



North Thistle 3-34 State Com No. 3H(ST01)
Lea County, NM

November 14, 2018

Job No. LNM5190018

HOBBS OCD

JUN 14 2019

RECEIVED

Survey Completion Report



Survey Certification Letter

November 14, 2018



Operator Name: Devon Energy Corp.
Well Name: North Thistle 3-34 State Com No. 3H(ST01)
County/Parish: Lea County,
State: NM
Rig Name: Cactus 126
Job Number: LNM5190018

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	10,682' MD – 19,956' MD	20,015' MD	10/31/18 – 11/09/18	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. 3H

ST01

Survey: ProDirectional

Survey Report

14 November, 2018





ProDirectional
Survey Report



Company: Devon Energy Corp.
Project: Lea County, NM (NAD83)
Site: North Thistle 3-34 State Com
Well: 3H
Wellbore: ST01
Design: Surveys 10682-20015 MD

Local Co-ordinate Reference: Well 3H
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 3H

Well Position	+N/-S	0.00 usft	Northing:	483,599.20 usft	Latitude:	32.327140
	+E/-W	0.00 usft	Easting:	779,011.00 usft	Longitude:	-103.563881
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,595.00 usft

Wellbore ST01

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

Design Surveys 10682-20015 MD

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 10,592.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.55



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Survey Program		Date	11/14/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
146.00	10,592.00	Survey #1 (OH)	MWD+HDGM	OWSG MWD + HDGM	
10,682.00	20,015.00	Survey #1 (ST01)	MWD+HDGM	OWSG MWD + HDGM	

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	0.00	483,599.20	779,011.00
146.00	0.10	9.70	146.00	0.13	0.13	0.02	0.13	9.70	483,599.33	779,011.02	
238.00	0.30	356.70	238.00	0.45	0.45	0.02	0.45	2.72	483,599.65	779,011.02	
330.00	0.20	2.30	330.00	0.85	0.85	0.01	0.85	0.93	483,600.05	779,011.01	
421.00	0.10	5.30	421.00	1.08	1.08	0.03	1.08	1.45	483,600.28	779,011.03	
512.00	0.30	348.90	512.00	1.40	1.40	-0.01	1.40	359.54	483,600.60	779,010.99	
604.00	0.20	306.30	604.00	1.73	1.73	-0.19	1.74	353.83	483,600.93	779,010.81	
697.00	0.30	318.10	697.00	2.01	2.01	-0.48	2.06	346.53	483,601.21	779,010.52	
789.00	0.30	335.90	788.99	2.41	2.40	-0.74	2.52	342.91	483,601.60	779,010.26	
881.00	0.30	321.90	880.99	2.82	2.81	-0.99	2.98	340.68	483,602.01	779,010.01	
1,060.00	0.20	327.00	1,059.99	3.46	3.44	-1.45	3.74	337.23	483,602.64	779,009.55	
1,152.00	0.20	300.80	1,151.99	3.67	3.66	-1.67	4.02	335.47	483,602.86	779,009.33	
1,244.00	0.00	273.10	1,243.99	3.76	3.74	-1.81	4.16	334.21	483,602.94	779,009.19	
1,336.00	0.00	192.60	1,335.99	3.76	3.74	-1.81	4.16	334.21	483,602.94	779,009.19	
1,428.00	0.10	142.40	1,427.99	3.69	3.68	-1.76	4.08	334.44	483,602.88	779,009.24	
1,519.00	0.20	119.60	1,518.99	3.55	3.54	-1.57	3.87	336.03	483,602.74	779,009.43	
1,611.00	0.10	102.80	1,610.99	3.45	3.44	-1.36	3.70	338.50	483,602.64	779,009.64	
1,705.00	0.20	122.40	1,704.99	3.34	3.34	-1.14	3.52	341.18	483,602.54	779,009.86	
1,799.00	0.20	161.60	1,798.99	3.10	3.09	-0.95	3.23	342.98	483,602.29	779,010.05	
1,892.00	0.30	214.60	1,891.99	2.75	2.74	-1.03	2.93	339.31	483,601.94	779,009.97	
1,986.00	0.30	213.50	1,985.99	2.34	2.33	-1.31	2.67	330.66	483,601.53	779,009.69	



