



HOBBS OCD

JUN 14 2019

RECEIVED

North Thistle 3-34 State Com No. 1H
Lea County, NM

December 18, 2018

Job No. LNM5193418

Survey Completion Report



Survey Certification Letter

December 18, 2018



Operator Name: Devon Energy Corp.
Well Name: North Thistle 3-34 State Com No. 1H
County/Parish: Lea County,
State: NM
Rig Name: Cactus 126
Job Number: LNM5193418

This is to certify the surveys performed on the referenced well by Professional Directional Ent., Inc. are true and correct MWD Surveys, data provided as follows:

Surveyor	Surveyed Depths	Projection to Bit	Dates Performed	Type of Survey
ProDirectional	179' MD – 19,827' MD	19,885' MD	11/29/18 – 12/17/18	MWD

Sincerely,

Mike Coats
Regulatory Specialist
Professional Directional

850 Conroe Park West Drive | Conroe, TX 77303 | Phone: 936.441.7266

prodirectional.com

The Standard of Excellence in Directional Supervision



Devon Energy Corp.

Lea County, NM

North Thistle 3-34 State Com

No. 1H

OH

Survey: ProDirectional

Survey Report

18 December, 2018





ProDirectional
Survey Report



Company: Devon Energy Corp.
Project: Lea County, NM (NAD83)
Site: North Thistle 3-34 State Com
Well: 1H
Wellbore: OH
Design: Surveys 179-19885 MD

Local Co-ordinate Reference: Well 1H
TVD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
MD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Project Lea County, NM (NAD83)

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site North Thistle 3-34 State Com

Site Position:		Northing:	483,599.20 usft	Latitude:	32.327141
From:	Map	Easting:	778,951.10 usft	Longitude:	-103.564074
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.41 °

Well 1H

Well Position	+N/-S	0.00 usft	Northing:	483,599.20 usft	Latitude:	32.327141
	+E/-W	0.00 usft	Easting:	778,951.10 usft	Longitude:	-103.564074
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,595.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/17/2018	6.75	60.08	48,059.80

Design Surveys 179-19885 MD

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	359.55

Survey Program Date 12/18/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
179.00	19,885.00	Survey #1 (OH)	MWD+HDGM	OWSG MWD + HDGM



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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	483,599.20	778,951.10
179.00	0.10	321.10	179.00	0.12	0.12	-0.10	0.16	321.10	483,599.32	778,951.00
Pro MWD First Survey: 179' MD										
272.00	0.20	298.40	272.00	0.26	0.26	-0.29	0.39	311.91	483,599.46	778,950.81
363.00	0.20	315.30	363.00	0.45	0.45	-0.54	0.71	309.66	483,599.65	778,950.56
454.00	0.30	305.00	454.00	0.71	0.70	-0.85	1.10	309.46	483,599.90	778,950.25
546.00	0.30	314.90	546.00	1.02	1.01	-1.22	1.58	309.61	483,600.21	778,949.88
638.00	0.30	321.90	638.00	1.38	1.37	-1.54	2.06	311.66	483,600.57	778,949.56
730.00	0.30	315.80	729.99	1.74	1.73	-1.85	2.54	313.02	483,600.93	778,949.25
822.00	0.30	291.30	821.99	2.01	1.99	-2.25	3.00	311.54	483,601.19	778,948.85
914.00	0.40	294.90	913.99	2.23	2.21	-2.76	3.54	308.70	483,601.41	778,948.34
1,063.00	0.10	325.50	1,062.99	2.56	2.54	-3.31	4.17	307.51	483,601.74	778,947.79
1,155.00	0.20	308.00	1,154.99	2.73	2.70	-3.48	4.41	307.85	483,601.90	778,947.62
1,247.00	0.30	298.60	1,246.99	2.95	2.92	-3.82	4.80	307.40	483,602.12	778,947.28
1,339.00	0.20	331.50	1,338.99	3.21	3.17	-4.11	5.19	307.71	483,602.37	778,946.99
1,431.00	0.10	341.10	1,430.99	3.42	3.39	-4.21	5.40	308.87	483,602.59	778,946.89
1,522.00	0.20	265.90	1,521.99	3.49	3.46	-4.39	5.59	308.19	483,602.66	778,946.71
1,613.00	0.80	268.00	1,612.98	3.46	3.42	-5.19	6.21	303.42	483,602.62	778,945.91
1,707.00	1.20	267.90	1,706.97	3.42	3.36	-6.82	7.61	296.23	483,602.56	778,944.28
1,801.00	1.10	266.60	1,800.95	3.34	3.27	-8.71	9.30	290.60	483,602.47	778,942.39
1,895.00	1.10	260.50	1,894.93	3.15	3.07	-10.50	10.94	286.30	483,602.27	778,940.60
1,989.00	1.20	253.70	1,988.91	2.74	2.65	-12.33	12.61	282.11	483,601.85	778,938.77
2,083.00	1.00	263.10	2,082.90	2.38	2.27	-14.09	14.28	279.15	483,601.47	778,937.01
2,177.00	1.00	253.40	2,176.88	2.06	1.94	-15.69	15.81	277.04	483,601.14	778,935.41
2,271.00	1.00	248.50	2,270.87	1.54	1.40	-17.24	17.30	274.65	483,600.60	778,933.86
2,365.00	1.00	268.40	2,364.85	1.23	1.08	-18.83	18.86	273.28	483,600.28	778,932.27
2,459.00	0.80	259.20	2,458.84	1.09	0.93	-20.29	20.31	272.63	483,600.13	778,930.81



