



**NM OIL CONSERVATION
ARTESIA DISTRICT**

September 25, 2017

SEP 25 2017

RECEIVED

Devon Energy Production Company, LP
Well: Onyx PWU 29-28 9H
County/Parish: Eddy County, NM

30-015-44098

LEAM MWD: (OH) from 248' MD – 18,777' MD
Projection; 18,909' MD

This Borehole Survey taken between 09/05/2017 and 09/19/2017 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Date: September 25, 2017



Survey Certification Form

State of New Mexico

Eddy County

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Services, that I did on the day(s) of 09/05/2017 through 09/19/2017, conduct or supervise the taking of MWD Survey from a depth of 248' MD to 18,909' 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 Onyx PWU 29-28 9H in Eddy 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 Systems LLC

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well 9H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	3313.4' GE + 23.5' KB @ 3336.90usft
Site:	Onyx PWU 29-28	MD Reference:	3313.4' GE + 23.5' KB @ 3336.90usft
Well:	9H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 MULTI User DB

Project Eddy County, NM (NAD-83)

Map System: US State Plane 1983

Geo Datum: North American Datum 1983

Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site Onyx PWU 29-28

Site Position:		Northing:	596,305.26 usft	Latitude:	32° 38' 20.7014 N
From:	Map	Easting:	611,703.20 usft	Longitude:	104° 6' 17.0602 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well 9H

Well Position	+N/-S	0.00 usft	Northing:	596,305.26 usft	Latitude:	32° 38' 20.7014 N
	+E/-W	0.00 usft	Easting:	611,703.20 usft	Longitude:	104° 6' 17.0602 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,313.40 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	3/1/2017	7.47	60.52	48,234

Design OH

Audit Notes:

Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
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Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	90.00

Survey Program Date 9/20/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
25.00	139.00	Survey #1 (OH)	ISCWSA-GYRO-3	Gyroflex Explorer(corrected acsfe)
248.00	18,777.00	Survey #2 (OH)	LEAM MWD+HDGM	MWD+HDGM
18,909.00	18,909.00	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
25.00	0.11	40.43	25.00	0.02	0.02	0.02	0.44	0.44	0.00
50.00	0.11	25.13	50.00	0.06	0.04	0.04	0.12	0.00	-61.20
75.00	0.05	235.52	75.00	0.07	0.04	0.04	0.62	-0.24	-598.44
100.00	0.21	204.71	100.00	0.03	0.01	0.01	0.68	0.64	-123.24
125.00	0.34	229.55	125.00	-0.06	-0.06	-0.06	0.69	0.52	99.36
139.00	0.36	229.49	139.00	-0.12	-0.13	-0.13	0.14	0.14	-0.43
248.00	1.40	209.00	247.99	-1.51	-1.03	-1.03	0.98	0.95	-18.80
338.00	1.40	200.00	337.96	-3.50	-1.94	-1.94	0.24	0.00	-10.00

