

Devon Energy Corporation

Lea County, NM (NAD 83) North Thistle Pad

API#

North Thistle 15-10 State Com 2H

SHL: (415' FSL - 810' FWL)

Wellbore #1

Design: Actual Drilled

HOBBS OCD
AUG 29 2019
RECEIVED

Sperry Drilling Services

Combo Report

08 February, 2019

Well Coordinates:

32° 17' 55.007 N

103° 33' 58.107 W

North American Datum 1983

New Mexico Eastern Zone

473,216.02 N

778,387.07 E

Ground Level: 3,711.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well North Thistle 15-10 State Com 2H

RKB (Nabors X05) 33' + GL @ 3744.0usft

N

Grid

API - US Survey Feet

HOBBS OCD
AUG 29 2019
RECEIVED

Version: 5000.15 Build: 91

Report Version: Midcon Combo v1.13

HALLIBURTON

HALLIBURTON**Design Report for North Thistle 15-10 State Com 2H - Actual Drilled**

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
0.0	0.00	0.00	0.0	0.00 N	0.00 E	473,216.02	778,387.07	0.00	0.0	0.00	
228.0	0.49	224.93	228.0	0.69 S	0.69 W	473,215.33	778,386.38	0.21	-0.7	224.93	First MWD Survey
329.0	0.34	176.51	329.0	1.30 S	0.98 W	473,214.72	778,386.09	0.36	-1.3	-136.11	
420.0	0.18	218.70	420.0	1.68 S	1.05 W	473,214.34	778,386.02	0.26	-1.7	149.67	
511.0	0.11	314.78	511.0	1.73 S	1.20 W	473,214.29	778,385.87	0.24	-1.7	150.29	
602.0	0.15	187.20	602.0	1.78 S	1.28 W	473,214.24	778,385.79	0.26	-1.8	-149.46	
692.0	0.31	236.53	692.0	2.03 S	1.49 W	473,213.99	778,385.58	0.27	-2.0	77.52	
781.0	0.31	236.53	781.0	2.30 S	1.90 W	473,213.72	778,385.17	0.00	-2.3	0.00	
783.0	0.25	112.69	783.0	2.30 S	1.90 W	473,213.72	778,385.17	24.74	-2.3	-155.19	
874.0	0.32	74.37	874.0	2.31 S	1.47 W	473,213.71	778,385.60	0.22	-2.3	-89.69	
966.0	0.04	127.98	966.0	2.26 S	1.20 W	473,213.76	778,385.87	0.32	-2.3	173.80	
1,056.0	0.40	61.29	1,056.0	2.13 S	0.90 W	473,213.89	778,386.17	0.43	-2.1	-72.15	
1,147.0	0.37	335.25	1,147.0	1.71 S	0.74 W	473,214.31	778,386.33	0.58	-1.7	-135.41	