ProDirectional Survey Report



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Well: 1H
Wellbore: OH
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MD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
2,553.00	0.30	277.50	2,552.84	1.01	0.84	-21.18	21.20	272.28	483,600.04	778,929.92
2,647.00	0.30	4.70	2,646.84	1.29	1.12	-21.40	21.43	273.00	483,600.32	778,929.70
2,741.00	0.70	286.60	2,740.83	1.70	1.53	-21.93	21.99	273.99	483,600.73	778,929.17
2,835.00	1.60	253.40	2,834.81	1.50	1.32	-23.74	23.78	273.18	483,600.52	778,927.36
2,930.00	1.90	257.30	2,929.77	0.80	0.59	-26.55	26.56	271.28	483,599.79	778,924.55
3,024.00	2.20	261.30	3,023.71	0.21	-0.02	-29.85	29.85	269.96	483,599.18	778,921.25
3,118.00	3.50	263.20	3,117.59	-0.36	-0.63	-34.49	34.49	268.95	483,598.57	778,916.61
3,212.00	5.40	261.10	3,211.30	-1.33	-1.66	-41.70	41.74	267.72	483,597.54	778,909.40
3,306.00	6.90	260.10	3,304.76	-2.91	-3.31	-51.64	51.74	266.33	483,595.89	778,899.46
3,400.00	8.10	259.90	3,397.95	-4.95	-5.45	-63.72	63.95	265.11	483,593.75	778,887.38
3,493.00	9.40	257.60	3,489.87	-7.62	-8.23	-77.59	78.02	263.95	483,590.97	778,873.51
3,587.00	9.60	255.80	3,582.58	-11.07	-11.80	-92.68	93.43	262.75	483,587.40	778,858.42
3,682.00	9.10	257.60	3,676.32	-14.51	-15.35	-107.70	108.79	261.89	483,583.85	778,843.40
3,776.00	9.50	257.30	3,769.08	-17.69	-18.66	-122.53	123.94	261.34	483,580.54	778,828.57
3,870.00	10.90	256.70	3,861.60	-21.32	-22.41	-138.75	140.54	260.83	483,576.79	778,812.35
3,964.00	11.30	257.40	3,953.84	-25.23	-26.46	-156.38	158.61	260.40	483,572.74	778,794.72
4,058.00	10.60	257.30	4,046.13	-29.00	-30.37	-173.81	176.44	260.09	483,568.83	778,777.29
4,152.00	9.60	256.80	4,138.67	-32.57	-34.06	-189.87	192.90	259.83	483,565.14	778,761.23
4,247.00	8.70	255.40	4,232.46	-36.07	-37.68	-204.54	207.98	259.56	483,561.52	778,746.56
4,341.00	9.10	257.20	4,325.33	-39.40	-41.12	-218.66	222.50	259.35	483,558.08	778,732.44
4,436.00	10.60	261.70	4,418.92	-42.20	-44.04	-234.64	238.74	259.37	483,555.16	778,716.46
4,530.00	10.70	260.10	4,511.31	-44.81	-46.79	-251.79	256.10	259.47	483,552.41	778,699.31
4,624.00	10.30	260.70	4,603.73	-47.54	-49.65	-268.68	273.23	259.53	483,549.55	778,682.42
4,717.00	9.20	262.00	4,695.39	-49.80	-52.03	-284.25	288.97	259.63	483,547.17	778,666.85
4,811.00	9.20	258.80	4,788.18	-52.18	-54.54	-299.06	303.99	259.67	483,544.66	778,652.04
4,906.00	9.40	258.70	4,881.93	-55.06	-57.53	-314.12	319.34	259.62	483,541.67	778,636.98
5,000.00	10.10	258.70	4,974.57	-58.06	-60.65	-329.73	335.26	259.58	483,538.55	778,621.37