ProDirectional
Survey Report



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Wellbore: ST01
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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)
2,081.00	0.20	177.10	2,080.99	1.97	1.96	-1.44	2.43	323.68	483,601.16	779,009.56
2,175.00	0.10	227.90	2,174.99	1.75	1.74	-1.49	2.29	319.38	483,600.94	779,009.51
2,269.00	0.10	269.60	2,268.99	1.70	1.68	-1.63	2.35	315.84	483,600.88	779,009.37
2,363.00	0.00	165.00	2,362.99	1.70	1.68	-1.72	2.40	314.43	483,600.88	779,009.28
2,457.00	0.20	25.90	2,456.99	1.84	1.83	-1.64	2.46	318.06	483,601.03	779,009.36
2,551.00	0.40	23.20	2,550.98	2.29	2.28	-1.44	2.70	327.65	483,601.48	779,009.56
2,645.00	0.60	21.50	2,644.98	3.05	3.04	-1.13	3.24	339.54	483,602.24	779,009.87
2,739.00	0.70	29.50	2,738.97	4.00	4.00	-0.67	4.05	350.48	483,603.20	779,010.33
2,833.00	0.80	24.00	2,832.97	5.10	5.10	-0.12	5.10	358.64	483,604.30	779,010.88
2,927.00	0.90	20.80	2,926.96	6.38	6.38	0.41	6.40	3.66	483,605.58	779,011.41
3,021.00	1.10	17.10	3,020.94	7.93	7.94	0.94	7.99	6.72	483,607.14	779,011.94
3,115.00	0.60	34.60	3,114.93	9.19	9.20	1.48	9.32	9.14	483,608.40	779,012.48
3,209.00	0.40	70.10	3,208.93	9.71	9.72	2.07	9.94	12.01	483,608.92	779,013.07
3,303.00	0.60	74.10	3,302.92	9.95	9.97	2.85	10.37	15.96	483,609.17	779,013.85
3,397.00	0.80	59.60	3,396.92	10.40	10.44	3.89	11.14	20.44	483,609.64	779,014.89
3,491.00	1.00	51.60	3,490.91	11.24	11.28	5.10	12.38	24.33	483,610.48	779,016.10
3,585.00	1.00	44.90	3,584.89	12.32	12.37	6.32	13.89	27.07	483,611.57	779,017.32
3,679.00	1.20	82.80	3,678.88	13.01	13.07	7.88	15.26	31.07	483,612.27	779,018.88
3,773.00	1.30	105.40	3,772.85	12.83	12.91	9.88	16.26	37.42	483,612.11	779,020.88
3,867.00	0.90	105.10	3,866.84	12.34	12.44	11.62	17.02	43.06	483,611.64	779,022.62
3,961.00	0.80	96.80	3,960.83	12.06	12.17	12.99	17.79	46.87	483,611.37	779,023.99
4,056.00	1.20	99.40	4,055.81	11.81	11.93	14.63	18.87	50.81	483,611.13	779,025.63
4,150.00	2.50	104.10	4,149.76	11.13	11.27	17.59	20.88	57.36	483,610.47	779,028.59
4,244.00	3.70	109.60	4,243.62	9.57	9.75	22.43	24.46	66.51	483,608.95	779,033.43
4,338.00	3.20	100.10	4,337.45	8.05	8.27	27.87	29.07	73.47	483,607.47	779,038.87
4,433.00	3.40	99.50	4,432.29	7.08	7.34	33.26	34.06	77.55	483,606.54	779,044.26
4,527.00	4.60	101.30	4,526.06	5.83	6.14	39.71	40.18	81.21	483,605.34	779,050.71



