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February 8, 2018

AUG 13 2018

DISTRICT II-ARTESIA O.C.D.

Devon Energy Production Company, LP

Well: Onyx PWU 29-28 #11H

County/Parish: Eddy County, NM

30-015-44372

LEAM MWD: (OH) from 234' MD – 16,666' MD  
Projection; 16,743' MD

This Borehole Survey taken between 01/19/2018 and 02/02/2018 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 8, 2018



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## Survey Certification Form

DISTRICT II-ARTESIA O.C.D.

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 01/19/2018 through 02/02/2018, conduct or supervise the taking of MWD Survey from a depth of 234' MD to 16,743' 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 #11H 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 solid horizontal line.

Randy W. Rakowitz  
MWD Operations Coordinator

# LEAM Drilling Services

## Survey Report

Company: Devon Energy	Local Co-ordinate Reference: Well 11H
Project: Eddy County, NM (NAD-83)	TVD Reference: 3310.0' GE + 23.5' KB @ 3333.50usft
Site: Onyx PWU 29-28	MD Reference: 3310.0' GE + 23.5' KB @ 3333.50usft
Well: 11H	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	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

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	11H					
Well Position	+N/-S	0.00 usft	Northing:	593,328.44 usft	Latitude:	32° 37' 51.2421 N
	+E/-W	0.00 usft	Easting:	611,830.14 usft	Longitude:	104° 6' 15.6506 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,310.00 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/8/2018	7.40	60.45	48,132

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)	Direction (°)	
	0.00	0.00	0.00	90.00	

Survey Program	Date 2/7/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
50.00	123.00	Survey #1 (OH)	VES GyroFlex V2	
234.00	16,666.00	Survey #2 (OH)	LEAM MWD+HDGM	MWD+HDGM
16,743.00	16,743.00	Survey #3 (OH)	Project	Projection

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
50.00	0.52	35.51	50.00	0.18	0.13	0.13	1.04	1.04	0.00
100.00	0.37	26.37	100.00	0.51	0.34	0.34	0.33	-0.30	-18.28
123.00	0.53	71.21	123.00	0.61	0.47	0.47	1.63	0.70	194.96
234.00	0.70	48.60	233.99	1.23	1.46	1.46	0.26	0.15	-20.37
326.00	1.00	34.70	325.98	2.26	2.34	2.34	0.39	0.33	-15.11
423.00	1.20	25.90	422.96	3.87	3.27	3.27	0.27	0.21	-9.07
515.00	1.10	28.20	514.94	5.51	4.11	4.11	0.12	-0.11	2.50
606.00	1.10	26.60	605.93	7.07	4.91	4.91	0.03	0.00	-1.76

# LEAM Drilling Services

## Survey Report

**Company:** Devon Energy  
**Project:** Eddy County, NM (NAD-83)  
**Site:** Onyx PWU 29-28  
**Well:** 11H  
**Wellbore:** OH  
**Design:** OH

