unit 109H
County/Parish: Lea County, NM

LEAM MWD: (OH) from 1,461' MD – 17,544' MD
Projection: 17,602'

This Borehole Survey taken between 10/26/15 and 11/16/15 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Date: November 17, 2015

*Physical & Mailing: 303 Longmire Dr., Suite 801, Conroe, TX 77304
936-756-7577 • www.lead.net • 1 (800) 756-7504*



Survey Certification Form

HOBBS OCD

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State of New Mexico
Lea County

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Systems LLC, that I did on the day(s) of October 26, 2015 through November 16, 2015, conduct or supervise the taking of MWD Survey from a depth of 1,461' to 17,602' MD; that the data is true, correct, complete and within the limitations of the tools as set forth by LEAM Drilling Systems LLC, that I am authorized and qualified to make this report; that this survey was conducted at the request of Devon Energy Production Company, L.P. for the Thistle Unit 109H 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 Systems LLC.

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 Systems LLC

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well 109H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Site:	Thistle Unit	MD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Well:	109H	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		
Site Position:		Northing:	468,026.90 usft
From:	Map	Easting:	780,722.56 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 17' 3.494 N
		Longitude:	103° 33' 31.335 W
		Grid Convergence:	0.41 °

Well	109H		
Well Position	+N/-S	0.00 usft	Northing: 472,548.44 usft
	+E/-W	0.00 usft	Easting: 777,932.69 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	3,739.60 usft
		Latitude:	32° 17' 48.433 N
		Longitude:	103° 34' 3.456 W
		Ground Level:	3,714.60 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	BGGM2015	06/12/15	7.26
			Dip Angle (°) 60.21
			Field Strength (nT) 48,264

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°) 179.98

Survey Program	Date	11/19/15		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
145.00	1,318.00	Survey #1 (OH)	MWD-ISCWSA	MWD - Standard
1,461.00	17,544.00	Survey #2 (OH)	LEAM MWD+HDGM	MWD+HDGM
17,602.00	17,602.00	Survey #3 (OH)	Project	Projection

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145.00	0.62	270.90	145.00	0.01	-0.78	-0.01	0.43	0.43	0.00
238.00	0.88	310.88	237.99	0.49	-1.83	-0.49	0.61	0.28	42.99
329.00	0.88	307.98	328.98	1.38	-2.91	-1.38	0.05	0.00	-3.19
422.00	1.10	324.29	421.97	2.54	-3.99	-2.54	0.38	0.24	17.54
514.00	0.70	320.46	513.95	3.69	-4.86	-3.69	0.44	-0.43	-4.16
605.00	0.88	326.57	604.95	4.70	-5.60	-4.70	0.22	0.20	6.71