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4,621.00	4.90	93.30	4,619.74	4.80	5.17	47.41	47.69	83.77	483,604.37	779,058.41
4,715.00	5.60	94.10	4,713.35	4.17	4.61	55.99	56.18	85.29	483,603.81	779,066.99
4,809.00	7.70	95.50	4,806.71	3.16	3.68	66.84	66.94	86.85	483,602.88	779,077.84
4,903.00	9.30	97.50	4,899.67	1.45	2.09	80.64	80.66	88.52	483,601.29	779,091.64
4,997.00	9.60	105.70	4,992.40	-1.78	-1.03	95.71	95.72	90.61	483,598.17	779,106.71
5,065.00	9.30	110.10	5,059.48	-5.28	-4.45	106.33	106.43	92.40	483,594.75	779,117.33
5,181.00	8.30	109.30	5,174.11	-11.40	-10.44	123.04	123.48	94.85	483,588.76	779,134.04
5,275.00	9.30	111.10	5,267.01	-16.49	-15.41	136.53	137.39	96.44	483,583.79	779,147.53
5,369.00	10.60	111.60	5,359.59	-22.52	-21.33	151.65	153.15	98.01	483,577.87	779,162.65
5,463.00	10.80	110.10	5,451.96	-28.86	-27.54	167.96	170.20	99.31	483,571.66	779,178.96
5,557.00	9.50	111.90	5,544.48	-34.90	-33.46	183.43	186.46	100.34	483,565.74	779,194.43
5,650.00	9.10	112.10	5,636.26	-40.64	-39.09	197.37	201.20	101.20	483,560.11	779,208.37
5,745.00	9.00	110.00	5,730.08	-46.12	-44.46	211.31	215.93	101.88	483,554.74	779,222.31
5,839.00	8.70	107.60	5,822.96	-50.89	-49.12	224.99	230.29	102.32	483,550.08	779,235.99
5,932.00	8.10	106.20	5,914.96	-54.94	-53.08	237.99	243.84	102.57	483,546.12	779,248.99
6,026.00	7.60	105.20	6,008.08	-58.52	-56.55	250.35	256.66	102.73	483,542.65	779,261.35
6,120.00	7.90	105.80	6,101.22	-62.00	-59.94	262.56	269.32	102.86	483,539.26	779,273.56
6,214.00	8.60	105.10	6,194.25	-65.70	-63.53	275.56	282.79	102.98	483,535.67	779,286.56
6,308.00	8.10	102.40	6,287.25	-69.05	-66.79	288.82	296.44	103.02	483,532.41	779,299.82
6,402.00	7.70	100.40	6,380.36	-71.71	-69.34	301.48	309.35	102.95	483,529.86	779,312.48
6,496.00	8.20	100.00	6,473.46	-74.11	-71.65	314.28	322.34	102.84	483,527.55	779,325.28
6,591.00	9.10	98.20	6,567.37	-76.47	-73.89	328.38	336.59	102.68	483,525.31	779,339.38
6,685.00	9.20	96.30	6,660.18	-78.47	-75.78	343.21	351.48	102.45	483,523.42	779,354.21
6,779.00	9.70	100.60	6,752.90	-80.87	-78.06	358.46	366.86	102.29	483,521.14	779,369.46
6,873.00	10.60	106.40	6,845.43	-84.90	-81.96	374.54	383.40	102.34	483,517.24	779,385.54
6,967.00	10.90	109.90	6,937.78	-90.49	-87.42	391.19	400.84	102.60	483,511.78	779,402.19
7,061.00	10.70	108.70	7,030.12	-96.45	-93.25	407.81	418.34	102.88	483,505.95	779,418.81