**Local Co-ordinate Reference:** Well 11H  
**TVD Reference:** 3310.0' GE + 23.5' KB @ 3333.50usft  
**MD Reference:** 3310.0' GE + 23.5' KB @ 3333.50usft  
**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)
697.00	1.40	26.60	696.91	8.84	5.80	5.80	0.33	0.33	0.00
788.00	1.50	18.70	787.88	10.96	6.68	6.68	0.25	0.11	-8.68
880.00	1.60	37.90	879.84	13.12	7.85	7.85	0.57	0.11	20.87
971.00	1.80	33.10	970.80	15.32	9.41	9.41	0.27	0.22	-5.27
1,063.00	1.10	43.30	1,062.77	17.17	10.81	10.81	0.81	-0.76	11.09
1,154.00	1.10	42.40	1,153.76	18.45	12.00	12.00	0.02	0.00	-0.99
1,247.00	0.40	16.40	1,246.75	19.42	12.69	12.69	0.82	-0.75	-27.96
1,338.00	0.20	61.40	1,337.75	19.80	12.92	12.92	0.32	-0.22	49.45
1,429.00	0.40	169.20	1,428.75	19.57	13.12	13.12	0.55	0.22	118.46
1,520.00	0.50	172.70	1,519.74	18.86	13.23	13.23	0.11	0.11	3.85
1,612.00	0.10	182.00	1,611.74	18.38	13.28	13.28	0.44	-0.43	10.11
1,708.00	0.30	188.90	1,707.74	18.05	13.23	13.23	0.21	0.21	7.19
1,803.00	1.00	245.60	1,802.74	17.46	12.44	12.44	0.92	0.74	59.68
1,899.00	2.00	240.90	1,898.70	16.30	10.21	10.21	1.05	1.04	-4.90
1,995.00	2.50	240.90	1,994.63	14.47	6.92	6.92	0.52	0.52	0.00
2,090.00	3.50	244.20	2,089.50	12.20	2.50	2.50	1.07	1.05	3.47
2,186.00	4.40	242.80	2,185.27	9.24	-3.41	-3.41	0.94	0.94	-1.46
2,281.00	5.00	244.80	2,279.95	5.81	-10.40	-10.40	0.65	0.63	2.11
2,377.00	5.10	244.80	2,375.57	2.21	-18.05	-18.05	0.10	0.10	0.00
2,472.00	5.10	245.80	2,470.20	-1.32	-25.72	-25.72	0.09	0.00	1.05
2,567.00	4.80	248.60	2,564.84	-4.50	-33.27	-33.27	0.41	-0.32	2.95
2,663.00	5.30	246.90	2,660.47	-7.70	-41.09	-41.09	0.54	0.52	-1.77
2,758.00	5.20	250.40	2,755.07	-10.87	-49.18	-49.18	0.35	-0.11	3.68
2,853.00	5.00	247.00	2,849.70	-13.93	-57.05	-57.05	0.38	-0.21	-3.58
2,949.00	4.80	246.70	2,945.35	-17.15	-64.59	-64.59	0.21	-0.21	-0.31
3,044.00	5.10	249.90	3,039.99	-20.18	-72.20	-72.20	0.43	0.32	3.37
3,140.00	5.60	249.20	3,135.57	-23.31	-80.59	-80.59	0.53	0.52	-0.73
3,235.00	6.40	251.60	3,230.05	-26.62	-89.95	-89.95	0.88	0.84	2.53
3,331.00	6.20	252.00	3,325.47	-29.91	-99.95	-99.95	0.21	-0.21	0.42
3,427.00	6.00	251.80	3,420.93	-33.08	-109.65	-109.65	0.21	-0.21	-0.21
3,449.00	5.80	251.80	3,442.81	-33.79	-111.80	-111.80	0.91	-0.91	0.00
3,517.00	5.90	251.80	3,510.46	-35.95	-118.38	-118.38	0.15	0.15	0.00
3,612.00	6.20	251.80	3,604.93	-39.08	-127.89	-127.89	0.32	0.32	0.00
3,707.00	5.10	258.80	3,699.47	-41.50	-136.91	-136.91	1.36	-1.16	7.37
3,801.00	4.80	262.70	3,793.12	-42.82	-144.91	-144.91	0.48	-0.32	4.15
3,896.00	5.70	260.90	3,887.72	-44.07	-153.51	-153.51	0.96	0.95	-1.89
3,989.00	6.70	259.00	3,980.17	-45.83	-163.40	-163.40	1.10	1.08	-2.04
4,084.00	6.80	255.50	4,074.51	-48.30	-174.28	-174.28	0.45	0.11	-3.68
4,178.00	6.20	249.50	4,167.91	-51.47	-184.42	-184.42	0.96	-0.64	-6.38
4,272.00	6.20	251.10	4,261.36	-54.89	-193.98	-193.98	0.18	0.00	1.70
4,367.00	5.50	251.60	4,355.87	-57.99	-203.15	-203.15	0.74	-0.74	0.53
4,462.00	5.20	249.50	4,450.45	-60.93	-211.51	-211.51	0.38	-0.32	-2.21
4,556.00	5.00	250.40	4,544.08	-63.80	-219.35	-219.35	0.23	-0.21	0.96