1,238.0	0.42	17.83	1,238.0	1.13 S	0.76 W	473,214.89	778,386.31	0.32	-1.1	102.06	
1,328.0	0.51	17.45	1,328.0	0.43 S	0.54 W	473,215.59	778,386.53	0.10	-0.4	-2.15	
1,446.0	0.43	355.30	1,446.0	0.51 N	0.42 W	473,216.53	778,386.65	0.17	0.5	-124.57	
1,537.0	0.07	80.18	1,537.0	0.86 N	0.39 W	473,216.88	778,386.68	0.47	0.9	170.66	
1,626.0	0.61	163.47	1,626.0	0.42 N	0.20 W	473,216.44	778,386.87	0.68	0.4	89.88	
1,717.0	1.63	148.23	1,717.0	1.15 S	0.62 E	473,214.87	778,387.69	1.16	-1.1	-23.99	
1,811.0	2.24	134.98	1,810.9	3.58 S	2.62 E	473,212.44	778,389.69	0.80	-3.6	-43.00	
1,904.0	3.19	140.62	1,903.8	6.87 S	5.55 E	473,209.15	778,392.62	1.06	-6.9	18.54	
1,996.0	4.46	139.63	1,995.6	11.57 S	9.49 E	473,204.45	778,396.56	1.38	-11.6	-3.47	
2,090.0	5.16	132.07	2,089.3	17.19 S	14.99 E	473,198.83	778,402.06	1.00	-17.2	-45.97	
2,184.0	6.14	130.31	2,182.8	23.27 S	21.96 E	473,192.75	778,409.03	1.06	-23.3	-10.90	
2,278.0	6.58	129.15	2,276.2	29.93 S	29.97 E	473,186.09	778,417.04	0.49	-29.9	-16.86	
2,374.0	6.49	127.98	2,371.6	36.74 S	38.52 E	473,179.28	778,425.59	0.17	-36.7	-124.63	
2,466.0	6.16	128.89	2,463.0	43.04 S	46.46 E	473,172.98	778,433.53	0.37	-43.0	163.55	
2,560.0	7.26	131.75	2,556.4	50.16 S	54.81 E	473,165.86	778,441.88	1.22	-50.2	18.32	
2,655.0	7.24	133.34	2,650.6	58.26 S	63.65 E	473,157.76	778,450.72	0.21	-58.3	96.48	
2,749.0	7.29	137.64	2,743.9	66.74 S	71.97 E	473,149.28	778,459.04	0.58	-66.7	86.88	
2,843.0	6.87	140.83	2,837.2	75.50 S	79.54 E	473,140.52	778,466.61	0.61	-75.5	138.46	
2,937.0	7.09	134.27	2,930.5	83.91 S	87.25 E	473,132.11	778,474.32	0.88	-83.9	-77.84	
3,031.0	7.22	126.28	3,023.7	91.46 S	96.16 E	473,124.56	778,483.23	1.07	-91.4	-86.53	
3,126.0	7.23	124.15	3,118.0	98.34 S	105.92 E	473,117.68	778,492.99	0.28	-98.3	-88.92	
3,220.0	7.02	124.94	3,211.3	104.95 S	115.53 E	473,111.07	778,502.60	0.25	-104.9	155.38	
3,313.0	6.81	124.88	3,303.6	111.36 S	124.71 E	473,104.66	778,511.78	0.23	-111.4	-178.06	