Leam Drilling Systems LLC

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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)	
696.00	0.70	305.39	695.94	5.61	-6.44	-5.61	0.37	-0.20	-23.27	
789.00	1.01	280.25	788.93	6.08	-7.71	-6.08	0.52	0.33	-27.03	
881.00	1.10	288.69	880.91	6.51	-9.34	-6.51	0.19	0.10	9.17	
973.00	1.10	291.59	972.89	7.12	-11.00	-7.12	0.06	0.00	3.15	
1,063.00	1.01	300.78	1,062.88	7.84	-12.49	-7.84	0.21	-0.10	10.21	
1,153.00	1.01	296.95	1,152.86	8.61	-13.88	-8.61	0.07	0.00	-4.26	
1,245.00	0.88	293.35	1,244.85	9.25	-15.25	-9.26	0.16	-0.14	-3.91	
1,318.00	1.10	281.07	1,317.84	9.61	-16.45	-9.62	0.42	0.30	-16.82	
1,461.00	1.00	280.00	1,460.82	10.09	-19.03	-10.10	0.07	-0.07	-0.75	
1,525.00	0.90	282.50	1,524.81	10.30	-20.07	-10.30	0.17	-0.16	3.91	
1,620.00	0.90	302.30	1,619.80	10.86	-21.43	-10.86	0.33	0.00	20.84	
1,716.00	1.10	290.00	1,715.78	11.57	-22.93	-11.58	0.30	0.21	-12.81	
1,811.00	0.60	337.70	1,810.77	12.35	-23.97	-12.35	0.87	-0.53	50.21	
1,906.00	0.70	18.50	1,905.77	13.36	-23.98	-13.37	0.49	0.11	42.95	
2,002.00	0.70	35.70	2,001.76	14.39	-23.45	-14.40	0.22	0.00	17.92	
2,097.00	0.80	36.20	2,096.75	15.40	-22.72	-15.40	0.11	0.11	0.53	
2,192.00	0.50	116.20	2,191.75	15.75	-21.96	-15.76	0.91	-0.32	84.21	
2,288.00	0.50	116.00	2,287.74	15.38	-21.20	-15.39	0.00	0.00	-0.21	
2,384.00	0.50	42.50	2,383.74	15.50	-20.54	-15.51	0.62	0.00	-76.56	
2,479.00	0.60	23.50	2,478.74	16.27	-20.07	-16.27	0.22	0.11	-20.00	
2,573.00	0.40	16.50	2,572.73	17.03	-19.78	-17.04	0.22	-0.21	-7.45	
2,669.00	0.40	65.00	2,668.73	17.50	-19.38	-17.50	0.34	0.00	50.52	
2,764.00	0.50	50.60	2,763.73	17.90	-18.76	-17.91	0.16	0.11	-15.16	
2,860.00	0.60	37.30	2,859.72	18.56	-18.13	-18.57	0.17	0.10	-13.85	
2,955.00	0.60	29.40	2,954.72	19.39	-17.58	-19.40	0.09	0.00	-8.32	
3,050.00	0.70	27.80	3,049.71	20.34	-17.07	-20.35	0.11	0.11	-1.68	
3,145.00	0.60	34.10	3,144.71	21.27	-16.52	-21.27	0.13	-0.11	6.63	
3,337.00	0.80	22.10	3,336.69	23.34	-15.45	-23.34	0.13	0.10	-6.25	
3,527.00	0.60	23.00	3,526.68	25.48	-14.56	-25.49	0.11	-0.11	0.47	
3,719.00	0.80	26.00	3,718.66	27.61	-13.58	-27.62	0.11	0.10	1.56	
3,909.00	0.70	13.50	3,908.65	29.94	-12.73	-29.94	0.10	-0.05	-6.58	
4,100.00	1.30	41.80	4,099.62	32.68	-11.01	-32.69	0.40	0.31	14.82	
4,195.00	1.50	52.70	4,194.59	34.24	-9.31	-34.24	0.35	0.21	11.47	
4,291.00	1.70	67.80	4,290.55	35.54	-6.99	-35.54	0.48	0.21	15.73	
4,386.00	1.90	82.80	4,385.51	36.27	-4.12	-36.27	0.54	0.21	15.79	
4,481.00	2.70	86.70	4,480.43	36.60	-0.33	-36.60	0.86	0.84	4.11	
4,576.00	3.10	74.30	4,575.31	37.42	4.38	-37.42	0.78	0.42	-13.05	
4,671.00	3.10	76.60	4,670.17	38.71	9.35	-38.71	0.13	0.00	2.42	
4,861.00	4.20	93.50	4,859.79	39.48	21.30	-39.47	0.80	0.58	8.89	
5,007.00	4.30	92.30	5,005.38	38.93	32.10	-38.92	0.09	0.07	-0.82	
5,159.00	3.40	92.10	5,157.04	38.54	42.30	-38.52	0.59	-0.59	-0.13	
5,243.00	3.30	93.90	5,240.90	38.28	47.20	-38.27	0.17	-0.12	2.14	