LEAM Drilling Systems LLC

Survey Report

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Site: Onyx PWU 29-28
Well: 9H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well 9H
TVD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft
MD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
437.00	1.10	198.90	436.93	-5.54	-2.66	-2.66	0.30	-0.30	-1.11
528.00	1.30	213.00	527.91	-7.23	-3.51	-3.51	0.39	0.22	15.49
619.00	1.10	197.70	618.90	-8.93	-4.34	-4.34	0.41	-0.22	-16.81
711.00	1.10	206.10	710.88	-10.56	-4.99	-4.99	0.18	0.00	9.13
803.00	1.10	175.70	802.86	-12.23	-5.31	-5.31	0.63	0.00	-33.04
895.00	1.10	177.30	894.85	-14.00	-5.21	-5.21	0.03	0.00	1.74
986.00	0.70	195.10	985.83	-15.41	-5.31	-5.31	0.53	-0.44	19.56
1,077.00	0.50	171.20	1,076.83	-16.34	-5.39	-5.39	0.35	-0.22	-26.26
1,168.00	0.70	193.10	1,167.82	-17.27	-5.46	-5.46	0.33	0.22	24.07
1,261.00	0.30	149.00	1,260.82	-18.03	-5.46	-5.46	0.57	-0.43	-47.42
1,352.00	0.40	149.70	1,351.82	-18.51	-5.18	-5.18	0.11	0.11	0.77
1,448.00	0.20	110.30	1,447.82	-18.86	-4.85	-4.85	0.29	-0.21	-41.04
1,543.00	0.10	354.50	1,542.82	-18.83	-4.71	-4.71	0.27	-0.11	-121.89
1,639.00	0.40	261.70	1,638.82	-18.80	-5.05	-5.05	0.43	0.31	-96.67
1,735.00	0.40	261.70	1,734.81	-18.89	-5.71	-5.71	0.00	0.00	0.00
1,830.00	0.40	204.40	1,829.81	-19.24	-6.17	-6.17	0.40	0.00	-60.32
1,926.00	0.30	348.20	1,925.81	-19.30	-6.36	-6.36	0.69	-0.10	149.79
2,021.00	0.40	304.20	2,020.81	-18.87	-6.69	-6.69	0.29	0.11	-46.32
2,117.00	0.40	299.00	2,116.81	-18.52	-7.26	-7.26	0.04	0.00	-5.42
2,213.00	0.20	223.70	2,212.81	-18.48	-7.67	-7.67	0.42	-0.21	-78.44
2,308.00	0.50	293.30	2,307.81	-18.44	-8.16	-8.16	0.49	0.32	73.26
2,404.00	0.30	311.60	2,403.80	-18.10	-8.74	-8.74	0.24	-0.21	19.06
2,500.00	0.40	312.30	2,499.80	-17.71	-9.17	-9.17	0.10	0.10	0.73
2,595.00	0.70	248.00	2,594.80	-17.71	-9.96	-9.96	0.67	0.32	-67.68
2,691.00	1.10	217.80	2,690.79	-18.65	-11.06	-11.06	0.63	0.42	-31.46
2,786.00	1.50	193.80	2,785.76	-20.58	-11.92	-11.92	0.70	0.42	-25.26
2,882.00	2.30	195.30	2,881.71	-23.66	-12.73	-12.73	0.83	0.83	1.56
2,977.00	2.90	196.50	2,976.61	-27.80	-13.91	-13.91	0.63	0.63	1.26
3,073.00	3.70	198.90	3,072.45	-33.06	-15.61	-15.61	0.85	0.83	2.50
3,169.00	4.60	205.30	3,168.20	-39.47	-18.25	-18.25	1.05	0.94	6.67
3,264.00	5.10	202.30	3,262.86	-46.82	-21.49	-21.49	0.59	0.53	-3.16
3,360.00	5.80	207.00	3,358.42	-55.09	-25.31	-25.31	0.86	0.73	4.90
3,411.00	6.00	207.60	3,409.15	-59.75	-27.71	-27.71	0.41	0.39	1.18
3,543.00	5.40	211.40	3,540.50	-71.17	-34.14	-34.14	0.54	-0.45	2.88
3,639.00	5.00	211.40	3,636.11	-78.59	-38.68	-38.68	0.42	-0.42	0.00
3,735.00	5.60	212.50	3,731.69	-86.12	-43.37	-43.37	0.63	0.63	1.15
3,830.00	5.10	211.20	3,826.28	-93.64	-48.05	-48.05	0.54	-0.53	-1.37
3,926.00	5.30	198.80	3,921.89	-101.48	-51.69	-51.69	1.19	0.21	-12.92
4,021.00	6.50	194.20	4,016.38	-110.85	-54.42	-54.42	1.36	1.26	-4.84
4,117.00	6.60	205.80	4,111.76	-121.09	-58.16	-58.16	1.38	0.10	12.08
4,212.00	5.40	208.40	4,206.24	-129.93	-62.66	-62.66	1.29	-1.26	2.74
4,307.00	5.80	219.70	4,300.79	-137.56	-67.85	-67.85	1.23	0.42	11.89
4,403.00	4.20	226.00	4,396.42	-143.73	-73.48	-73.48	1.76	-1.67	6.56