HALLIBURTON**Design Report for North Thistle 15-10 State Com 2H - Actual Drilled**

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)								
3,406.0	6.87	123.46	3,395.9	117.58 S	133.87 E	473,098.44	778,520.94	0.19	-117.6	-71.17	
3,501.0	5.92	130.07	3,490.3	123.87 S	142.36 E	473,092.15	778,529.43	1.26	-123.9	145.48	
3,596.0	6.00	133.53	3,584.8	130.44 S	149.71 E	473,085.58	778,536.78	0.39	-130.4	79.17	
3,688.0	5.85	132.55	3,676.3	136.92 S	156.65 E	473,079.10	778,543.72	0.20	-136.9	-146.49	
3,779.0	5.35	129.80	3,766.9	142.78 S	163.33 E	473,073.24	778,550.40	0.62	-142.8	-153.14	
3,872.0	5.35	132.42	3,859.5	148.48 S	169.86 E	473,067.54	778,556.93	0.26	-148.5	91.30	
3,965.0	5.37	136.91	3,952.1	154.58 S	176.03 E	473,061.44	778,563.10	0.45	-154.6	89.51	
4,059.0	5.73	137.67	4,045.6	161.26 S	182.20 E	473,054.76	778,569.27	0.39	-161.2	11.92	
4,153.0	5.77	140.51	4,139.2	168.38 S	188.36 E	473,047.64	778,575.43	0.31	-168.4	83.41	
4,246.0	5.94	135.22	4,231.7	175.40 S	194.72 E	473,040.62	778,581.79	0.61	-175.4	-75.16	
4,339.0	6.72	130.06	4,324.1	182.32 S	202.28 E	473,033.70	778,589.35	1.04	-182.3	-38.69	
4,432.0	7.66	125.57	4,416.4	189.42 S	211.48 E	473,026.60	778,598.55	1.18	-189.4	-33.11	
4,527.0	7.43	128.63	4,510.6	196.94 S	221.43 E	473,019.08	778,608.50	0.49	-196.9	121.30	
4,622.0	5.90	131.62	4,604.9	204.02 S	229.88 E	473,012.00	778,616.95	1.65	-204.0	168.70	
4,716.0	5.90	131.79	4,698.4	210.45 S	237.10 E	473,005.57	778,624.17	0.02	-210.4	90.08	
4,809.0	6.65	131.20	4,790.9	217.18 S	244.71 E	472,998.84	778,631.78	0.81	-217.2	-5.21	
4,903.0	6.98	130.36	4,884.2	224.46 S	253.16 E	472,991.56	778,640.23	0.37	-224.4	-17.22	
4,997.0	6.97	132.57	4,977.5	232.02 S	261.71 E	472,984.00	778,648.78	0.29	-232.0	93.23	
5,093.0	6.24	132.26	5,072.9	239.47 S	269.86 E	472,976.55	778,656.93	0.76	-239.4	-177.36	
5,188.0	5.71	132.90	5,167.3	246.16 S	277.15 E	472,969.86	778,664.22	0.56	-246.1	173.15	
5,282.0	5.44	129.27	5,260.9	252.16 S	284.02 E	472,963.86	778,671.09	0.47	-252.1	-129.24	
5,443.0	5.17	135.11	5,421.2	262.13 S	295.05 E	472,953.89	778,682.12	0.37	-262.1	119.45	
5,538.0	5.22	134.16	5,515.8	268.18 S	301.17 E	472,947.84	778,688.24	0.10	-268.2	-60.31	
5,631.0	5.26	132.75	5,608.4	274.02 S	307.34 E	472,942.00	778,694.41	0.14	-274.0	-73.45	
5,726.0	5.25	130.85	5,703.0	279.82 S	313.82 E	472,936.20	778,700.89	0.18	-279.8	-94.23	
5,820.0	5.13	129.23	5,796.7	285.29 S	320.33 E	472,930.73	778,707.40	0.20	-285.3	-130.12	
5,914.0	5.56	137.30	5,890.2	291.29 S	326.67 E	472,924.73	778,713.74	0.92	-291.3	84.29	
6,009.0	5.56	139.61	5,984.8	298.18 S	332.78 E	472,917.84	778,719.85	0.24	-298.2	91.15	
6,103.0	5.32	139.69	6,078.4	304.97 S	338.55 E	472,911.05	778,725.62	0.26	-304.9	178.23	
6,196.0	5.30	138.29	6,171.0	311.48 S	344.19 E	472,904.56	778,731.26	0.14	-311.4	-99.47	
6,218.0	5.52	137.68	6,192.9	313.01 S	345.58 E	472,903.01	778,732.65	1.05	-313.0	-14.65	Cross 100' Perf Line (100.0326' FSL, 1152.6007' FWL)
6,288.0	6.24	136.04	6,262.5	318.24 S	350.49 E	472,897.78	778,737.56	1.05	-318.2	-14.05	Section 15
6,381.0	6.31	135.83	6,355.0	325.54 S	357.56 E	472,890.48	778,744.63	0.08	-325.5	-18.26	
6,474.0	6.19	134.02	6,447.4	332.69 S	364.73 E	472,883.33	778,751.80	0.25	-332.7	-122.24	
6,566.0	6.13	133.08	6,538.9	339.49 S	371.88 E	472,876.53	778,758.95	0.13	-339.5	-121.21	
6,661.0	5.77	127.85	6,633.4	345.89 S	379.36 E	472,870.13	778,766.43	0.68	-345.9	-126.17	