Leam Drilling Systems LLC

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi_User Db

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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)
5,338.00	3.70	84.70	5,335.72	38.38	52.98	-38.36	0.72	0.42	-9.68
5,434.00	4.00	73.60	5,431.50	39.61	59.28	-39.59	0.84	0.31	-11.56
5,529.00	4.10	62.20	5,526.27	42.13	65.46	-42.11	0.85	0.11	-12.00
5,625.00	4.20	57.30	5,622.02	45.63	71.45	-45.60	0.38	0.10	-5.10
5,720.00	4.00	57.30	5,716.77	49.30	77.17	-49.27	0.21	-0.21	0.00
5,815.00	4.00	47.10	5,811.54	53.34	82.39	-53.32	0.75	0.00	-10.74
5,911.00	4.00	42.70	5,907.31	58.08	87.11	-58.05	0.32	0.00	-4.58
6,005.00	3.90	41.30	6,001.09	62.90	91.44	-62.86	0.15	-0.11	-1.49
6,100.00	3.50	39.50	6,095.89	67.56	95.42	-67.53	0.44	-0.42	-1.89
6,195.00	4.00	42.40	6,190.69	72.24	99.50	-72.21	0.56	0.53	3.05
6,290.00	4.30	43.10	6,285.44	77.29	104.17	-77.26	0.32	0.32	0.74
6,385.00	4.10	43.20	6,380.18	82.37	108.92	-82.33	0.21	-0.21	0.11
6,481.00	4.00	42.50	6,475.94	87.34	113.54	-87.30	0.12	-0.10	-0.73
6,576.00	4.00	41.80	6,570.71	92.25	117.98	-92.21	0.05	0.00	-0.74
6,671.00	4.10	42.20	6,665.47	97.24	122.47	-97.19	0.11	0.11	0.42
6,767.00	4.30	35.30	6,761.22	102.72	126.86	-102.67	0.57	0.21	-7.19
6,862.00	3.70	33.60	6,855.98	108.18	130.61	-108.13	0.64	-0.63	-1.79
6,957.00	3.40	33.70	6,950.80	113.07	133.87	-113.03	0.32	-0.32	0.11
7,053.00	2.60	28.50	7,046.67	117.36	136.49	-117.31	0.88	-0.83	-5.42
7,148.00	1.90	18.50	7,141.60	120.74	138.02	-120.69	0.84	-0.74	-10.53
7,243.00	1.90	19.00	7,236.54	123.73	139.03	-123.68	0.02	0.00	0.53
7,338.00	1.80	18.60	7,331.49	126.63	140.02	-126.58	0.11	-0.11	-0.42
7,434.00	1.70	14.90	7,427.45	129.43	140.87	-129.38	0.16	-0.10	-3.85
7,529.00	1.50	19.50	7,522.41	131.97	141.64	-131.92	0.25	-0.21	4.84
7,625.00	1.20	24.40	7,618.39	134.07	142.48	-134.02	0.33	-0.31	5.10
7,720.00	1.00	16.00	7,713.37	135.77	143.12	-135.72	0.27	-0.21	-8.84
7,816.00	0.90	9.10	7,809.35	137.32	143.47	-137.27	0.16	-0.10	-7.19
7,911.00	0.80	359.80	7,904.34	138.72	143.58	-138.67	0.18	-0.11	-9.79
8,006.00	0.40	338.50	7,999.34	139.69	143.46	-139.64	0.48	-0.42	-22.42
8,102.00	0.30	328.90	8,095.34	140.22	143.21	-140.17	0.12	-0.10	-10.00
8,197.00	0.40	296.50	8,190.34	140.58	142.78	-140.53	0.23	0.11	-34.11
8,293.00	0.10	291.60	8,286.33	140.76	142.40	-140.71	0.31	-0.31	-5.10
8,388.00	0.40	306.00	8,381.33	140.99	142.06	-140.94	0.32	0.32	15.16
8,482.00	0.40	180.30	8,475.33	140.85	141.79	-140.80	0.76	0.00	-133.72
8,578.00	0.50	208.50	8,571.33	140.15	141.59	-140.10	0.25	0.10	29.38
8,673.00	0.60	233.80	8,666.33	139.49	140.99	-139.44	0.27	0.11	26.63
8,768.00	0.80	236.20	8,761.32	138.83	140.04	-138.78	0.21	0.21	2.53
8,863.00	0.90	226.90	8,856.31	137.95	138.94	-137.90	0.18	0.11	-9.79
8,958.00	0.90	240.80	8,951.30	137.07	137.75	-137.03	0.23	0.00	14.63
9,053.00	0.90	251.00	9,046.28	136.47	136.39	-136.42	0.17	0.00	10.74
9,148.00	0.90	253.50	9,141.27	136.01	134.97	-135.96	0.04	0.00	2.63
9,244.00	0.80	277.00	9,237.26	135.88	133.58	-135.83	0.37	-0.10	24.48