LEAM Drilling Systems LLC

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Site: Onyx PWU 29-28
Well: 9H
Wellbore: OH
Design: OH

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
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Survey

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4,498.00	4.20	209.70	4,491.17	-149.17	-77.71	-77.71	1.25	0.00	-17.16
4,594.00	5.00	211.60	4,586.86	-155.79	-81.64	-81.64	0.85	0.83	1.98
4,690.00	6.10	208.60	4,682.41	-163.83	-86.27	-86.27	1.18	1.15	-3.13
4,785.00	5.90	207.00	4,776.89	-172.61	-90.91	-90.91	0.27	-0.21	-1.68
4,881.00	5.00	207.70	4,872.45	-180.71	-95.09	-95.09	0.94	-0.94	0.73
4,977.00	5.00	210.40	4,968.09	-188.03	-99.15	-99.15	0.25	0.00	2.81
5,072.00	6.30	216.50	5,062.62	-195.79	-104.35	-104.35	1.51	1.37	6.42
5,168.00	5.70	214.80	5,158.10	-203.94	-110.20	-110.20	0.65	-0.63	-1.77
5,263.00	4.70	220.70	5,252.71	-210.76	-115.43	-115.43	1.19	-1.05	6.21
5,359.00	5.20	214.90	5,348.35	-217.31	-120.49	-120.49	0.74	0.52	-6.04
5,454.00	6.10	214.80	5,442.89	-224.99	-125.83	-125.83	0.95	0.95	-0.11
5,550.00	5.30	215.80	5,538.41	-232.77	-131.34	-131.34	0.84	-0.83	1.04
5,645.00	4.90	210.70	5,633.04	-239.82	-135.97	-135.97	0.64	-0.42	-5.37
5,741.00	5.40	204.20	5,728.65	-247.46	-139.92	-139.92	0.80	0.52	-6.77
5,836.00	6.90	202.50	5,823.10	-256.81	-143.94	-143.94	1.59	1.58	-1.79
5,932.00	5.70	203.90	5,918.52	-266.50	-148.07	-148.07	1.26	-1.25	1.46
6,027.00	5.40	196.70	6,013.07	-275.10	-151.27	-151.27	0.80	-0.32	-7.58
6,123.00	5.40	196.50	6,108.65	-283.75	-153.85	-153.85	0.02	0.00	-0.21
6,219.00	4.70	194.50	6,204.27	-291.89	-156.12	-156.12	0.75	-0.73	-2.08
6,314.00	3.10	194.40	6,299.05	-298.15	-157.73	-157.73	1.68	-1.68	-0.11
6,430.00	5.60	201.10	6,414.71	-306.47	-160.55	-160.55	2.20	2.16	5.78
6,505.00	4.90	187.50	6,489.40	-313.06	-162.29	-162.29	1.90	-0.93	-18.13
6,601.00	5.90	197.40	6,584.97	-321.83	-164.30	-164.30	1.42	1.04	10.31
6,696.00	6.20	205.10	6,679.44	-331.14	-167.93	-167.93	0.91	0.32	8.11
6,791.00	5.40	200.00	6,773.96	-339.98	-171.64	-171.64	1.00	-0.84	-5.37
6,887.00	5.50	200.20	6,869.52	-348.55	-174.77	-174.77	0.11	0.10	0.21
6,982.00	6.40	203.70	6,964.01	-357.67	-178.47	-178.47	1.02	0.95	3.68
7,078.00	6.00	204.00	7,059.45	-367.15	-182.66	-182.66	0.42	-0.42	0.31
7,173.00	4.90	204.00	7,154.02	-375.39	-186.33	-186.33	1.16	-1.16	0.00
7,268.00	4.50	208.60	7,248.70	-382.37	-189.77	-189.77	0.58	-0.42	4.84
7,364.00	4.40	213.40	7,344.41	-388.75	-193.60	-193.60	0.40	-0.10	5.00
7,460.00	4.60	214.20	7,440.11	-395.01	-197.79	-197.79	0.22	0.21	0.83
7,555.00	4.70	212.10	7,534.80	-401.46	-202.00	-202.00	0.21	0.11	-2.21
7,650.00	3.40	207.00	7,629.56	-407.27	-205.35	-205.35	1.42	-1.37	-5.37
7,746.00	2.70	199.30	7,725.43	-411.94	-207.38	-207.38	0.84	-0.73	-8.02
7,841.00	2.30	189.30	7,820.34	-415.93	-208.43	-208.43	0.62	-0.42	-10.53
7,937.00	1.60	207.60	7,916.28	-419.02	-209.36	-209.36	0.97	-0.73	19.06
8,032.00	1.20	214.10	8,011.25	-421.02	-210.54	-210.54	0.45	-0.42	6.84
8,127.00	0.20	225.30	8,106.24	-421.96	-211.21	-211.21	1.06	-1.05	11.79
8,223.00	0.20	74.10	8,202.24	-422.03	-211.17	-211.17	0.40	0.00	-157.50
8,261.00	0.40	70.60	8,240.24	-421.97	-210.98	-210.98	0.53	0.53	-9.21
8,362.00	8.30	99.70	8,340.87	-423.08	-203.45	-203.45	7.87	7.82	28.81
8,410.00	16.65	101.75	8,387.70	-425.07	-193.29	-193.29	17.42	17.40	4.27