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Survey Report



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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
5,071.00	10.10	260.30	5,044.47	-60.23	-62.92	-341.97	347.71	259.57	483,536.28	778,609.13
5,180.00	9.20	259.90	5,151.93	-63.23	-66.06	-359.97	365.98	259.60	483,533.14	778,591.13
5,274.00	10.40	259.40	5,244.55	-65.98	-68.94	-375.71	381.98	259.60	483,530.26	778,575.39
5,368.00	11.40	258.00	5,336.86	-69.34	-72.43	-393.13	399.75	259.56	483,526.77	778,557.97
5,462.00	11.80	257.10	5,428.94	-73.27	-76.50	-411.59	418.64	259.47	483,522.70	778,539.51
5,555.00	10.80	258.00	5,520.13	-77.06	-80.44	-429.38	436.85	259.39	483,518.76	778,521.72
5,650.00	10.10	258.00	5,613.56	-80.51	-84.02	-446.24	454.08	259.34	483,515.18	778,504.86
5,743.00	9.90	257.60	5,705.14	-83.80	-87.43	-462.02	470.22	259.28	483,511.77	778,489.08
5,837.00	10.10	256.40	5,797.72	-87.35	-91.11	-477.92	486.53	259.21	483,508.09	778,473.18
5,931.00	9.40	254.80	5,890.36	-91.18	-95.06	-493.34	502.42	259.09	483,504.14	778,457.76
6,025.00	8.60	258.80	5,983.20	-94.45	-98.44	-507.64	517.10	259.03	483,500.76	778,443.46
6,119.00	8.40	261.40	6,076.17	-96.73	-100.83	-521.33	530.99	259.05	483,498.37	778,429.77
6,213.00	8.50	262.10	6,169.15	-98.60	-102.81	-535.00	544.79	259.12	483,496.39	778,416.10
6,307.00	9.40	261.70	6,262.00	-100.55	-104.87	-549.48	559.39	259.19	483,494.33	778,401.62
6,401.00	9.80	260.90	6,354.69	-102.81	-107.25	-564.97	575.06	259.25	483,491.95	778,386.13
6,495.00	9.90	261.40	6,447.30	-105.15	-109.72	-580.86	591.13	259.30	483,489.48	778,370.24
6,590.00	9.80	261.50	6,540.90	-107.44	-112.14	-596.93	607.37	259.36	483,487.06	778,354.17
6,684.00	9.60	261.30	6,633.56	-109.69	-114.50	-612.59	623.20	259.41	483,484.70	778,338.51
6,778.00	9.10	262.40	6,726.31	-111.74	-116.67	-627.71	638.46	259.47	483,482.53	778,323.39
6,872.00	9.10	260.80	6,819.12	-113.79	-118.84	-642.41	653.31	259.52	483,480.36	778,308.69
6,966.00	10.20	258.70	6,911.79	-116.49	-121.66	-657.91	669.07	259.52	483,477.54	778,293.19
7,060.00	10.90	260.00	7,004.20	-119.53	-124.84	-674.83	686.28	259.52	483,474.36	778,276.27
7,154.00	11.20	260.50	7,096.46	-122.44	-127.89	-692.58	704.29	259.54	483,471.31	778,258.52
7,248.00	10.70	255.30	7,188.75	-126.03	-131.61	-710.03	722.12	259.50	483,467.59	778,241.07
7,342.00	10.50	254.00	7,281.15	-130.47	-136.18	-726.70	739.35	259.39	483,463.02	778,224.40
7,436.00	10.00	255.40	7,373.65	-134.76	-140.60	-742.83	756.02	259.28	483,458.60	778,208.27
7,530.00	9.80	255.10	7,466.25	-138.76	-144.72	-758.46	772.14	259.20	483,454.48	778,192.64