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9,338.00	0.80	278.30	9,331.25	136.05	132.28	-136.01	0.02	0.00	1.38
9,427.00	1.20	287.60	9,420.24	136.43	130.78	-136.38	0.48	0.45	10.45
9,521.00	4.20	207.10	9,514.14	133.66	128.27	-133.61	4.44	3.19	-85.64
9,553.00	9.10	198.10	9,545.92	130.21	126.95	-130.16	15.61	15.31	-28.13
9,584.00	12.20	196.20	9,576.38	124.73	125.27	-124.69	10.06	10.00	-6.13
9,616.00	15.00	193.70	9,607.48	117.46	123.35	-117.42	8.94	8.75	-7.81
9,648.00	18.50	190.20	9,638.12	108.44	121.47	-108.39	11.38	10.94	-10.94
9,680.00	21.10	188.40	9,668.23	97.74	119.73	-97.70	8.34	8.13	-5.63
9,712.00	23.10	188.10	9,697.87	85.82	118.00	-85.78	6.26	6.25	-0.94
9,744.00	24.90	188.80	9,727.11	72.95	116.09	-72.91	5.69	5.63	2.19
9,775.00	26.80	187.00	9,755.00	59.56	114.24	-59.52	6.63	6.13	-5.81
9,807.00	29.30	185.60	9,783.24	44.61	112.59	-44.57	8.08	7.81	-4.38
9,852.00	32.10	184.90	9,821.93	21.73	110.50	-21.69	6.27	6.22	-1.56
9,902.00	36.20	183.90	9,863.30	-6.25	108.36	6.28	8.28	8.20	-2.00
9,947.00	40.40	183.00	9,898.61	-34.08	106.69	34.12	9.42	9.33	-2.00
9,997.00	45.20	183.20	9,935.29	-67.99	104.85	68.03	9.60	9.60	0.40
10,041.00	48.90	182.60	9,965.26	-100.15	103.22	100.19	8.47	8.41	-1.36
10,092.00	52.20	183.20	9,997.66	-139.48	101.23	139.51	6.53	6.47	1.18
10,137.00	57.60	185.30	10,023.53	-176.17	98.48	176.21	12.59	12.00	4.67
10,187.00	63.80	184.70	10,047.99	-219.59	94.69	219.62	12.44	12.40	-1.20
10,219.00	66.70	181.60	10,061.39	-248.60	93.10	248.63	12.63	9.06	-9.69
10,283.00	71.90	180.20	10,084.00	-308.44	92.17	308.47	8.38	8.13	-2.19
10,328.00	79.20	179.60	10,095.22	-351.98	92.25	352.02	16.27	16.22	-1.33
10,350.00	82.20	180.20	10,098.78	-373.69	92.29	373.72	13.90	13.64	2.73
10,382.00	85.60	180.20	10,102.18	-405.51	92.18	405.54	10.63	10.63	0.00
10,446.00	91.00	180.20	10,104.08	-469.45	91.95	469.49	8.44	8.44	0.00
10,541.00	92.60	180.00	10,101.09	-564.40	91.79	564.44	1.70	1.68	-0.21
10,637.00	91.20	180.00	10,097.91	-660.35	91.79	660.38	1.46	-1.46	0.00
10,732.00	88.50	180.20	10,098.16	-755.34	91.62	755.37	2.85	-2.84	0.21
10,828.00	89.30	180.70	10,100.00	-851.32	90.87	851.35	0.98	0.83	0.52
10,923.00	89.40	180.90	10,101.08	-946.30	89.54	946.33	0.24	0.11	0.21
11,018.00	90.40	181.00	10,101.24	-1,041.29	87.97	1,041.32	1.06	1.05	0.11
11,114.00	90.50	180.30	10,100.49	-1,137.28	86.88	1,137.31	0.74	0.10	-0.73
11,208.00	89.70	180.20	10,100.33	-1,231.28	86.47	1,231.31	0.86	-0.85	-0.11
11,303.00	89.80	180.20	10,100.74	-1,326.27	86.14	1,326.30	0.11	0.11	0.00
11,398.00	89.90	180.70	10,100.99	-1,421.27	85.39	1,421.30	0.54	0.11	0.53
11,493.00	88.20	181.00	10,102.56	-1,516.24	83.98	1,516.27	1.82	-1.79	0.32
11,588.00	87.90	180.30	10,105.80	-1,611.18	82.90	1,611.21	0.80	-0.32	-0.74
11,683.00	89.20	180.00	10,108.20	-1,706.15	82.66	1,706.18	1.40	1.37	-0.32
11,778.00	91.60	180.00	10,107.54	-1,801.14	82.66	1,801.17	2.53	2.53	0.00
11,864.00	90.80	179.50	10,105.74	-1,887.12	83.03	1,887.15	1.10	-0.93	-0.58
11,961.00	90.70	179.60	10,104.47	-1,984.11	83.79	1,984.14	0.15	-0.10	0.10