ProDirectional
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7,155.00	10.80	109.00	7,122.47	-102.24	-98.91	424.41	435.78	103.12	483,500.29	779,435.41
7,249.00	9.70	107.40	7,214.97	-107.60	-104.15	440.29	452.44	103.31	483,495.05	779,451.29
7,343.00	9.10	105.70	7,307.71	-112.10	-108.53	455.00	467.77	103.42	483,490.67	779,466.00
7,437.00	8.90	105.10	7,400.55	-116.11	-112.43	469.18	482.46	103.48	483,486.77	779,480.18
7,531.00	8.90	105.90	7,493.42	-120.11	-116.32	483.19	497.00	103.54	483,482.88	779,494.19
7,625.00	8.20	105.70	7,586.37	-124.02	-120.13	496.64	510.96	103.60	483,479.07	779,507.64
7,719.00	7.40	104.60	7,679.50	-127.46	-123.47	508.95	523.71	103.64	483,475.73	779,519.95
7,813.00	7.30	102.80	7,772.73	-130.40	-126.31	520.63	535.74	103.64	483,472.89	779,531.63
7,907.00	7.10	102.40	7,865.99	-133.06	-128.88	532.13	547.52	103.62	483,470.32	779,543.13
8,001.00	7.50	101.00	7,959.23	-135.57	-131.30	543.83	559.45	103.57	483,467.90	779,554.83
8,095.00	7.20	100.10	8,052.45	-137.87	-133.51	555.65	571.46	103.51	483,465.69	779,566.65
8,189.00	6.60	99.40	8,145.77	-139.87	-135.42	566.78	582.73	103.44	483,463.78	779,577.78
8,283.00	6.70	100.60	8,239.14	-141.84	-137.31	577.50	593.60	103.37	483,461.89	779,588.50
8,377.00	6.70	100.90	8,332.50	-143.97	-139.36	588.27	604.55	103.33	483,459.84	779,599.27
8,471.00	6.50	100.60	8,425.87	-146.07	-141.37	598.89	615.35	103.28	483,457.83	779,609.89
8,565.00	6.30	102.70	8,519.29	-148.27	-143.49	609.15	625.82	103.25	483,455.71	779,620.15
8,659.00	6.40	101.50	8,612.71	-150.52	-145.67	619.31	636.21	103.24	483,453.53	779,630.31
8,753.00	6.20	101.60	8,706.14	-152.67	-147.73	629.42	646.52	103.21	483,451.47	779,640.42
8,848.00	6.20	102.50	8,800.59	-154.89	-149.87	639.45	656.78	103.19	483,449.33	779,650.45
8,941.00	5.70	103.90	8,893.09	-157.16	-152.07	648.84	666.42	103.19	483,447.13	779,659.84
9,036.00	4.50	112.20	8,987.71	-159.76	-154.61	656.87	674.82	103.24	483,444.59	779,667.87
9,092.00	4.70	114.40	9,043.53	-161.57	-156.39	660.99	679.24	103.31	483,442.81	779,671.99
9,186.00	8.00	82.40	9,136.97	-162.38	-157.11	670.99	689.14	103.18	483,442.09	779,681.99
9,280.00	14.40	59.00	9,229.17	-155.61	-150.22	687.52	703.74	102.33	483,448.98	779,698.52
9,312.00	17.60	56.30	9,259.93	-150.94	-145.48	694.95	710.02	101.82	483,453.72	779,705.95
9,376.00	23.10	53.60	9,319.91	-138.25	-132.65	713.12	725.36	100.54	483,466.55	779,724.12
9,470.00	34.50	43.40	9,402.20	-108.11	-102.25	746.39	753.36	97.80	483,496.95	779,757.39



