



30.025.42814

January 4, 2016

Devon Energy Production Company, L.P.
Well: Gaucho Unit 23H (OH)
County/Parish: Lea Co, NM

LEAM MWD: (OH) from 1,859' MD – 15,732' MD
Projection: 15,832' MD

This Borehole Survey taken between 12/17/2015 and 01/02/2016 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Date: January 4, 2016

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



Survey Certification Form

State of NM

Lea County

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Systems LLC, that I did on the day(s) of 12/17/2015 through 01/02/2016, conduct or supervise the taking of MWD Survey from a depth of 1,859' MD to 15,832' 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 Gaucho Unit 23H (OH) in Lea County, NM; 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', positioned above a horizontal line.

Randy W. Rakowitz
MWD Operations Coordinator

LEAM Drilling Systems LLC

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well 23H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3470.1' GL + 23.5' RKB @ 3493.60usft
Site:	Gaucha Unit	MD Reference:	3470.1' GL + 23.5' RKB @ 3493.60usft
Well:	23H	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	Gaucha Unit		
Site Position:		Northing:	504,450.40 usft
From:	Map	Easting:	799,049.77 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 23' 2.539 N
		Longitude:	103° 29' 54.548 W
		Grid Convergence:	0.45 °

Well	23H,		
Well Position	+N/-S	0.00 usft	Northing: 504,852.54 usft
	+E/-W	0.00 usft	Easting: 802,789.87 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	3,493.60 usft
		Ground Level:	3,470.10 usft

Wellbore	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	02/12/15	7.28	60.25	48,308

Design	OH
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Audit Notes:	
Version:	1.0
Phase:	ACTUAL
Tie On Depth:	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	2.17

Survey Program		Date	01/04/16
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
150.00	1,661.00	Survey #1 (OH)	MWD-ISCWSA
1,859.00	15,732.00	Survey #2 (OH)	LEAM MWD+HDGM
15,832.00	15,832.00	Survey #3 (OH)	Project
			Description
			MWD - Standard
			MWD+HDGM
			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
150.00	0.22	333.65	150.00	0.26	-0.13	0.25	0.15	0.15	0.00
233.00	0.10	87.87	233.00	0.40	-0.13	0.40	0.33	-0.14	137.61
263.00	0.48	228.30	263.00	0.32	-0.19	0.31	1.87	1.27	468.10
405.00	0.20	206.20	405.00	-0.30	-0.75	-0.33	0.21	-0.20	-15.56
547.00	0.22	205.64	547.00	-0.77	-0.97	-0.80	0.01	0.01	-0.39
731.00	0.09	192.94	730.99	-1.22	-1.16	-1.27	0.07	-0.07	-6.90
925.00	0.70	233.54	924.99	-2.08	-2.15	-2.16	0.33	0.31	20.93
1,116.00	1.00	245.15	1,115.97	-3.47	-4.60	-3.64	0.18	0.16	6.08