Leam Drilling Systems LLC

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well 109H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Site:	Thistle Unit	MD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Well:	109H	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)	
12,056.00	88.90	179.80	10,104.80	-2,079.10	84.29	2,079.13	1.91	-1.89	0.21	
12,152.00	89.00	179.60	10,106.56	-2,175.08	84.79	2,175.11	0.23	0.10	-0.21	
12,247.00	88.70	178.60	10,108.46	-2,270.05	86.28	2,270.08	1.10	-0.32	-1.05	
12,342.00	88.50	178.90	10,110.79	-2,365.00	88.36	2,365.03	0.38	-0.21	0.32	
12,437.00	90.40	179.10	10,111.70	-2,459.98	90.01	2,460.01	2.01	2.00	0.21	
12,533.00	90.50	179.60	10,110.94	-2,555.97	91.10	2,556.00	0.53	0.10	0.52	
12,628.00	89.80	178.80	10,110.69	-2,650.96	92.43	2,650.99	1.12	-0.74	-0.84	
12,722.00	90.60	178.60	10,110.37	-2,744.93	94.56	2,744.97	0.88	0.85	-0.21	
12,817.00	89.50	178.10	10,110.28	-2,839.89	97.30	2,839.92	1.27	-1.16	-0.53	
12,913.00	89.10	177.70	10,111.46	-2,935.82	100.82	2,935.85	0.59	-0.42	-0.42	
13,007.00	89.80	177.20	10,112.36	-3,029.72	105.00	3,029.76	0.92	0.74	-0.53	
13,103.00	89.50	177.00	10,112.95	-3,125.60	109.85	3,125.63	0.38	-0.31	-0.21	
13,198.00	89.60	177.00	10,113.69	-3,220.46	114.83	3,220.50	0.11	0.11	0.00	
13,293.00	89.80	177.50	10,114.19	-3,315.35	119.38	3,315.39	0.57	0.21	0.53	
13,389.00	89.90	178.10	10,114.44	-3,411.28	123.07	3,411.32	0.63	0.10	0.63	
13,484.00	90.00	178.80	10,114.52	-3,506.24	125.64	3,506.29	0.74	0.11	0.74	
13,579.00	90.10	179.50	10,114.44	-3,601.23	127.05	3,601.28	0.74	0.11	0.74	
13,675.00	90.80	180.90	10,113.69	-3,697.23	126.71	3,697.27	1.63	0.73	1.46	
13,770.00	91.70	181.80	10,111.61	-3,792.18	124.48	3,792.22	1.34	0.95	0.95	
13,865.00	91.00	181.80	10,109.38	-3,887.10	121.49	3,887.14	0.74	-0.74	0.00	
13,960.00	91.10	181.80	10,107.63	-3,982.04	118.51	3,982.08	0.11	0.11	0.00	
14,056.00	90.00	181.40	10,106.71	-4,078.00	115.83	4,078.04	1.22	-1.15	-0.42	
14,151.00	89.30	180.90	10,107.29	-4,172.97	113.92	4,173.01	0.91	-0.74	-0.53	
14,260.00	89.70	180.70	10,108.24	-4,281.96	112.40	4,282.00	0.41	0.37	-0.18	
14,355.00	90.00	180.70	10,108.49	-4,376.95	111.24	4,376.99	0.32	0.32	0.00	
14,450.00	90.40	181.00	10,108.16	-4,471.94	109.83	4,471.98	0.53	0.42	0.32	
14,545.00	88.20	180.30	10,109.32	-4,566.92	108.75	4,566.96	2.43	-2.32	-0.74	
14,640.00	89.00	180.70	10,111.64	-4,661.89	107.92	4,661.93	0.94	0.84	0.42	
14,736.00	90.00	180.50	10,112.48	-4,757.88	106.92	4,757.91	1.06	1.04	-0.21	
14,831.00	89.30	180.70	10,113.06	-4,852.87	105.92	4,852.91	0.77	-0.74	0.21	
14,927.00	89.40	180.90	10,114.15	-4,948.85	104.58	4,948.89	0.23	0.10	0.21	
15,022.00	90.00	180.90	10,114.65	-5,043.84	103.09	5,043.88	0.63	0.63	0.00	
15,117.00	90.10	180.90	10,114.56	-5,138.83	101.60	5,138.86	0.11	0.11	0.00	
15,213.00	90.10	181.40	10,114.40	-5,234.81	99.67	5,234.84	0.52	0.00	0.52	
15,309.00	90.20	181.60	10,114.15	-5,330.78	97.16	5,330.81	0.23	0.10	0.21	
15,403.00	90.10	181.00	10,113.90	-5,424.75	95.03	5,424.78	0.65	-0.11	-0.64	
15,498.00	89.70	179.60	10,114.07	-5,519.75	94.53	5,519.78	1.53	-0.42	-1.47	
15,594.00	90.20	180.50	10,114.15	-5,615.75	94.45	5,615.78	1.07	0.52	0.94	
15,689.00	91.10	181.20	10,113.07	-5,710.73	93.04	5,710.76	1.20	0.95	0.74	
15,785.00	90.80	181.20	10,111.48	-5,806.69	91.03	5,806.72	0.31	-0.31	0.00	
15,880.00	90.70	180.90	10,110.24	-5,901.67	89.29	5,901.70	0.33	-0.11	-0.32	
15,975.00	90.70	181.40	10,109.08	-5,996.64	87.38	5,996.67	0.53	0.00	0.53	