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7,624.00	9.70	256.10	7,558.89	-142.59	-148.68	-773.88	788.03	259.12	483,450.52	778,177.22
7,718.00	10.40	259.00	7,651.45	-145.99	-152.20	-789.90	804.43	259.09	483,447.00	778,161.20
7,812.00	10.70	260.10	7,743.86	-148.97	-155.32	-806.82	821.63	259.10	483,443.88	778,144.28
7,906.00	9.90	259.80	7,836.34	-151.78	-158.25	-823.37	838.44	259.12	483,440.95	778,127.73
8,000.00	9.70	260.60	7,928.97	-154.38	-160.97	-839.14	854.44	259.14	483,438.23	778,111.96
8,094.00	9.00	260.90	8,021.72	-156.71	-163.43	-854.21	869.70	259.17	483,435.77	778,096.89
8,188.00	8.40	262.80	8,114.64	-158.63	-165.45	-868.28	883.90	259.21	483,433.75	778,082.82
8,282.00	7.90	262.90	8,207.69	-160.18	-167.11	-881.50	897.20	259.27	483,432.09	778,069.60
8,376.00	7.40	263.30	8,300.85	-161.59	-168.62	-893.93	909.69	259.32	483,430.58	778,057.17
8,470.00	7.00	264.50	8,394.11	-162.75	-169.87	-905.64	921.43	259.38	483,428.33	778,045.46
8,564.00	6.10	260.30	8,487.50	-164.06	-171.26	-916.26	932.13	259.41	483,427.94	778,034.84
8,658.00	4.20	254.60	8,581.11	-165.75	-173.02	-924.51	940.56	259.40	483,426.18	778,026.59
8,752.00	1.60	251.50	8,674.99	-167.05	-174.35	-929.07	945.29	259.37	483,424.85	778,022.03
8,846.00	0.40	67.70	8,768.98	-167.33	-174.64	-930.01	946.27	259.36	483,424.56	778,021.09
8,940.00	0.60	85.30	8,862.97	-167.17	-174.47	-929.22	945.46	259.37	483,424.73	778,021.88
9,035.00	0.30	20.70	8,957.97	-166.90	-174.20	-928.63	944.83	259.38	483,425.00	778,022.47
9,065.00	0.30	11.90	8,987.97	-166.75	-174.05	-928.59	944.76	259.38	483,425.15	778,022.51
9,135.00	2.00	359.50	9,057.95	-165.35	-172.65	-928.56	944.48	259.47	483,426.55	778,022.54
KOP: 9135' MD, 65' FSL & 527' FWL										
9,229.00	12.20	3.90	9,151.11	-153.78	-161.07	-927.90	941.78	260.15	483,438.13	778,023.20
9,311.00	21.01	1.96	9,229.61	-130.41	-137.69	-926.81	936.98	261.55	483,461.51	778,024.29
FTP: 9311' MD, 100' FSL & 529' FWL										
9,323.00	22.30	1.80	9,240.77	-125.98	-133.26	-926.66	936.19	261.82	483,465.94	778,024.44
9,417.00	34.90	357.10	9,323.14	-81.11	-88.39	-927.46	931.67	264.56	483,510.81	778,023.64
9,511.00	48.00	355.10	9,393.45	-19.15	-26.47	-931.83	932.20	268.37	483,572.73	778,019.27
9,605.00	56.10	356.00	9,451.21	54.74	47.37	-937.54	938.74	272.89	483,646.57	778,013.56
9,699.00	64.20	357.60	9,497.96	136.10	128.71	-942.04	950.79	277.78	483,727.91	778,009.06