LEAM Drilling Systems LLC

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Well:	23H	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)
1,308.00	1.10	243.34	1,307.94	-5.00	-7.77	-5.29	0.05	0.05	-0.94
1,498.00	2.00	243.65	1,497.86	-7.29	-12.37	-7.76	0.47	0.47	0.16
1,661.00	2.59	252.13	1,660.73	-9.68	-18.42	-10.38	0.42	0.36	5.20
1,859.00	2.20	259.90	1,858.56	-11.72	-26.42	-12.72	0.26	-0.20	3.92
2,050.00	1.30	254.50	2,049.47	-12.95	-32.12	-14.15	0.48	-0.47	-2.83
2,241.00	0.70	258.40	2,240.44	-13.76	-35.35	-15.09	0.32	-0.31	2.04
2,431.00	0.00	25.50	2,430.44	-13.99	-36.48	-15.37	0.37	-0.37	0.00
2,623.00	0.30	49.50	2,622.43	-13.67	-36.10	-15.02	0.16	0.16	0.00
2,814.00	0.60	56.60	2,813.43	-12.79	-34.89	-14.10	0.16	0.16	3.72
3,004.00	1.60	73.10	3,003.39	-11.47	-31.52	-12.66	0.55	0.53	8.68
3,194.00	1.50	68.20	3,193.32	-9.78	-26.67	-10.78	0.09	-0.05	-2.58
3,383.00	1.60	65.70	3,382.25	-7.77	-21.97	-8.60	0.06	0.05	-1.32
3,573.00	1.20	81.40	3,572.20	-6.38	-17.59	-7.05	0.29	-0.21	8.26
3,761.00	0.60	71.00	3,760.17	-5.77	-14.71	-6.32	0.33	-0.32	-5.53
3,950.00	0.60	68.00	3,949.16	-5.08	-12.85	-5.56	0.02	0.00	-1.59
4,140.00	0.40	88.00	4,139.15	-4.68	-11.27	-5.10	0.14	-0.11	10.53
4,331.00	0.40	158.20	4,330.15	-5.28	-10.36	-5.67	0.24	0.00	36.75
4,521.00	0.50	204.40	4,520.15	-6.65	-10.45	-7.04	0.19	0.05	24.32
4,710.00	0.40	210.20	4,709.14	-7.97	-11.12	-8.38	0.06	-0.05	3.07
4,900.00	0.40	239.70	4,899.14	-8.88	-12.03	-9.33	0.11	0.00	15.53
5,091.00	0.10	179.80	5,090.13	-9.38	-12.61	-9.85	0.19	-0.16	-31.36
5,237.00	0.20	234.80	5,236.13	-9.65	-12.81	-10.13	0.11	0.07	37.67
5,428.00	0.30	307.20	5,427.13	-9.54	-13.48	-10.05	0.16	0.05	37.91
5,618.00	0.40	267.20	5,617.13	-9.28	-14.54	-9.82	0.14	0.05	-21.05
5,809.00	0.40	273.00	5,808.12	-9.27	-15.87	-9.87	0.02	0.00	3.04
6,000.00	0.50	291.80	5,999.12	-8.93	-17.31	-9.58	0.09	0.05	9.84
6,190.00	0.80	274.90	6,189.11	-8.51	-19.41	-9.24	0.19	0.16	-8.89
6,381.00	0.70	281.70	6,380.09	-8.16	-21.88	-8.98	0.07	-0.05	3.56
6,571.00	0.70	300.40	6,570.08	-7.33	-24.01	-8.24	0.12	0.00	9.84
6,760.00	0.90	289.70	6,759.06	-6.25	-26.41	-7.25	0.13	0.11	-5.66
6,949.00	0.80	271.00	6,948.04	-5.73	-29.12	-6.83	0.16	-0.05	-9.89
7,138.00	0.70	274.70	7,137.02	-5.61	-31.59	-6.80	0.06	-0.05	1.96
7,327.00	1.00	231.60	7,326.00	-6.54	-34.04	-7.82	0.36	0.16	-22.80
7,515.00	1.20	228.10	7,513.97	-8.87	-36.79	-10.26	0.11	0.11	-1.86
7,706.00	1.10	232.20	7,704.93	-11.33	-39.73	-12.83	0.07	-0.05	2.15
7,897.00	1.20	238.10	7,895.89	-13.51	-42.87	-15.13	0.08	0.05	3.09
8,089.00	0.60	247.10	8,087.87	-14.97	-45.50	-16.68	0.32	-0.31	4.69
8,280.00	0.60	234.80	8,278.85	-15.93	-47.24	-17.71	0.07	0.00	-6.44
8,471.00	0.10	176.10	8,469.85	-16.67	-48.05	-18.48	0.29	-0.26	-30.73
8,662.00	0.40	12.10	8,660.85	-16.19	-47.90	-17.99	0.26	0.16	-85.86
8,853.00	0.10	88.00	8,851.85	-15.53	-47.59	-17.32	0.20	-0.16	39.74
9,044.00	0.60	39.20	9,042.84	-14.75	-46.79	-16.51	0.28	0.26	-25.55
9,235.00	1.80	342.20	9,233.80	-11.12	-47.08	-12.89	0.82	0.63	-29.84