Leam Drilling Systems LLC

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well 109H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Site:	Thistle Unit	MD Reference:	3714.6' GL + 25' RKB @ 3739.60usft (Original Well Elev)
Well:	109H	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)
16,071.00	90.60	181.40	10,107.99	-6,092.61	85.03	6,092.64	0.10	-0.10	0.00
16,166.00	90.10	181.80	10,107.41	-6,187.57	82.38	6,187.60	0.67	-0.53	0.42
16,262.00	89.30	181.20	10,107.91	-6,283.53	79.87	6,283.56	1.04	-0.83	-0.63
16,357.00	88.80	180.30	10,109.48	-6,378.51	78.62	6,378.54	1.08	-0.53	-0.95
16,453.00	88.80	179.60	10,111.49	-6,474.49	78.71	6,474.52	0.73	0.00	-0.73
16,548.00	89.10	179.30	10,113.24	-6,569.47	79.62	6,569.50	0.45	0.32	-0.32
16,643.00	88.90	178.90	10,114.89	-6,664.44	81.11	6,664.47	0.47	-0.21	-0.42
16,738.00	90.20	178.90	10,115.64	-6,759.42	82.94	6,759.45	1.37	1.37	0.00
16,833.00	91.00	179.60	10,114.64	-6,854.40	84.18	6,854.43	1.12	0.84	0.74
16,927.00	90.40	179.50	10,113.50	-6,948.39	84.92	6,948.42	0.65	-0.64	-0.11
17,023.00	91.30	180.00	10,112.07	-7,044.38	85.34	7,044.41	1.07	0.94	0.52
17,118.00	90.80	179.60	10,110.33	-7,139.36	85.67	7,139.39	0.67	-0.53	-0.42
17,213.00	90.90	180.00	10,108.92	-7,234.35	86.00	7,234.38	0.43	0.11	0.42
17,308.00	90.90	180.00	10,107.43	-7,329.34	86.00	7,329.37	0.00	0.00	0.00
17,403.00	91.00	180.90	10,105.85	-7,424.32	85.25	7,424.35	0.95	0.11	0.95
17,498.00	91.40	181.80	10,103.87	-7,519.28	83.02	7,519.30	1.04	0.42	0.95
17,544.00	91.60	181.80	10,102.66	-7,565.24	81.57	7,565.27	0.43	0.43	0.00
17,602.00	91.60	181.80	10,101.04	-7,623.19	79.75	7,623.21	0.00	0.00	0.00
Projection									