# LEAM Drilling Services

## Survey Report

<b>Company:</b> Devon Energy	<b>Local Co-ordinate Reference:</b> Well 11H
<b>Project:</b> Eddy County, NM (NAD-83)	<b>TVD Reference:</b> 3310.0' GE + 23.5' KB @ 3333.50usft
<b>Site:</b> Onyx PWU 29-28	<b>MD Reference:</b> 3310.0' GE + 23.5' KB @ 3333.50usft
<b>Well:</b> 11H	<b>North Reference:</b> Grid
<b>Wellbore:</b> OH	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> OH	<b>Database:</b> 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)
4,651.00	5.20	261.10	4,638.71	-65.85	-227.51	-227.51	1.02	0.21	11.26
4,746.00	5.00	264.30	4,733.33	-66.93	-235.88	-235.88	0.37	-0.21	3.37
4,840.00	4.70	258.80	4,826.99	-68.09	-243.73	-243.73	0.59	-0.32	-5.85
4,936.00	5.10	253.00	4,922.64	-70.10	-251.67	-251.67	0.66	0.42	-6.04
5,030.00	5.50	251.30	5,016.24	-72.76	-259.94	-259.94	0.46	0.43	-1.81
5,125.00	5.50	248.60	5,110.80	-75.89	-268.49	-268.49	0.27	0.00	-2.84
5,220.00	4.90	247.70	5,205.41	-79.09	-276.48	-276.48	0.64	-0.63	-0.95
5,315.00	4.20	250.90	5,300.11	-81.76	-283.52	-283.52	0.78	-0.74	3.37
5,411.00	4.20	253.70	5,395.85	-83.90	-290.22	-290.22	0.21	0.00	2.92
5,506.00	4.00	253.90	5,490.61	-85.80	-296.74	-296.74	0.21	-0.21	0.21
5,602.00	4.40	250.70	5,586.35	-87.94	-303.43	-303.43	0.48	0.42	-3.33
5,697.00	4.70	246.70	5,681.05	-90.69	-310.45	-310.45	0.46	0.32	-4.21
5,793.00	4.00	261.80	5,776.78	-92.72	-317.37	-317.37	1.39	-0.73	15.73
5,889.00	3.30	263.70	5,872.59	-93.50	-323.43	-323.43	0.74	-0.73	1.98
5,984.00	2.60	258.50	5,967.46	-94.23	-328.26	-328.26	0.79	-0.74	-5.47
6,080.00	2.30	236.90	6,063.37	-95.72	-332.01	-332.01	1.00	-0.31	-22.50
6,175.00	1.10	231.80	6,158.33	-97.32	-334.32	-334.32	1.27	-1.26	-5.37
6,270.00	0.60	251.30	6,253.32	-98.04	-335.51	-335.51	0.60	-0.53	20.53
6,365.00	0.40	316.80	6,348.32	-97.96	-336.21	-336.21	0.60	-0.21	68.95
6,461.00	0.50	5.00	6,444.31	-97.30	-336.40	-336.40	0.39	0.10	50.21
6,556.00	1.00	4.50	6,539.31	-96.06	-336.30	-336.30	0.53	0.53	-0.53
6,651.00	1.10	1.80	6,634.29	-94.32	-336.21	-336.21	0.12	0.11	-2.84
6,747.00	1.00	2.40	6,730.27	-92.56	-336.14	-336.14	0.10	-0.10	0.63
6,843.00	0.80	239.50	6,826.27	-92.07	-336.69	-336.69	1.65	-0.21	-128.02
6,938.00	0.80	232.10	6,921.26	-92.81	-337.78	-337.78	0.11	0.00	-7.79
7,033.00	0.60	230.90	7,016.25	-93.53	-338.69	-338.69	0.21	-0.21	-1.26
7,129.00	0.40	256.00	7,112.25	-93.93	-339.41	-339.41	0.30	-0.21	26.15
7,224.00	1.20	200.60	7,207.24	-94.94	-340.08	-340.08	1.08	0.84	-58.32
7,320.00	1.20	206.30	7,303.22	-96.78	-340.88	-340.88	0.12	0.00	5.94
7,415.00	0.90	194.50	7,398.20	-98.40	-341.50	-341.50	0.39	-0.32	-12.42
7,511.00	1.00	189.90	7,494.19	-99.95	-341.84	-341.84	0.13	0.10	-4.79
7,607.00	0.60	176.90	7,590.18	-101.28	-341.95	-341.95	0.45	-0.42	-13.54
7,702.00	1.10	179.90	7,685.17	-102.69	-341.93	-341.93	0.53	0.53	3.16
7,798.00	1.10	174.10	7,781.15	-104.53	-341.83	-341.83	0.12	0.00	-6.04
7,893.00	1.10	177.30	7,876.13	-106.35	-341.69	-341.69	0.06	0.00	3.37
7,988.00	1.20	181.70	7,971.11	-108.25	-341.68	-341.68	0.14	0.11	4.63
8,084.00	1.00	172.30	8,067.10	-110.09	-341.60	-341.60	0.28	-0.21	-9.79
8,179.00	1.10	162.80	8,162.08	-111.78	-341.22	-341.22	0.21	0.11	-10.00
8,275.00	1.50	192.40	8,258.06	-113.89	-341.21	-341.21	0.80	0.42	30.83
8,380.00	1.30	189.70	8,363.02	-116.40	-341.71	-341.71	0.20	-0.19	-2.57
8,477.00	5.50	98.20	8,459.87	-118.15	-337.29	-337.29	5.86	4.33	-94.33
8,525.00	12.80	88.70	8,507.23	-118.36	-329.69	-329.69	15.48	15.21	-19.79
8,573.00	17.90	82.50	8,553.50	-117.27	-317.05	-317.05	11.15	10.63	-12.92