ProDirectional
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Site: North Thistle 3-34 State Com
Well: 1H
Wellbore: OH
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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
9,793.00	73.30	0.20	9,531.99	223.60	216.20	-943.66	968.11	282.90	483,815.40	778,007.44
9,887.00	82.60	0.80	9,551.60	315.42	308.02	-942.85	991.89	288.09	483,907.22	778,008.25
9,941.00	90.50	2.00	9,554.84	369.25	361.87	-941.53	1,008.68	291.02	483,961.07	778,009.57
10,035.00	91.60	1.80	9,553.12	463.15	455.80	-938.42	1,043.25	295.91	484,055.00	778,012.68
10,129.00	91.90	1.30	9,550.25	557.05	549.72	-935.88	1,085.38	300.43	484,148.92	778,015.22
10,223.00	92.00	0.90	9,547.05	650.96	643.65	-934.07	1,134.36	304.57	484,242.85	778,017.03
10,317.00	91.60	0.50	9,544.10	744.90	737.59	-932.92	1,189.28	308.33	484,336.79	778,018.18
10,411.00	90.60	1.00	9,542.30	838.86	831.57	-931.69	1,248.82	311.75	484,430.77	778,019.41
10,505.00	90.00	1.50	9,541.80	932.81	925.54	-929.64	1,311.82	314.87	484,524.74	778,021.46
10,599.00	89.90	1.30	9,541.89	1,026.77	1,019.51	-927.35	1,378.18	317.71	484,618.71	778,023.75
10,692.00	90.90	0.00	9,541.24	1,119.74	1,112.50	-926.29	1,447.65	320.22	484,711.70	778,024.81
10,785.00	92.30	358.90	9,538.64	1,212.70	1,205.46	-927.18	1,520.79	322.43	484,804.66	778,023.92
10,876.00	92.70	359.20	9,534.67	1,303.61	1,296.36	-928.69	1,594.68	324.38	484,895.56	778,022.41
10,967.00	92.00	0.00	9,530.94	1,394.53	1,387.28	-929.33	1,669.79	326.18	484,986.48	778,021.77
11,059.00	90.20	1.60	9,529.17	1,486.49	1,479.25	-928.04	1,746.26	327.90	485,078.45	778,023.06
11,151.00	90.00	1.50	9,529.01	1,578.43	1,571.21	-925.55	1,823.56	329.50	485,170.41	778,025.55
11,243.00	89.70	1.20	9,529.25	1,670.39	1,663.19	-923.39	1,902.32	330.96	485,262.39	778,027.71
11,335.00	89.40	0.80	9,529.98	1,762.35	1,755.17	-921.78	1,982.50	332.29	485,354.37	778,029.32
11,427.00	89.10	1.00	9,531.18	1,854.32	1,847.15	-920.33	2,063.73	333.52	485,446.35	778,030.77
11,519.00	90.30	1.10	9,531.66	1,946.29	1,939.13	-918.65	2,145.73	334.65	485,538.33	778,032.45
11,612.00	91.20	0.90	9,530.44	2,039.25	2,032.11	-917.03	2,229.44	335.71	485,631.31	778,034.07
11,703.00	91.00	0.60	9,528.70	2,130.21	2,123.08	-915.83	2,312.19	336.67	485,722.28	778,035.27
11,795.00	90.60	0.30	9,527.41	2,222.19	2,215.07	-915.11	2,396.66	337.55	485,814.27	778,035.99
11,886.00	90.30	359.60	9,526.70	2,313.18	2,306.07	-915.19	2,481.03	338.35	485,905.27	778,035.91
11,978.00	90.70	359.50	9,525.89	2,405.18	2,398.06	-915.91	2,567.02	339.10	485,997.26	778,035.19
12,072.00	90.70	358.70	9,524.75	2,499.17	2,492.04	-917.39	2,655.54	339.79	486,091.24	778,033.71
12,166.00	90.40	358.30	9,523.84	2,593.15	2,586.00	-919.85	2,744.73	340.42	486,185.20	778,031.25



ProDirectional
Survey Report



Company: Devon Energy Corp.
Project: Lea County, NM (NAD83)
Site: North Thistle 3-34 State Com
Well: 1H
Wellbore: OH
Design: Surveys 179-19885 MD