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9,563.00	49.50	36.70	9,471.15	-60.64	-54.47	785.86	787.75	93.96	483,544.73	779,796.86
9,657.00	65.70	31.90	9,521.37	4.50	11.02	830.17	830.24	89.24	483,610.22	779,841.17
9,751.00	82.60	25.60	9,546.98	83.20	90.06	873.30	877.93	84.11	483,689.26	779,884.30
9,844.00	88.20	17.00	9,554.44	169.20	176.33	906.90	923.88	79.00	483,775.53	779,917.90
9,938.00	87.30	10.90	9,558.14	260.13	267.44	929.53	967.24	73.95	483,866.64	779,940.53
10,032.00	87.00	3.60	9,562.82	353.10	360.51	941.37	1,008.04	69.05	483,959.71	779,952.37
10,126.00	91.30	358.30	9,564.21	447.01	454.43	942.93	1,046.72	64.27	484,053.63	779,953.93
10,220.00	91.10	354.60	9,562.24	540.83	548.21	937.11	1,085.69	59.67	484,147.41	779,948.11
10,314.00	91.60	356.10	9,560.03	634.55	641.87	929.49	1,129.58	55.37	484,241.07	779,940.49
10,407.00	91.00	355.20	9,557.92	727.31	734.58	922.44	1,179.20	51.47	484,333.78	779,933.44
10,500.00	88.80	353.80	9,558.08	819.94	827.14	913.53	1,232.36	47.84	484,426.34	779,924.53
10,592.00	88.80	353.10	9,560.01	911.40	918.52	903.04	1,288.08	44.51	484,517.72	779,914.04
Tie-In to OH										
10,682.00	87.30	355.60	9,563.07	1,000.97	1,008.02	894.18	1,347.47	41.58	484,607.22	779,905.18
ST First Survey: 10682' MD										
10,774.00	81.60	354.20	9,571.97	1,092.20	1,099.19	886.05	1,411.84	38.87	484,698.39	779,897.05
10,866.00	84.50	350.10	9,583.10	1,182.73	1,189.63	873.57	1,475.92	36.29	484,788.83	779,884.57
10,958.00	90.60	346.70	9,587.03	1,272.85	1,279.61	855.09	1,539.02	33.75	484,878.81	779,866.09
11,050.00	93.60	347.40	9,583.66	1,362.60	1,369.20	834.49	1,603.46	31.36	484,968.40	779,845.49
11,143.00	95.60	347.90	9,576.21	1,453.31	1,459.75	814.67	1,671.69	29.17	485,058.95	779,825.67
11,235.00	96.20	348.40	9,566.75	1,543.01	1,549.31	795.87	1,741.77	27.19	485,148.51	779,806.87
11,327.00	94.60	349.70	9,558.09	1,633.07	1,639.23	778.48	1,814.69	25.40	485,238.43	779,789.48
11,419.00	94.10	350.40	9,551.11	1,723.54	1,729.58	762.63	1,890.25	23.79	485,328.78	779,773.63
11,510.00	93.60	351.80	9,545.00	1,813.35	1,819.28	748.58	1,967.27	22.37	485,418.48	779,759.58
11,602.00	92.10	353.40	9,540.43	1,904.55	1,910.40	736.75	2,047.54	21.09	485,509.60	779,747.75
11,693.00	93.30	353.20	9,536.14	1,994.91	2,000.68	726.14	2,128.38	19.95	485,599.88	779,737.14
11,787.00	91.10	353.60	9,532.53	2,088.29	2,093.98	715.35	2,212.80	18.86	485,693.18	779,726.35



ProDirectional
Survey Report



Company: Devon Energy Corp.
Project: Lea County, NM (NAD83)
Site: North Thistle 3-34 State Com
Well: 3H
Wellbore: ST01
Design: Surveys 10682-20015 MD