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Wellbore: OH
Design: OH

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8,458.00	24.35	99.38	8,432.63	-428.09	-176.76	-176.76	16.13	16.04	-4.94
8,506.00	29.00	99.08	8,475.51	-431.54	-155.50	-155.50	9.69	9.69	-0.63
8,553.00	31.17	100.54	8,516.17	-435.56	-132.29	-132.29	4.87	4.62	3.11
8,601.00	36.24	100.17	8,556.09	-440.34	-106.09	-106.09	10.57	10.56	-0.77
8,649.00	41.37	97.92	8,593.49	-445.03	-76.40	-76.40	11.08	10.69	-4.69
8,697.00	46.52	94.65	8,628.04	-448.64	-43.30	-43.30	11.72	10.73	-6.81
8,745.00	49.87	93.37	8,660.03	-451.13	-7.62	-7.62	7.26	6.98	-2.67
8,793.00	53.87	92.31	8,689.66	-452.99	30.09	30.09	8.51	8.33	-2.21
8,840.00	56.62	91.69	8,716.46	-454.33	68.67	68.67	5.95	5.85	-1.32
8,888.00	60.40	90.74	8,741.52	-455.19	109.59	109.59	8.05	7.88	-1.98
8,936.00	64.15	88.73	8,763.85	-454.98	152.07	152.07	8.65	7.81	-4.19
8,984.00	66.55	87.95	8,783.87	-453.72	195.67	195.67	5.21	5.00	-1.63
9,032.00	70.57	88.17	8,801.41	-452.21	240.31	240.31	8.39	8.38	0.46
9,080.00	73.90	88.11	8,816.06	-450.72	285.99	285.99	6.94	6.94	-0.13
9,131.00	76.35	89.77	8,829.15	-449.81	335.27	335.27	5.74	4.80	3.25
9,219.00	82.47	90.40	8,845.31	-449.95	421.73	421.73	6.99	6.95	0.72
9,315.00	85.21	90.06	8,855.61	-450.33	517.17	517.17	2.88	2.85	-0.35
9,410.00	88.04	88.30	8,861.21	-448.97	611.98	611.98	3.51	2.98	-1.85
9,506.00	89.38	87.90	8,863.37	-445.79	707.90	707.90	1.46	1.40	-0.42
9,602.00	89.95	88.04	8,863.93	-442.39	803.84	803.84	0.61	0.59	0.15
9,697.00	90.69	88.30	8,863.40	-439.35	898.79	898.79	0.83	0.78	0.27
9,793.00	91.43	88.26	8,861.62	-436.47	994.73	994.73	0.77	0.77	-0.04
9,889.00	91.33	90.09	8,859.31	-435.09	1,090.68	1,090.68	1.91	-0.10	1.91
9,984.00	90.72	91.79	8,857.61	-436.65	1,185.65	1,185.65	1.90	-0.64	1.79
10,080.00	89.62	91.64	8,857.33	-439.52	1,281.61	1,281.61	1.16	-1.15	-0.16
10,176.00	88.81	90.51	8,858.64	-441.32	1,377.58	1,377.58	1.45	-0.84	-1.18
10,271.00	89.11	90.66	8,860.37	-442.29	1,472.56	1,472.56	0.35	0.32	0.16
10,367.00	89.65	91.08	8,861.40	-443.75	1,568.54	1,568.54	0.71	0.56	0.44
10,462.00	89.08	90.32	8,862.46	-444.91	1,663.53	1,663.53	1.00	-0.60	-0.80
10,554.00	89.62	89.94	8,863.50	-445.12	1,755.52	1,755.52	0.72	0.59	-0.41
10,645.00	89.08	90.19	8,864.53	-445.22	1,846.51	1,846.51	0.65	-0.59	0.27
10,736.00	88.57	90.37	8,866.40	-445.67	1,937.49	1,937.49	0.59	-0.56	0.20
10,828.00	89.08	89.38	8,868.29	-445.47	2,029.47	2,029.47	1.21	0.55	-1.08
10,919.00	88.77	88.62	8,869.99	-443.88	2,120.44	2,120.44	0.90	-0.34	-0.84
11,011.00	88.88	88.96	8,871.88	-441.94	2,212.40	2,212.40	0.39	0.12	0.37
11,103.00	88.84	88.67	8,873.71	-440.03	2,304.36	2,304.36	0.32	-0.04	-0.32
11,194.00	89.62	89.20	8,874.93	-438.34	2,395.34	2,395.34	1.04	0.86	0.58
11,285.00	90.18	89.48	8,875.09	-437.30	2,486.33	2,486.33	0.69	0.62	0.31
11,377.00	90.38	90.08	8,874.64	-436.94	2,578.33	2,578.33	0.69	0.22	0.65
11,469.00	89.82	90.32	8,874.48	-437.26	2,670.33	2,670.33	0.66	-0.61	0.26
11,560.00	90.07	89.39	8,874.57	-437.03	2,761.33	2,761.33	1.06	0.27	-1.02
11,652.00	88.44	91.78	8,875.77	-437.97	2,853.31	2,853.31	3.14	-1.77	2.60
11,742.00	88.07	91.66	8,878.51	-440.67	2,943.22	2,943.22	0.43	-0.41	-0.13
11,838.00	88.27	90.20	8,881.57	-442.23	3,039.16	3,039.16	1.53	0.21	-1.52