# LEAM Drilling Services

## Survey Report

**Company:** Devon Energy  
**Project:** Eddy County, NM (NAD-83)  
**Site:** Onyx PWU 29-28  
**Well:** 11H  
**Wellbore:** OH  
**Design:** OH

**Local Co-ordinate Reference:** Well 11H  
**TVD Reference:** 3310.0' GE + 23.5' KB @ 3333.50usft  
**MD Reference:** 3310.0' GE + 23.5' KB @ 3333.50usft  
**North Reference:** Grid  
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### Survey

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8,621.00	24.00	75.80	8,598.32	-113.91	-300.25	-300.25	13.63	12.71	-13.96
8,668.00	29.40	77.10	8,640.29	-108.99	-279.73	-279.73	11.56	11.49	2.77
8,716.00	35.70	80.90	8,680.73	-104.14	-254.38	-254.38	13.79	13.13	7.92
8,763.00	41.80	84.40	8,717.37	-100.44	-225.22	-225.22	13.79	12.98	7.45
8,811.00	48.20	87.80	8,751.30	-98.19	-191.39	-191.39	14.24	13.33	7.08
8,859.00	52.60	88.70	8,781.89	-97.07	-154.43	-154.43	9.28	9.17	1.88
8,907.00	57.00	88.10	8,809.55	-95.97	-115.23	-115.23	9.22	9.17	-1.25
8,954.00	59.50	88.10	8,834.28	-94.64	-75.29	-75.29	5.32	5.32	0.00
9,002.00	62.50	87.30	8,857.55	-92.95	-33.35	-33.35	6.42	6.25	-1.67
9,050.00	66.60	85.00	8,878.18	-90.03	9.88	9.88	9.57	8.54	-4.79
9,098.00	69.50	83.20	8,896.12	-85.45	54.16	54.16	6.97	6.04	-3.75
9,145.00	71.50	84.60	8,911.81	-80.74	98.21	98.21	5.10	4.26	2.98
9,193.00	76.90	86.20	8,924.87	-77.05	144.23	144.23	11.70	11.25	3.33
9,224.00	81.30	86.90	8,930.73	-75.22	174.61	174.61	14.37	14.19	2.26
9,269.00	86.00	87.80	8,935.71	-73.15	219.27	219.27	10.63	10.44	2.00
9,315.00	88.10	88.80	8,938.08	-71.79	265.19	265.19	5.06	4.57	2.17
9,360.00	88.40	91.50	8,939.45	-71.91	310.16	310.16	6.03	0.67	6.00
9,405.00	88.00	92.40	8,940.87	-73.44	355.11	355.11	2.19	-0.89	2.00
9,453.00	87.80	91.80	8,942.62	-75.20	403.05	403.05	1.32	-0.42	-1.25
9,497.00	87.80	91.50	8,944.31	-76.46	447.00	447.00	0.68	0.00	-0.68
9,588.00	88.50	92.40	8,947.25	-79.56	537.90	537.90	1.25	0.77	0.99
9,679.00	88.70	92.70	8,949.47	-83.60	628.78	628.78	0.40	0.22	0.33
9,774.00	88.60	92.50	8,951.71	-87.91	723.65	723.65	0.24	-0.11	-0.21
9,869.00	88.80	92.50	8,953.87	-92.06	818.54	818.54	0.21	0.21	0.00
9,964.00	88.60	92.00	8,956.02	-95.78	913.44	913.44	0.57	-0.21	-0.53
10,059.00	89.30	90.80	8,957.76	-98.10	1,008.40	1,008.40	1.46	0.74	-1.26
10,155.00	89.20	90.20	8,959.02	-98.94	1,104.38	1,104.38	0.63	-0.10	-0.63
10,250.00	90.00	91.00	8,959.68	-99.94	1,199.37	1,199.37	1.19	0.84	0.84
10,346.00	89.30	90.80	8,960.27	-101.45	1,295.36	1,295.36	0.76	-0.73	-0.21
10,441.00	89.60	90.20	8,961.18	-102.27	1,390.35	1,390.35	0.71	0.32	-0.63
10,537.00	89.60	89.50	8,961.85	-102.02	1,486.35	1,486.35	0.73	0.00	-0.73
10,632.00	89.30	90.80	8,962.76	-102.27	1,581.34	1,581.34	1.40	-0.32	1.37
10,728.00	88.80	90.20	8,964.36	-103.11	1,677.32	1,677.32	0.81	-0.52	-0.63
10,823.00	88.90	89.70	8,966.26	-103.03	1,772.30	1,772.30	0.54	0.11	-0.53
10,919.00	89.30	90.40	8,967.77	-103.11	1,868.29	1,868.29	0.84	0.42	0.73
11,014.00	89.50	92.40	8,968.77	-105.43	1,963.25	1,963.25	2.12	0.21	2.11
11,109.00	89.70	91.80	8,969.43	-108.91	2,058.19	2,058.19	0.67	0.21	-0.63
11,205.00	90.40	91.50	8,969.34	-111.68	2,154.15	2,154.15	0.79	0.73	-0.31
11,300.00	89.80	91.30	8,969.18	-114.00	2,249.12	2,249.12	0.67	-0.63	-0.21
11,396.00	88.50	90.10	8,970.60	-115.17	2,345.09	2,345.09	1.84	-1.35	-1.25
11,491.00	88.30	89.70	8,973.26	-115.00	2,440.06	2,440.06	0.47	-0.21	-0.42
11,587.00	88.10	89.20	8,976.27	-114.08	2,536.01	2,536.01	0.56	-0.21	-0.52
11,683.00	88.70	88.00	8,978.95	-111.74	2,631.94	2,631.94	1.40	0.63	-1.25
11,778.00	89.60	89.00	8,980.36	-109.25	2,726.89	2,726.89	1.42	0.95	1.05