HALLIBURTON**Design Report for North Thistle 15-10 State Com 2H - Actual Drilled**

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
6,754.0	5.14	127.89	6,725.9	351.31 S	386.34 E	472,864.71	778,773.41	0.68	-351.3	179.67	
6,848.0	3.93	126.26	6,819.6	355.80 S	392.26 E	472,860.22	778,779.33	1.29	-355.8	-174.73	
6,942.0	2.29	114.32	6,913.5	358.48 S	396.57 E	472,857.54	778,783.64	1.87	-358.4	-164.34	
7,036.0	1.79	107.64	7,007.4	359.70 S	399.68 E	472,856.32	778,786.75	0.59	-359.7	-157.88	
7,130.0	0.61	92.31	7,101.4	360.17 S	401.58 E	472,855.85	778,788.65	1.29	-360.1	-172.36	
7,223.0	0.07	33.14	7,194.4	360.14 S	402.10 E	472,855.88	778,789.17	0.62	-360.1	-174.02	
7,316.0	0.22	88.15	7,287.4	360.09 S	402.31 E	472,855.93	778,789.38	0.20	-360.1	72.69	
7,410.0	0.15	82.62	7,381.4	360.06 S	402.61 E	472,855.96	778,789.68	0.08	-360.0	-168.44	
7,503.0	0.10	148.10	7,474.4	360.12 S	402.78 E	472,855.90	778,789.85	0.15	-360.1	140.02	
7,597.0	0.24	133.50	7,568.4	360.32 S	402.96 E	472,855.70	778,790.03	0.15	-360.3	-24.58	
7,692.0	0.52	191.35	7,663.4	360.88 S	403.02 E	472,855.14	778,790.09	0.47	-360.8	85.23	
7,787.0	0.56	214.89	7,758.4	361.69 S	402.67 E	472,854.33	778,789.74	0.24	-361.7	91.69	
7,880.0	0.46	222.69	7,851.4	362.33 S	402.16 E	472,853.69	778,789.23	0.13	-362.3	149.09	
7,974.0	0.87	217.38	7,945.4	363.18 S	401.47 E	472,852.84	778,788.54	0.44	-363.1	-11.21	
8,069.0	0.75	228.08	8,040.4	364.17 S	400.57 E	472,851.85	778,787.64	0.20	-364.1	133.69	
8,163.0	0.96	235.64	8,134.4	365.02 S	399.46 E	472,851.00	778,786.53	0.25	-365.0	32.06	
8,258.0	1.09	241.29	8,229.4	365.90 S	398.01 E	472,850.12	778,785.08	0.17	-365.9	40.71	
8,351.0	0.37	222.95	8,322.4	366.55 S	397.03 E	472,849.47	778,784.10	0.80	-366.5	-171.04	
8,445.0	0.53	191.97	8,416.4	367.20 S	396.73 E	472,848.82	778,783.80	0.30	-367.2	-72.81	
8,537.0	0.71	211.41	8,508.3	368.10 S	396.35 E	472,847.92	778,783.42	0.30	-368.1	59.44	
8,631.0	0.86	197.31	8,602.3	369.27 S	395.84 E	472,846.75	778,782.91	0.26	-369.2	-59.36	
8,724.0	0.24	179.82	8,695.3	370.13 S	395.63 E	472,845.89	778,782.70	0.68	-370.1	-173.48	
8,817.0	0.06	276.32	8,788.3	370.32 S	395.58 E	472,845.70	778,782.65	0.27	-370.3	166.42	
8,911.0	0.11	105.52	8,882.3	370.34 S	395.62 E	472,845.68	778,782.69	0.18	-370.3	-174.04	
9,004.0	0.19	261.45	8,975.3	370.39 S	395.55 E	472,845.63	778,782.62	0.32	-370.4	164.71	
9,110.0	0.53	334.19	9,081.3	369.97 S	395.17 E	472,846.05	778,782.24	0.48	-369.9	93.70	KOP (42.7888' FSL, 1201.6598' FWL) Section 15
9,142.0	3.28	350.76	9,113.3	368.93 S	394.95 E	472,847.09	778,782.02	8.68	-368.9	19.69	
9,173.0	6.70	352.27	9,144.2	366.27 S	394.57 E	472,849.75	778,781.64	11.04	-366.2	2.95	
9,204.0	9.69	357.36	9,174.9	361.87 S	394.20 E	472,854.15	778,781.27	9.92	-361.8	16.17	
9,236.0	12.71	358.94	9,206.3	355.66 S	394.02 E	472,860.36	778,781.09	9.49	-355.6	6.58	
9,267.0	16.44	359.34	9,236.3	347.86 S	393.90 E	472,868.16	778,780.97	12.04	-347.8	1.74	
9,298.0	19.61	357.90	9,265.7	338.27 S	393.66 E	472,877.75	778,780.73	10.33	-338.2	-8.69	
9,329.0	22.33	356.74	9,294.7	327.19 S	393.14 E	472,888.83	778,780.21	8.88	-327.2	-9.22	
9,361.0	25.74	356.80	9,323.9	314.18 S	392.40 E	472,901.84	778,779.47	10.66	-314.1	0.44	
9,365.0	26.14	357.00	9,327.5	312.43 S	392.31 E	472,903.59	778,779.38	10.21	-312.4	12.41	Cross 100' Perf Line (100.3441' FSL, 1199.3290' FWL) Section 15
9,392.0	28.84	358.21	9,351.4	299.98 S	391.79 E	472,916.04	778,778.86	10.21	-299.9	12.23	

HALLIBURTON**Design Report for North Thistle 15-10 State Com 2H - Actual Drilled**