LEAM Drilling Systems LLC

Survey Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Site: Onyx PWU 29-28
Well: 9H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well 9H
TVD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft
MD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
11,934.00	88.74	89.92	8,884.08	-442.33	3,135.13	3,135.13	0.57	0.49	-0.29
12,029.00	89.31	89.90	8,885.69	-442.18	3,230.11	3,230.11	0.60	0.60	-0.02
12,125.00	90.59	89.32	8,885.78	-441.53	3,326.11	3,326.11	1.46	1.33	-0.60
12,221.00	90.52	90.25	8,884.85	-441.17	3,422.10	3,422.10	0.97	-0.07	0.97
12,316.00	91.19	89.73	8,883.43	-441.15	3,517.09	3,517.09	0.89	0.71	-0.55
12,412.00	90.79	89.34	8,881.77	-440.37	3,613.07	3,613.07	0.58	-0.42	-0.41
12,508.00	89.85	89.93	8,881.23	-439.76	3,709.07	3,709.07	1.16	-0.98	0.61
12,603.00	90.42	89.91	8,881.01	-439.63	3,804.07	3,804.07	0.60	0.60	-0.02
12,699.00	88.91	89.66	8,881.57	-439.27	3,900.06	3,900.06	1.59	-1.57	-0.26
12,795.00	88.30	89.22	8,883.91	-438.33	3,996.03	3,996.03	0.78	-0.64	-0.46
12,890.00	88.47	89.51	8,886.59	-437.28	4,090.98	4,090.98	0.35	0.18	0.31
12,986.00	89.21	89.93	8,888.53	-436.81	4,186.96	4,186.96	0.89	0.77	0.44
13,082.00	88.81	90.85	8,890.19	-437.46	4,282.94	4,282.94	1.04	-0.42	0.96
13,177.00	88.81	89.91	8,892.16	-438.09	4,377.92	4,377.92	0.99	0.00	-0.99
13,273.00	89.04	90.39	8,893.96	-438.34	4,473.90	4,473.90	0.55	0.24	0.50
13,368.00	89.28	90.81	8,895.36	-439.34	4,568.89	4,568.89	0.51	0.25	0.44
13,464.00	89.55	90.78	8,896.34	-440.67	4,664.87	4,664.87	0.28	0.28	-0.03
13,559.00	87.80	90.81	8,898.53	-441.99	4,759.83	4,759.83	1.84	-1.84	0.03
13,655.00	88.33	90.07	8,901.77	-442.72	4,855.77	4,855.77	0.95	0.55	-0.77