# LEAM Drilling Services

## Survey Report

**Company:** Devon Energy  
**Project:** Eddy County, NM (NAD-83)  
**Site:** Onyx PWU 29-28  
**Well:** 11H  
**Wellbore:** OH  
**Design:** OH

**Local Co-ordinate Reference:** Well 11H  
**TVD Reference:** 3310.0' GE + 23.5' KB @ 3333.50usft  
**MD Reference:** 3310.0' GE + 23.5' KB @ 3333.50usft  
**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)
11,874.00	90.00	89.40	8,980.70	-107.91	2,822.88	2,822.88	0.59	0.42	0.42
11,969.00	90.10	90.20	8,980.61	-107.58	2,917.88	2,917.88	0.85	0.11	0.84
12,065.00	89.30	91.50	8,981.12	-109.00	3,013.87	3,013.87	1.59	-0.83	1.35
12,160.00	89.40	91.30	8,982.19	-111.33	3,108.83	3,108.83	0.24	0.11	-0.21
12,256.00	89.90	90.80	8,982.78	-113.08	3,204.81	3,204.81	0.74	0.52	-0.52
12,351.00	89.30	90.60	8,983.44	-114.25	3,299.80	3,299.80	0.67	-0.63	-0.21
12,446.00	89.30	90.60	8,984.60	-115.24	3,394.79	3,394.79	0.00	0.00	0.00
12,542.00	89.80	90.10	8,985.36	-115.83	3,490.78	3,490.78	0.74	0.52	-0.52
12,637.00	90.20	89.50	8,985.36	-115.49	3,585.78	3,585.78	0.76	0.42	-0.63
12,733.00	90.20	89.40	8,985.02	-114.57	3,681.78	3,681.78	0.10	0.00	-0.10
12,828.00	89.40	89.00	8,985.35	-113.25	3,776.77	3,776.77	0.94	-0.84	-0.42
12,924.00	88.60	89.20	8,987.03	-111.74	3,872.74	3,872.74	0.86	-0.83	0.21
13,019.00	88.70	90.20	8,989.27	-111.24	3,967.71	3,967.71	1.06	0.11	1.05
13,115.00	87.60	91.10	8,992.37	-112.33	4,063.65	4,063.65	1.48	-1.15	0.94
13,210.00	86.30	90.20	8,997.42	-113.41	4,158.51	4,158.51	1.66	-1.37	-0.95
13,306.00	86.30	89.90	9,003.62	-113.49	4,254.31	4,254.31	0.31	0.00	-0.31
13,401.00	87.00	89.20	9,009.17	-112.75	4,349.14	4,349.14	1.04	0.74	-0.74
13,496.00	87.50	88.80	9,013.73	-111.09	4,444.02	4,444.02	0.67	0.53	-0.42
13,592.00	87.40	89.50	9,018.00	-109.67	4,539.91	4,539.91	0.74	-0.10	0.73
13,687.00	87.80	91.10	9,021.98	-110.16	4,634.82	4,634.82	1.73	0.42	1.68
13,783.00	88.50	91.00	9,025.08	-111.92	4,730.76	4,730.76	0.74	0.73	-0.10
13,879.00	90.00	90.60	9,026.33	-113.26	4,826.74	4,826.74	1.62	1.56	-0.42
13,974.00	88.50	90.40	9,027.58	-114.09	4,921.72	4,921.72	1.59	-1.58	-0.21
14,070.00	89.00	90.60	9,029.67	-114.93	5,017.70	5,017.70	0.56	0.52	0.21
14,165.00	87.50	90.60	9,032.57	-115.92	5,112.64	5,112.64	1.58	-1.58	0.00