Local Co-ordinate Reference: Well 1H
TVD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
MD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
12,260.00	89.90	358.10	9,523.60	2,687.12	2,679.96	-922.80	2,834.38	341.00	486,279.16	778,028.30
12,354.00	90.80	359.50	9,523.02	2,781.11	2,773.93	-924.77	2,924.02	341.56	486,373.13	778,026.33
12,448.00	91.50	1.10	9,521.14	2,875.08	2,867.91	-924.28	3,013.17	342.14	486,467.11	778,026.82
12,542.00	89.70	1.10	9,520.15	2,969.04	2,961.88	-922.48	3,102.21	342.70	486,561.08	778,028.62
12,636.00	90.00	1.20	9,520.40	3,063.00	3,055.86	-920.59	3,191.52	343.23	486,655.06	778,030.51
12,731.00	90.80	0.60	9,519.74	3,157.97	3,150.85	-919.10	3,282.16	343.74	486,750.05	778,032.00
12,825.00	91.90	0.10	9,517.52	3,251.93	3,244.82	-918.52	3,372.32	344.19	486,844.02	778,032.58
12,919.00	91.20	1.00	9,514.98	3,345.88	3,338.78	-917.62	3,462.58	344.63	486,937.98	778,033.48
13,013.00	90.20	1.80	9,513.83	3,439.82	3,432.74	-915.32	3,552.68	345.07	487,031.94	778,035.78
13,107.00	91.40	2.00	9,512.52	3,533.73	3,526.68	-912.21	3,642.74	345.50	487,125.88	778,038.89
13,201.00	89.80	1.30	9,511.53	3,627.66	3,620.63	-909.50	3,733.12	345.90	487,219.83	778,041.60
13,295.00	88.70	359.20	9,512.76	3,721.64	3,714.61	-909.09	3,824.24	346.25	487,313.81	778,042.01
13,389.00	88.90	359.00	9,514.73	3,815.62	3,808.58	-910.57	3,915.92	346.55	487,407.78	778,040.53
13,484.00	89.40	358.80	9,516.14	3,910.60	3,903.55	-912.39	4,008.76	346.84	487,502.75	778,038.71
13,578.00	89.70	358.20	9,516.88	4,004.58	3,997.52	-914.85	4,100.87	347.11	487,596.72	778,036.25
13,672.00	89.90	357.50	9,517.21	4,098.54	4,091.45	-918.38	4,193.25	347.35	487,690.65	778,032.72
13,766.00	90.30	358.60	9,517.04	4,192.50	4,185.39	-921.58	4,285.65	347.58	487,784.59	778,029.52
13,860.00	90.90	0.40	9,516.06	4,286.49	4,279.38	-922.40	4,377.66	347.84	487,878.58	778,028.70
13,954.00	89.20	0.40	9,515.98	4,380.48	4,373.38	-921.74	4,469.45	348.10	487,972.58	778,029.36
14,048.00	89.40	0.30	9,517.13	4,474.46	4,467.37	-921.17	4,561.35	348.35	488,066.57	778,029.93
14,142.00	89.70	359.90	9,517.86	4,568.46	4,561.36	-921.00	4,653.42	348.58	488,160.56	778,030.10
14,236.00	90.10	359.20	9,518.03	4,662.45	4,655.36	-921.74	4,745.73	348.80	488,254.56	778,029.36
14,330.00	89.40	0.50	9,518.44	4,756.45	4,749.36	-921.99	4,838.02	349.01	488,348.56	778,029.11
14,425.00	90.20	0.60	9,518.77	4,851.43	4,844.35	-921.08	4,931.14	349.23	488,443.55	778,030.02
14,519.00	89.00	0.70	9,519.43	4,945.41	4,938.34	-920.01	5,023.31	349.45	488,537.54	778,031.09
14,613.00	89.30	0.30	9,520.82	5,039.39	5,032.33	-919.19	5,115.58	349.65	488,631.53	778,031.91
14,707.00	89.60	359.80	9,521.72	5,133.38	5,126.32	-919.11	5,208.06	349.84	488,725.52	778,031.99



ProDirectional
Survey Report



Company: Devon Energy Corp.
Project: Lea County, NM (NAD83)
Site: North Thistle 3-34 State Com
Well: 1H
Wellbore: OH
Design: Surveys 179-19885 MD