13,750.00	88.21	91.17	8,904.64	-443.75	4,950.72	4,950.72	1.16	-0.13	1.16
13,846.00	88.64	90.33	8,907.28	-445.01	5,046.68	5,046.68	0.98	0.45	-0.88
13,941.00	89.02	88.69	8,909.22	-444.19	5,141.65	5,141.65	1.77	0.40	-1.73
14,037.00	89.65	88.86	8,910.33	-442.14	5,237.62	5,237.62	0.68	0.66	0.18
14,133.00	89.15	89.39	8,911.34	-440.68	5,333.61	5,333.61	0.76	-0.52	0.55
14,228.00	90.09	88.38	8,911.97	-438.83	5,428.58	5,428.58	1.45	0.99	-1.06
14,324.00	90.25	87.88	8,911.68	-435.69	5,524.53	5,524.53	0.55	0.17	-0.52
14,419.00	90.29	88.98	8,911.24	-433.09	5,619.49	5,619.49	1.16	0.04	1.16
14,515.00	90.36	88.09	8,910.69	-430.64	5,715.46	5,715.46	0.93	0.07	-0.93
14,610.00	90.56	89.18	8,909.93	-428.37	5,810.43	5,810.43	1.17	0.21	1.15
14,801.00	90.29	89.18	8,908.51	-425.64	6,001.40	6,001.40	0.14	-0.14	0.00
14,897.00	88.54	88.82	8,909.49	-423.97	6,097.38	6,097.38	1.86	-1.82	-0.38
14,993.00	88.78	89.58	8,911.74	-422.63	6,193.34	6,193.34	0.83	0.25	0.79
15,088.00	89.31	89.09	8,913.32	-421.52	6,288.32	6,288.32	0.76	0.56	-0.52
15,184.00	89.08	89.10	8,914.67	-420.01	6,384.30	6,384.30	0.24	-0.24	0.01
15,279.00	89.95	88.84	8,915.47	-418.30	6,479.28	6,479.28	0.96	0.92	-0.27
15,375.00	88.47	89.94	8,916.80	-417.28	6,575.26	6,575.26	1.92	-1.54	1.15
15,470.00	88.95	89.41	8,918.94	-416.74	6,670.24	6,670.24	0.75	0.51	-0.56
15,566.00	88.78	90.41	8,920.84	-416.59	6,766.22	6,766.22	1.06	-0.18	1.04
15,661.00	88.91	89.96	8,922.75	-416.90	6,861.20	6,861.20	0.49	0.14	-0.47
15,757.00	88.98	90.67	8,924.52	-417.42	6,957.18	6,957.18	0.74	0.07	0.74
15,853.00	89.85	89.95	8,925.50	-417.94	7,053.17	7,053.17	1.18	0.91	-0.75
15,893.00	89.84	90.44	8,925.61	-418.08	7,093.17	7,093.17	1.23	-0.03	1.23
15,989.00	89.40	89.63	8,926.25	-418.14	7,189.17	7,189.17	0.96	-0.46	-0.84