14,260.00	87.80	90.60	9,036.47	-116.92	5,207.56	5,207.56	0.32	0.32	0.00
14,356.00	87.50	90.20	9,040.40	-117.59	5,303.47	5,303.47	0.52	-0.31	-0.42
14,451.00	88.00	90.20	9,044.13	-117.92	5,398.40	5,398.40	0.53	0.53	0.00
14,546.00	88.50	90.10	9,047.03	-118.17	5,493.36	5,493.36	0.54	0.53	-0.11
14,642.00	87.30	90.20	9,050.55	-118.42	5,589.29	5,589.29	1.25	-1.25	0.10
14,737.00	88.30	89.70	9,054.20	-118.33	5,684.22	5,684.22	1.18	1.05	-0.53
14,832.00	88.80	90.10	9,056.60	-118.17	5,779.19	5,779.19	0.67	0.53	0.42
14,927.00	89.00	89.90	9,058.43	-118.17	5,874.17	5,874.17	0.30	0.21	-0.21
15,023.00	89.10	89.90	9,060.02	-118.00	5,970.16	5,970.16	0.10	0.10	0.00
15,118.00	88.90	90.20	9,061.67	-118.08	6,065.14	6,065.14	0.38	-0.21	0.32
15,214.00	89.80	89.40	9,062.76	-117.75	6,161.13	6,161.13	1.25	0.94	-0.83
15,309.00	90.00	89.40	9,062.93	-116.75	6,256.13	6,256.13	0.21	0.21	0.00
15,405.00	90.20	89.50	9,062.76	-115.83	6,352.12	6,352.12	0.23	0.21	0.10
15,500.00	90.70	89.90	9,062.02	-115.34	6,447.12	6,447.12	0.67	0.53	0.42
15,595.00	89.90	89.40	9,061.52	-114.75	6,542.11	6,542.11	0.99	-0.84	-0.53
15,690.00	90.00	89.40	9,061.60	-113.76	6,637.11	6,637.11	0.11	0.11	0.00
15,785.00	90.70	89.70	9,061.02	-113.01	6,732.10	6,732.10	0.80	0.74	0.32
15,881.00	90.00	89.40	9,060.43	-112.26	6,828.10	6,828.10	0.79	-0.73	-0.31

# LEAM Drilling Services

## Survey Report

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**Well:** 11H  
**Wellbore:** OH  
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**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)
15,976.00	90.30	89.70	9,060.19	-111.51	6,923.09	6,923.09	0.45	0.32	0.32
16,072.00	90.00	89.40	9,059.93	-110.76	7,019.09	7,019.09	0.44	-0.31	-0.31
16,167.00	89.20	89.70	9,060.60	-110.01	7,114.08	7,114.08	0.90	-0.84	0.32
16,262.00	89.30	89.90	9,061.84	-109.68	7,209.08	7,209.08	0.24	0.11	0.21
16,358.00	89.40	89.90	9,062.93	-109.51	7,305.07	7,305.07	0.10	0.10	0.00
16,454.00	90.10	90.10	9,063.35	-109.51	7,401.07	7,401.07	0.76	0.73	0.21
16,549.00	89.90	90.20	9,063.35	-109.76	7,496.07	7,496.07	0.24	-0.21	0.11
16,666.00	90.50	90.10	9,062.94	-110.07	7,613.07	7,613.07	0.52	0.51	-0.09
16,743.00	90.50	90.10	9,062.27	-110.20	7,690.06	7,690.06	0.00	0.00	0.00
<b>Projection</b>									