Local Co-ordinate Reference: Well 3H
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)
11,881.00	91.70	353.20	9,530.24	2,181.73	2,187.33	704.55	2,298.00	17.85	485,786.53	779,715.55
11,975.00	93.70	352.70	9,525.81	2,274.99	2,280.51	693.02	2,383.48	16.90	485,879.71	779,704.02
12,069.00	90.90	353.70	9,522.04	2,368.33	2,373.76	681.90	2,469.76	16.03	485,972.96	779,692.90
12,163.00	89.00	355.40	9,522.12	2,461.97	2,467.33	672.98	2,557.46	15.26	486,066.53	779,683.98
12,257.00	88.90	355.40	9,523.84	2,555.70	2,561.01	665.44	2,646.05	14.57	486,160.21	779,676.44
12,351.00	90.10	354.80	9,524.66	2,649.41	2,654.66	657.41	2,734.85	13.91	486,253.86	779,668.41
12,445.00	90.80	355.00	9,523.92	2,743.10	2,748.28	649.06	2,823.89	13.29	486,347.48	779,660.06
12,539.00	90.90	356.70	9,522.53	2,836.89	2,842.02	642.25	2,913.69	12.73	486,441.22	779,653.25
12,633.00	89.40	358.30	9,522.28	2,930.83	2,935.93	638.15	3,004.48	12.26	486,535.13	779,649.15
12,727.00	89.40	358.40	9,523.27	3,024.80	3,029.88	635.45	3,095.80	11.84	486,629.08	779,646.45
12,821.00	90.00	358.80	9,523.76	3,118.78	3,123.85	633.15	3,187.37	11.46	486,723.05	779,644.15
12,915.00	90.40	358.60	9,523.43	3,212.77	3,217.83	631.02	3,279.12	11.09	486,817.03	779,642.02
13,010.00	89.90	359.70	9,523.18	3,307.77	3,312.82	629.61	3,372.12	10.76	486,912.02	779,640.61
13,104.00	90.70	0.10	9,522.69	3,401.77	3,406.81	629.44	3,464.47	10.47	487,006.01	779,640.44
13,198.00	90.20	0.00	9,521.95	3,495.76	3,500.81	629.53	3,556.96	10.19	487,100.01	779,640.53
13,292.00	89.60	1.20	9,522.11	3,589.74	3,594.80	630.51	3,649.68	9.95	487,194.00	779,641.51
13,386.00	89.80	1.50	9,522.61	3,683.69	3,688.78	632.73	3,742.65	9.73	487,287.98	779,643.73
13,480.00	90.10	1.20	9,522.69	3,777.65	3,782.75	634.94	3,835.67	9.53	487,381.95	779,645.94
13,574.00	88.50	1.60	9,523.84	3,871.59	3,876.71	637.24	3,928.74	9.33	487,475.91	779,648.24
13,668.00	88.90	1.60	9,525.97	3,965.50	3,970.65	639.86	4,021.88	9.15	487,569.85	779,650.86
13,762.00	89.40	1.20	9,527.36	4,059.44	4,064.61	642.16	4,115.02	8.98	487,663.81	779,653.16
13,856.00	90.80	2.30	9,527.20	4,153.37	4,158.56	645.03	4,208.29	8.82	487,757.76	779,656.03
13,950.00	90.60	0.70	9,526.05	4,247.30	4,252.52	647.49	4,301.53	8.66	487,851.72	779,658.49
14,044.00	91.30	0.30	9,524.49	4,341.28	4,346.50	648.31	4,394.59	8.48	487,945.70	779,659.31
14,138.00	90.00	0.60	9,523.43	4,435.26	4,440.49	649.05	4,487.68	8.32	488,039.69	779,660.05
14,232.00	89.70	0.90	9,523.67	4,529.24	4,534.48	650.28	4,580.87	8.16	488,133.68	779,661.28
14,327.00	88.90	359.20	9,524.83	4,624.22	4,629.47	650.36	4,674.93	8.00	488,228.67	779,661.36