LEAM Drilling Systems LLC

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Survey

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9,426.00	0.90	316.40	9,424.75	-7.18	-49.03	-9.03	0.56	-0.47	-13.51
9,618.00	0.70	264.90	9,616.73	-6.19	-51.24	-8.13	0.37	-0.10	-26.82
9,809.00	0.40	171.20	9,807.73	-6.95	-52.30	-8.93	0.43	-0.16	-49.06
10,000.00	0.80	114.60	9,998.72	-8.16	-50.98	-10.09	0.35	0.21	-29.63
10,191.00	0.70	103.30	10,189.70	-8.99	-48.64	-10.82	0.09	-0.05	-5.92
10,383.00	0.90	145.70	10,381.68	-10.50	-46.64	-12.26	0.32	0.10	22.08
10,574.00	0.90	251.20	10,572.67	-12.23	-47.22	-14.01	0.75	0.00	55.24
10,654.00	1.10	259.80	10,652.66	-12.56	-48.57	-14.40	0.31	0.25	10.75
10,755.00	6.50	335.40	10,753.43	-7.53	-51.91	-9.50	6.25	5.35	74.85
10,800.00	12.00	347.50	10,797.83	-0.64	-53.98	-2.69	12.90	12.22	26.89
10,851.00	16.30	351.70	10,847.27	11.62	-56.16	9.48	8.66	8.43	8.24
10,896.00	20.70	352.60	10,889.93	25.76	-58.10	23.54	9.80	9.78	2.00
10,946.00	24.50	352.90	10,936.09	44.82	-60.52	42.49	7.60	7.60	0.60
10,991.00	28.30	352.10	10,976.39	64.65	-63.14	62.21	8.48	8.44	-1.78
11,042.00	32.80	352.90	11,020.30	90.35	-66.51	87.76	8.86	8.82	1.57
11,087.00	36.10	354.70	11,057.40	115.65	-69.24	112.94	7.67	7.33	4.00
11,137.00	40.70	356.30	11,096.58	146.60	-71.66	143.78	9.41	9.20	3.20
11,182.00	44.60	357.90	11,129.67	177.05	-73.18	174.15	8.99	8.67	3.56
11,233.00	49.50	359.30	11,164.41	214.35	-74.08	211.39	9.82	9.61	2.75
11,278.00	54.10	1.70	11,192.23	249.70	-73.75	246.73	11.05	10.22	5.33
11,328.00	59.80	4.00	11,219.49	291.53	-71.64	288.61	12.03	11.40	4.60
11,373.00	65.20	5.40	11,240.26	331.30	-68.35	328.47	12.31	12.00	3.11
11,424.00	70.40	5.60	11,259.53	378.28	-63.83	375.59	10.20	10.20	0.39
11,469.00	74.80	4.50	11,272.98	421.05	-60.05	418.47	10.05	9.78	-2.44
11,478.00	75.60	4.50	11,275.28	429.72	-59.37	427.16	8.89	8.89	0.00
11,508.00	77.50	4.40	11,282.26	458.81	-57.11	456.32	6.34	6.33	-0.33
11,553.00	79.00	3.80	11,291.42	502.75	-53.96	500.35	3.58	3.33	-1.33
11,602.00	79.80	3.50	11,300.43	550.82	-50.89	548.49	1.74	1.63	-0.61
11,647.00	82.10	3.70	11,307.51	595.17	-48.10	592.92	5.13	5.11	0.44
11,698.00	84.90	3.70	11,313.28	645.73	-44.83	643.57	5.49	5.49	0.00
11,792.00	88.50	3.30	11,318.69	739.38	-39.11	737.37	3.85	3.83	-0.43
11,886.00	90.90	3.70	11,319.19	833.20	-33.37	831.34	2.59	2.55	0.43
11,981.00	92.30	4.00	11,316.53	927.95	-26.99	926.26	1.51	1.47	0.32
12,075.00	91.50	3.50	11,313.42	1,021.69	-20.85	1,020.17	1.00	-0.85	-0.53
12,170.00	90.90	3.70	11,311.43	1,116.48	-14.88	1,115.12	0.67	-0.63	0.21
12,264.00	92.20	3.80	11,308.89	1,210.24	-8.74	1,209.04	1.39	1.38	0.11
12,359.00	91.30	3.10	11,305.98	1,305.03	-3.02	1,303.97	1.20	-0.95	-0.74
12,453.00	90.00	3.30	11,304.92	1,398.87	2.22	1,397.95	1.40	-1.38	0.21
12,548.00	90.50	3.30	11,304.50	1,493.71	7.69	1,492.93	0.53	0.53	0.00
12,642.00	89.60	3.10	11,304.42	1,587.57	12.94	1,586.92	0.98	-0.96	-0.21
12,737.00	90.00	2.80	11,304.75	1,682.44	17.83	1,681.91	0.53	0.42	-0.32
12,833.00	90.00	3.10	11,304.75	1,778.31	22.77	1,777.90	0.31	0.00	0.31
12,929.00	90.00	3.10	11,304.75	1,874.17	27.96	1,873.88	0.00	0.00	0.00