LEAM Drilling Systems LLC

Survey Report

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Project: Eddy County, NM (NAD-83)
Site: Onyx PWU 29-28
Well: 9H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well 9H
TVD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft
MD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
16,084.00	89.42	89.48	8,927.22	-417.40	7,284.16	7,284.16	0.16	0.02	-0.16
16,179.00	89.03	89.31	8,928.51	-416.40	7,379.14	7,379.14	0.45	-0.41	-0.18
16,275.00	88.88	89.50	8,930.26	-415.40	7,475.12	7,475.12	0.25	-0.16	0.20
16,371.00	89.51	88.17	8,931.61	-413.45	7,571.09	7,571.09	1.53	0.66	-1.39
16,466.00	88.25	89.46	8,933.47	-411.48	7,666.05	7,666.05	1.90	-1.33	1.36
16,562.00	88.29	89.69	8,936.36	-410.77	7,762.00	7,762.00	0.24	0.04	0.24
16,657.00	88.90	89.91	8,938.69	-410.44	7,856.97	7,856.97	0.68	0.64	0.23
16,753.00	89.28	89.91	8,940.22	-410.29	7,952.96	7,952.96	0.40	0.40	0.00
16,849.00	89.39	90.32	8,941.33	-410.48	8,048.95	8,048.95	0.44	0.11	0.43
16,944.00	89.32	88.93	8,942.40	-409.86	8,143.94	8,143.94	1.46	-0.07	-1.46
17,040.00	89.46	88.81	8,943.42	-407.97	8,239.92	8,239.92	0.19	0.15	-0.13
17,135.00	89.78	88.97	8,944.05	-406.13	8,334.90	8,334.90	0.38	0.34	0.17
17,231.00	90.06	88.85	8,944.19	-404.30	8,430.88	8,430.88	0.32	0.29	-0.13
17,326.00	90.20	88.64	8,943.97	-402.22	8,525.86	8,525.86	0.27	0.15	-0.22
17,422.00	90.35	88.84	8,943.51	-400.11	8,621.83	8,621.83	0.26	0.16	0.21
17,518.00	90.66	89.06	8,942.67	-398.35	8,717.81	8,717.81	0.40	0.32	0.23
17,613.00	90.26	88.49	8,941.90	-396.32	8,812.79	8,812.79	0.73	-0.42	-0.60
17,709.00	90.00	89.13	8,941.69	-394.33	8,908.77	8,908.77	0.72	-0.27	0.67
17,805.00	89.26	89.02	8,942.30	-392.78	9,004.75	9,004.75	0.78	-0.77	-0.11
17,900.00	88.72	89.22	8,943.98	-391.32	9,099.73	9,099.73	0.61	-0.57	0.21
17,996.00	90.10	89.30	8,944.97	-390.08	9,195.71	9,195.71	1.44	1.44	0.08
18,091.00	90.27	89.97	8,944.66	-389.47	9,290.71	9,290.71	0.73	0.18	0.71
18,187.00	88.58	90.04	8,945.62	-389.48	9,386.70	9,386.70	1.76	-1.76	0.07
18,282.00	86.66	90.02	8,949.57	-389.53	9,481.61	9,481.61	2.02	-2.02	-0.02
18,377.00	86.82	89.49	8,954.97	-389.12	9,576.46	9,576.46	0.58	0.17	-0.56
18,473.00	86.76	89.72	8,960.35	-388.46	9,672.30	9,672.30	0.25	-0.06	0.24
18,569.00	87.22	89.90	8,965.39	-388.15	9,768.17	9,768.17	0.51	0.48	0.19
18,664.00	87.10	89.63	8,970.10	-387.76	9,863.05	9,863.05	0.31	-0.13	-0.28
18,758.00	87.56	89.86	8,974.47	-387.34	9,956.95	9,956.95	0.55	0.49	0.24
18,777.00	87.85	89.83	8,975.24	-387.29	9,975.94	9,975.94	1.53	1.53	-0.16
18,909.00	87.85	89.83	8,980.19	-386.90	10,107.84	10,107.84	0.00	0.00	0.00
Projection									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
18,909.00	8,980.19	-386.90	10,107.84	Projection