Local Co-ordinate Reference: Well 1H
TVD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
MD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
14,801.00	89.80	359.50	9,522.22	5,227.38	5,220.32	-919.68	5,300.71	350.01	488,819.52	778,031.42
14,895.00	90.20	359.10	9,522.22	5,321.38	5,314.31	-920.83	5,393.50	350.17	488,913.51	778,030.27
14,989.00	90.40	358.90	9,521.72	5,415.37	5,408.29	-922.47	5,486.40	350.32	489,007.49	778,028.63
15,083.00	90.60	357.90	9,520.90	5,509.35	5,502.25	-925.09	5,579.48	350.46	489,101.45	778,026.01
15,177.00	90.80	357.50	9,519.75	5,603.29	5,596.17	-928.87	5,672.73	350.58	489,195.37	778,022.23
15,271.00	91.40	356.80	9,517.95	5,697.19	5,690.04	-933.54	5,766.11	350.68	489,289.24	778,017.56
15,364.00	89.80	357.30	9,516.98	5,790.09	5,782.90	-938.33	5,858.53	350.78	489,382.10	778,012.77
15,458.00	89.70	357.10	9,517.39	5,884.01	5,876.79	-942.92	5,951.95	350.88	489,475.99	778,008.18
15,552.00	89.90	356.60	9,517.71	5,977.91	5,970.65	-948.08	6,045.45	350.98	489,569.85	778,003.02
15,646.00	90.20	356.10	9,517.63	6,071.76	6,064.46	-954.07	6,139.04	351.06	489,663.66	777,997.03
15,740.00	89.60	357.50	9,517.80	6,165.65	6,158.31	-959.31	6,232.58	351.15	489,757.51	777,991.79
15,834.00	90.10	357.40	9,518.04	6,259.59	6,252.21	-963.50	6,326.02	351.24	489,851.41	777,987.60
15,928.00	89.80	356.80	9,518.12	6,353.50	6,346.09	-968.25	6,419.53	351.33	489,945.29	777,982.85
16,022.00	90.20	356.30	9,518.12	6,447.37	6,439.92	-973.91	6,513.15	351.40	490,039.12	777,977.19
16,116.00	88.80	357.70	9,518.94	6,541.27	6,533.78	-978.83	6,606.70	351.48	490,132.98	777,972.27
16,211.00	88.90	357.30	9,520.85	6,636.19	6,628.67	-982.97	6,701.16	351.57	490,227.87	777,968.13
16,305.00	88.90	356.90	9,522.66	6,730.09	6,722.54	-987.72	6,794.71	351.64	490,321.74	777,963.38
16,398.00	89.10	356.90	9,524.28	6,822.97	6,815.39	-992.75	6,887.31	351.71	490,414.59	777,958.35
16,493.00	88.80	356.80	9,526.02	6,917.85	6,910.23	-997.97	6,981.92	351.78	490,509.43	777,953.13
16,587.00	90.80	356.90	9,526.35	7,011.74	7,004.08	-1,003.14	7,075.55	351.85	490,603.28	777,947.96
16,681.00	91.60	356.80	9,524.38	7,105.62	7,097.92	-1,008.30	7,169.18	351.91	490,697.12	777,942.80
16,775.00	92.00	357.10	9,521.43	7,199.47	7,191.74	-1,013.30	7,262.77	351.98	490,790.94	777,937.80
16,869.00	91.40	358.50	9,518.64	7,293.38	7,285.62	-1,016.91	7,356.25	352.05	490,884.82	777,934.19
16,963.00	90.20	357.50	9,517.33	7,387.34	7,379.55	-1,020.19	7,449.74	352.13	490,978.75	777,930.91
17,057.00	90.70	357.30	9,516.59	7,481.27	7,473.45	-1,024.45	7,543.34	352.19	491,072.65	777,926.65
17,151.00	90.60	356.80	9,515.52	7,575.17	7,567.32	-1,029.29	7,637.00	352.25	491,166.52	777,921.81
17,245.00	90.20	356.60	9,514.86	7,669.05	7,661.16	-1,034.70	7,730.72	352.31	491,260.36	777,916.40



ProDirectional Survey Report



Company: Devon Energy Corp.
Project: Lea County, NM (NAD83)
Site: North Thistle 3-34 State Com
Well: 1H
Wellbore: OH
Design: Surveys 179-19885 MD