LEAM Drilling Systems LLC

Survey Report

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
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Survey

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13,024.00	91.50	3.30	11,303.51	1,969.01	33.26	1,968.86	1.59	1.58	0.21
13,120.00	91.50	4.00	11,301.00	2,064.78	39.37	2,064.79	0.73	0.00	0.73
13,215.00	91.10	4.70	11,298.84	2,159.49	46.58	2,159.70	0.85	-0.42	0.74
13,312.00	90.90	5.40	11,297.15	2,256.09	55.11	2,256.56	0.75	-0.21	0.72
13,407.00	90.70	4.20	11,295.82	2,350.75	63.06	2,351.45	1.28	-0.21	-1.26
13,503.00	90.90	4.40	11,294.48	2,446.47	70.26	2,447.37	0.29	0.21	0.21
13,598.00	91.30	4.70	11,292.66	2,541.15	77.79	2,542.28	0.53	0.42	0.32
13,694.00	90.30	3.30	11,291.32	2,636.91	84.49	2,638.21	1.79	-1.04	-1.46
13,789.00	90.70	3.10	11,290.49	2,731.75	89.79	2,733.19	0.47	0.42	-0.21
13,884.00	90.80	2.60	11,289.24	2,826.63	94.51	2,828.18	0.54	0.11	-0.53
13,980.00	90.80	2.40	11,287.90	2,922.53	98.70	2,924.17	0.21	0.00	-0.21
14,075.00	91.00	2.80	11,286.41	3,017.42	103.01	3,019.15	0.47	0.21	0.42
14,171.00	90.80	2.40	11,284.90	3,113.31	107.36	3,115.14	0.47	-0.21	-0.42
14,267.00	91.10	2.80	11,283.31	3,209.19	111.72	3,211.12	0.52	0.31	0.42
14,362.00	91.50	3.10	11,281.16	3,304.04	116.61	3,306.09	0.53	0.42	0.32
14,458.00	92.00	3.50	11,278.23	3,399.84	122.13	3,402.03	0.67	0.52	0.42
14,554.00	91.30	2.80	11,275.46	3,495.65	127.40	3,497.97	1.03	-0.73	-0.73
14,649.00	90.90	2.20	11,273.64	3,590.54	131.55	3,592.95	0.76	-0.42	-0.63
14,745.00	90.50	2.10	11,272.46	3,686.47	135.15	3,688.94	0.43	-0.42	-0.10
14,841.00	90.00	2.60	11,272.05	3,782.39	139.08	3,784.94	0.74	-0.52	0.52
14,936.00	91.00	2.60	11,271.22	3,877.28	143.39	3,879.93	1.05	1.05	0.00
15,032.00	91.50	3.00	11,269.12	3,973.15	148.08	3,975.90	0.67	0.52	0.42
15,127.00	91.40	3.00	11,266.72	4,067.99	153.05	4,070.86	0.11	-0.11	0.00
15,223.00	90.90	2.60	11,264.79	4,163.85	157.74	4,166.84	0.67	-0.52	-0.42
15,318.00	90.30	3.30	11,263.80	4,258.72	162.63	4,261.82	0.97	-0.63	0.74
15,414.00	89.30	3.30	11,264.13	4,354.56	168.16	4,357.80	1.04	-1.04	0.00
15,509.00	88.60	3.00	11,265.87	4,449.40	173.37	4,452.77	0.80	-0.74	-0.32
15,605.00	87.70	1.90	11,268.97	4,545.26	177.48	4,548.72	1.48	-0.94	-1.15
15,701.00	88.90	1.70	11,271.82	4,641.17	180.49	4,644.67	1.27	1.25	-0.21
15,732.00	88.80	1.70	11,272.44	4,672.15	181.41	4,675.67	0.32	-0.32	0.00
15,832.00	88.80	1.70	11,274.54	4,772.08	184.38	4,775.64	0.00	0.00	0.00
Projection									