ProDirectional
Survey Report



Company: Devon Energy Corp.
Project: Lea County, NM (NAD83)
Site: North Thistle 3-34 State Com
Well: 3H
Wellbore: ST01
Design: Surveys 10682-20015 MD

Local Co-ordinate Reference: Well 3H
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)
14,421.00	89.00	359.10	9,526.56	4,718.20	4,723.45	648.97	4,767.82	7.82	488,322.65	779,659.97
14,515.00	89.10	359.10	9,528.12	4,812.19	4,817.42	647.49	4,860.74	7.66	488,416.62	779,658.49
14,609.00	89.50	359.20	9,529.26	4,906.18	4,911.40	646.09	4,953.72	7.49	488,510.60	779,657.09
14,703.00	89.80	359.80	9,529.84	5,000.18	5,005.40	645.27	5,046.82	7.35	488,604.60	779,656.27
14,797.00	89.80	359.80	9,530.17	5,094.17	5,099.40	644.95	5,140.02	7.21	488,698.60	779,655.95
14,891.00	90.10	359.80	9,530.25	5,188.17	5,193.40	644.62	5,233.25	7.08	488,792.60	779,655.62
14,985.00	90.60	0.40	9,529.67	5,282.17	5,287.39	644.78	5,326.56	6.95	488,886.59	779,655.78
15,079.00	89.20	359.30	9,529.84	5,376.16	5,381.39	644.54	5,419.85	6.83	488,980.59	779,655.54
15,173.00	89.00	359.00	9,531.31	5,470.15	5,475.37	643.14	5,513.01	6.70	489,074.57	779,654.14
15,267.00	89.30	359.10	9,532.71	5,564.13	5,569.34	641.58	5,606.18	6.57	489,168.54	779,652.58
15,361.00	89.30	359.40	9,533.86	5,658.13	5,663.33	640.35	5,699.42	6.45	489,262.53	779,651.35
15,455.00	89.50	359.50	9,534.84	5,752.12	5,757.32	639.45	5,792.72	6.34	489,356.52	779,650.45
15,549.00	89.90	358.10	9,535.33	5,846.11	5,851.30	637.48	5,885.92	6.22	489,450.50	779,648.48
15,643.00	90.80	357.60	9,534.76	5,940.06	5,945.23	633.96	5,978.93	6.09	489,544.43	779,644.96
15,736.00	92.60	358.40	9,532.00	6,032.98	6,038.12	630.71	6,070.98	5.96	489,637.32	779,641.71
15,831.00	91.30	357.90	9,528.77	6,127.90	6,133.02	627.65	6,165.05	5.84	489,732.22	779,638.65
15,925.00	89.20	358.30	9,528.36	6,221.86	6,226.96	624.53	6,258.20	5.73	489,826.16	779,635.53
16,019.00	89.20	358.60	9,529.67	6,315.84	6,320.92	621.99	6,351.44	5.62	489,920.12	779,632.99
16,113.00	89.60	359.00	9,530.65	6,409.82	6,414.89	620.02	6,444.78	5.52	490,014.09	779,631.02
16,207.00	89.40	358.60	9,531.47	6,503.81	6,508.86	618.05	6,538.14	5.42	490,108.06	779,629.05
16,301.00	89.20	358.30	9,532.62	6,597.79	6,602.82	615.51	6,631.45	5.33	490,202.02	779,626.51
16,395.00	89.00	358.00	9,534.10	6,691.75	6,696.76	612.47	6,724.71	5.23	490,295.96	779,623.47
16,489.00	88.70	358.00	9,535.99	6,785.69	6,790.69	609.19	6,817.96	5.13	490,389.89	779,620.19
16,583.00	90.40	359.30	9,536.72	6,879.67	6,884.65	606.98	6,911.36	5.04	490,483.85	779,617.98
16,677.00	89.00	358.70	9,537.22	6,973.66	6,978.63	605.34	7,004.84	4.96	490,577.83	779,616.34
16,771.00	91.30	359.80	9,536.97	7,067.65	7,072.62	604.11	7,098.37	4.88	490,671.82	779,615.11
16,865.00	91.50	358.90	9,534.67	7,161.62	7,166.58	603.04	7,191.91	4.81	490,765.78	779,614.04



ProDirectional
Survey Report



Company: Devon Energy Corp.
Project: Lea County, NM (NAD83)
Site: North Thistle 3-34 State Com
Well: 3H
Wellbore: ST01
Design: Surveys 10682-20015 MD