Local Co-ordinate Reference: Well 1H
TVD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
MD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
17,339.00	90.20	355.90	9,514.54	7,762.90	7,754.96	-1,040.85	7,824.50	352.36	491,354.16	777,910.25
17,433.00	89.80	357.70	9,514.54	7,856.79	7,848.81	-1,046.09	7,918.22	352.41	491,448.01	777,905.01
17,527.00	90.10	357.40	9,514.62	7,950.73	7,942.73	-1,050.11	8,011.84	352.47	491,541.93	777,900.99
17,621.00	89.30	358.60	9,515.11	8,044.69	8,036.66	-1,053.39	8,105.41	352.53	491,635.86	777,897.71
17,715.00	89.80	358.60	9,515.85	8,138.67	8,130.63	-1,055.69	8,198.88	352.60	491,729.83	777,895.41
17,809.00	90.20	358.90	9,515.85	8,232.66	8,224.61	-1,057.74	8,292.35	352.67	491,823.81	777,893.36
17,897.00	91.20	359.10	9,514.77	8,320.65	8,312.59	-1,059.28	8,379.81	352.74	491,911.79	777,891.82
17,991.00	89.90	358.40	9,513.87	8,414.64	8,406.56	-1,061.33	8,473.29	352.80	492,005.76	777,889.77
18,085.00	89.90	358.20	9,514.04	8,508.61	8,500.52	-1,064.12	8,566.86	352.86	492,099.72	777,886.98
18,179.00	90.30	358.50	9,513.87	8,602.59	8,594.48	-1,066.82	8,660.44	352.92	492,193.68	777,884.28
18,273.00	89.60	358.80	9,513.95	8,696.58	8,688.45	-1,069.04	8,753.97	352.99	492,287.65	777,882.06
18,366.00	89.80	358.90	9,514.44	8,789.57	8,781.43	-1,070.90	8,846.49	353.05	492,380.63	777,880.20
18,461.00	89.60	357.90	9,514.94	8,884.55	8,876.39	-1,073.56	8,941.08	353.10	492,475.59	777,877.54
18,555.00	90.10	356.90	9,515.18	8,978.48	8,970.29	-1,077.82	9,034.81	353.15	492,569.49	777,873.28
18,649.00	91.70	357.30	9,513.71	9,072.38	9,064.16	-1,082.57	9,128.58	353.19	492,663.36	777,868.53
18,743.00	91.30	356.80	9,511.25	9,166.26	9,158.00	-1,087.41	9,222.33	353.23	492,757.20	777,863.69
18,837.00	90.10	357.40	9,510.10	9,260.16	9,251.87	-1,092.17	9,316.11	353.27	492,851.07	777,858.93
18,931.00	89.10	357.00	9,510.75	9,354.08	9,345.76	-1,096.76	9,409.89	353.31	492,944.96	777,854.34
19,025.00	90.00	356.90	9,511.49	9,447.98	9,439.62	-1,101.76	9,503.70	353.34	493,038.82	777,849.34
19,119.00	89.10	356.80	9,512.23	9,541.87	9,533.47	-1,106.92	9,597.52	353.38	493,132.67	777,844.18
19,213.00	88.90	356.90	9,513.87	9,635.75	9,627.32	-1,112.09	9,691.33	353.41	493,226.52	777,839.01
19,307.00	89.10	356.80	9,515.51	9,729.64	9,721.16	-1,117.25	9,785.15	353.44	493,320.36	777,833.85
19,402.00	91.10	357.50	9,515.35	9,824.55	9,816.04	-1,121.98	9,879.95	353.48	493,415.24	777,829.12
19,496.00	86.70	356.30	9,517.15	9,918.40	9,909.86	-1,127.06	9,973.74	353.51	493,509.06	777,824.04
19,590.00	87.70	355.30	9,521.74	10,012.09	10,003.49	-1,133.93	10,067.55	353.53	493,602.69	777,817.17
19,685.00	88.30	355.10	9,525.06	10,106.76	10,098.10	-1,141.88	10,162.46	353.55	493,697.30	777,809.22
19,778.00	88.70	355.00	9,527.49	10,199.44	10,190.72	-1,149.90	10,255.39	353.56	493,789.92	777,801.20



ProDirectional Survey Report



Company: Devon Energy Corp.
Project: Lea County, NM (NAD83)
Site: North Thistle 3-34 State Com
Well: 1H
Wellbore: OH
Design: Surveys 179-19885 MD

Local Co-ordinate Reference: Well 1H
TVD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
MD Reference: GL 3595'+KB 25' @ 3620.00usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
19,799.00	88.87	354.79	9,527.94	10,220.36	10,211.63	-1,151.77	10,276.38	353.56	493,810.83	777,799.33
LTP: 19799' MD, 100' FNL & 386' FWL										
19,827.00	89.10	354.50	9,528.43	10,248.26	10,239.51	-1,154.38	10,304.37	353.57	493,838.71	777,796.72
Final Survey: 19827' MD										
19,885.00	89.10	354.50	9,529.34	10,306.02	10,297.23	-1,159.94	10,362.36	353.57	493,896.43	777,791.16
Final TD: 19885' MD, 15' FNL & 378' FWL										

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
179.00	179.00	0.12	-0.10	Pro MWD First Survey: 179' MD
9,135.00	9,057.95	-172.65	-928.56	KOP: 9135' MD, 65' FSL & 527' FWL
9,311.00	9,229.61	-137.69	-926.81	FTP: 9311' MD, 100' FSL & 529' FWL
19,799.00	9,527.94	10,211.63	-1,151.77	LTP: 19799' MD, 100' FNL & 386' FWL
19,827.00	9,528.43	10,239.51	-1,154.38	Final Survey: 19827' MD
19,885.00	9,529.34	10,297.23	-1,159.94	Final TD: 19885' MD, 15' FNL & 378' FWL