Local Co-ordinate Reference: Well 3H
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)
16,960.00	92.10	358.40	9,531.69	7,256.57	7,261.51	600.81	7,286.32	4.73	490,860.71	779,611.81
17,053.00	91.60	359.70	9,528.69	7,349.51	7,354.44	599.27	7,378.82	4.66	490,953.64	779,610.27
17,147.00	90.90	1.60	9,526.64	7,443.47	7,448.41	600.33	7,472.57	4.61	491,047.61	779,611.33
17,242.00	89.10	2.20	9,526.64	7,538.38	7,543.35	603.48	7,567.46	4.57	491,142.55	779,614.48
17,336.00	88.60	2.00	9,528.52	7,632.27	7,637.27	606.93	7,661.35	4.54	491,236.47	779,617.93
17,430.00	88.70	2.20	9,530.74	7,726.15	7,731.18	610.37	7,755.24	4.51	491,330.38	779,621.37
17,524.00	87.70	0.30	9,533.69	7,820.06	7,825.11	612.42	7,849.04	4.48	491,424.31	779,623.42
17,618.00	89.70	359.30	9,535.82	7,914.03	7,919.08	612.09	7,942.70	4.42	491,518.28	779,623.09
17,712.00	90.90	358.80	9,535.33	8,008.02	8,013.06	610.53	8,036.29	4.36	491,612.26	779,621.53
17,806.00	91.40	359.00	9,533.44	8,101.99	8,107.03	608.73	8,129.85	4.29	491,706.23	779,619.73
17,900.00	91.80	358.90	9,530.82	8,195.95	8,200.97	607.01	8,223.41	4.23	491,800.17	779,618.01
17,994.00	91.30	359.40	9,528.28	8,289.92	8,294.93	605.61	8,317.01	4.18	491,894.13	779,616.61
18,087.00	90.40	359.80	9,526.90	8,382.90	8,387.91	604.96	8,409.70	4.13	491,987.11	779,615.96
18,181.00	89.60	0.30	9,526.90	8,476.90	8,481.91	605.04	8,503.47	4.08	492,081.11	779,616.04
18,283.00	88.10	0.40	9,528.94	8,578.87	8,583.89	605.67	8,605.23	4.04	492,183.09	779,618.67
18,377.00	90.20	1.10	9,530.34	8,672.83	8,677.86	606.90	8,699.06	4.00	492,277.06	779,617.90
18,471.00	89.40	0.30	9,530.67	8,766.81	8,771.85	608.05	8,792.90	3.97	492,371.05	779,619.05
18,565.00	89.50	0.40	9,531.57	8,860.79	8,865.85	608.62	8,886.71	3.93	492,465.05	779,619.62
18,659.00	89.90	0.50	9,532.06	8,954.78	8,959.84	609.36	8,980.54	3.89	492,559.04	779,620.36
18,753.00	89.40	358.80	9,532.64	9,048.78	9,053.84	608.78	9,074.28	3.85	492,653.04	779,619.78
18,847.00	89.40	358.30	9,533.62	9,142.76	9,147.80	606.41	9,167.88	3.79	492,747.00	779,617.41
18,941.00	89.60	358.40	9,534.44	9,236.73	9,241.76	603.70	9,261.45	3.74	492,840.96	779,614.70
19,035.00	89.60	358.90	9,535.10	9,330.72	9,335.73	601.49	9,355.09	3.69	492,934.93	779,612.49
19,129.00	89.50	359.10	9,535.84	9,424.71	9,429.71	599.84	9,448.77	3.64	493,028.91	779,610.84
19,223.00	88.80	359.00	9,537.23	9,518.70	9,523.69	598.29	9,542.46	3.59	493,122.89	779,609.29
19,317.00	87.10	358.00	9,540.59	9,612.62	9,617.59	595.83	9,636.03	3.55	493,216.79	779,606.83
19,412.00	87.70	358.60	9,544.90	9,707.49	9,712.45	593.01	9,730.54	3.49	493,311.65	779,604.01



ProDirectional Survey Report



Company: Devon Energy Corp.
Project: Lea County, NM (NAD83)
Site: North Thistle 3-34 State Com
Well: 3H
Wellbore: ST01
Design: Surveys 10682-20015 MD

Local Co-ordinate Reference: Well 3H
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)
19,506.00	88.40	359.00	9,548.10	9,801.43	9,806.37	591.05	9,824.17	3.45	493,405.57	779,602.05
19,600.00	89.00	359.00	9,550.23	9,895.40	9,900.34	589.41	9,917.87	3.41	493,499.54	779,600.41
19,695.00	89.60	359.20	9,551.39	9,990.39	9,995.32	587.91	10,012.59	3.37	493,594.52	779,598.91
19,789.00	89.20	359.90	9,552.38	10,084.39	10,089.31	587.17	10,106.38	3.33	493,688.51	779,598.17
19,883.00	89.10	359.90	9,553.77	10,178.37	10,183.30	587.01	10,200.20	3.30	493,782.50	779,598.01
19,922.00	88.57	359.85	9,554.57	10,217.36	10,222.29	586.92	10,239.12	3.29	493,821.49	779,597.92
LTP: 19922' MD, 100' FNL & 451' FEL										
19,956.00	88.10	359.80	9,555.56	10,251.35	10,256.27	586.82	10,273.05	3.27	493,855.47	779,597.82
ST Final Survey: 19956' MD										
20,015.00	88.10	359.80	9,557.51	10,310.32	10,315.24	586.61	10,331.91	3.25	493,914.44	779,597.61
ST Final TD: 20015' MD, 7' FNL & 451' FEL										

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,592.00	9,560.01	918.52	903.04	Tie-in to OH
10,682.00	9,563.07	1,008.02	894.18	ST First Survey: 10682' MD
19,922.00	9,554.57	10,222.29	586.92	LTP: 19922' MD, 100' FNL & 451' FEL
19,956.00	9,555.56	10,256.27	586.82	ST Final Survey: 19956' MD
20,015.00	9,557.51	10,315.24	586.61	ST Final TD: 20015' MD, 7' FNL & 451' FEL