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				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
9,423.0	31.61	359.96	9,378.2	284.38 S	391.55 E	472,931.64	778,778.62	9.38	-284.3	18.40	
9,454.0	34.55	2.42	9,404.2	267.47 S	391.92 E	472,948.55	778,778.99	10.42	-267.4	25.58	
9,486.0	37.55	2.44	9,430.1	248.66 S	392.72 E	472,967.36	778,779.79	9.38	-248.6	0.23	
9,516.0	40.79	1.22	9,453.3	229.72 S	393.31 E	472,986.30	778,780.38	11.10	-229.7	-13.85	
9,547.0	44.11	359.91	9,476.2	208.80 S	393.51 E	473,007.22	778,780.58	11.08	-208.8	-15.40	
9,578.0	47.59	359.11	9,497.8	186.56 S	393.32 E	473,029.46	778,780.39	11.38	-186.5	-9.65	
9,609.0	51.31	358.41	9,517.9	163.02 S	392.80 E	473,053.00	778,779.87	12.12	-163.0	-8.37	
9,641.0	54.39	358.45	9,537.3	137.53 S	392.11 E	473,078.49	778,779.18	9.63	-137.5	0.61	
9,673.0	56.54	358.32	9,555.4	111.18 S	391.36 E	473,104.84	778,778.43	6.73	-111.1	-2.89	
9,704.0	58.09	358.47	9,572.1	85.10 S	390.63 E	473,130.92	778,777.70	5.02	-85.1	4.70	
9,735.0	58.92	359.53	9,588.3	58.67 S	390.17 E	473,157.35	778,777.24	3.96	-58.6	47.72	
9,766.0	61.31	0.59	9,603.8	31.79 S	390.20 E	473,184.23	778,777.27	8.26	-31.8	21.30	
9,797.0	64.51	1.17	9,617.9	4.20 S	390.63 E	473,211.82	778,777.70	10.46	-4.2	9.30	
9,829.0	67.51	1.60	9,630.9	25.02 N	391.34 E	473,241.04	778,778.41	9.46	25.1	7.55	
9,860.0	70.43	2.28	9,642.0	53.94 N	392.32 E	473,269.96	778,779.39	9.64	54.0	12.39	
9,891.0	72.18	2.21	9,652.0	83.28 N	393.47 E	473,299.30	778,780.54	5.65	83.3	-2.18	
9,923.0	73.82	2.86	9,661.3	113.85 N	394.82 E	473,329.87	778,781.89	5.48	113.9	20.85	
9,955.0	75.81	2.73	9,669.7	144.69 N	396.33 E	473,360.71	778,783.40	6.23	144.7	-3.62	
9,986.0	77.63	2.59	9,676.8	174.83 N	397.73 E	473,390.85	778,784.80	5.89	174.9	-4.30	
10,018.0	79.08	2.14	9,683.3	206.15 N	399.02 E	473,422.17	778,786.09	4.74	206.2	-16.95	
10,049.0	80.06	2.10	9,688.9	236.61 N	400.15 E	473,452.63	778,787.22	3.16	236.6	-2.30	
10,081.0	81.83	1.72	9,693.9	268.19 N	401.20 E	473,484.21	778,788.27	5.65	268.2	-12.00	
10,112.0	82.17	1.64	9,698.2	298.88 N	402.10 E	473,514.90	778,789.17	1.13	298.9	-13.12	
10,142.0	83.51	1.47	9,702.0	328.63 N	402.91 E	473,544.65	778,789.98	4.50	328.7	-7.19	
10,174.0	85.38	0.26	9,705.1	360.48 N	403.39 E	473,576.50	778,790.46	6.95	360.5	-32.84	
10,205.0	88.24	359.97	9,706.8	391.43 N	403.45 E	473,607.45	778,790.52	9.27	391.5	-5.79	
10,237.0	90.03	0.07	9,707.3	423.42 N	403.46 E	473,639.44	778,790.53	5.60	423.5	3.20	
10,331.0	91.39	0.07	9,708.1	517.41 N	403.58 E	473,733.43	778,790.65	1.45	517.4	0.00	
10,399.0	91.85	359.99	9,704.2	585.38 N	403.61 E	473,801.40	778,790.68	0.69	585.4	-9.86	
10,491.0	90.86	359.76	9,702.0	677.36 N	403.41 E	473,893.38	778,790.48	1.10	677.4	-166.92	
10,583.0	88.76	358.95	9,702.3	769.35 N	402.38 E	473,985.37	778,789.45	2.45	769.4	-158.91	
10,677.0	88.08	359.32	9,704.9	863.30 N	400.96 E	474,079.32	778,788.03	0.82	863.3	151.46	
10,770.0	87.34	359.21	9,708.6	956.22 N	399.77 E	474,172.24	778,786.84	0.80	956.2	-171.55	
10,810.3	88.06	359.21	9,710.2	996.45 N	399.21 E	474,212.47	778,786.28	1.78	996.5	0.00	(TGT 1) 9753' TVD
10,867.0	89.07	359.21	9,711.7	1,053.15 N	398.43 E	474,269.17	778,785.50	1.78	1,053.2	0.00	
10,956.0	89.14	359.61	9,713.1	1,142.14 N	397.51 E	474,358.16	778,784.58	0.46	1,142.2	80.08	
11,043.0	89.32	359.40	9,714.2	1,229.13 N	396.76 E	474,445.15	778,783.83	0.32	1,229.2	-49.40	

HALLIBURTON**Design Report for North Thistle 15-10 State Com 2H - Actual Drilled**

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
11,136.0	89.75	359.73	9,715.0	1,322.12 N	396.06 E	474,538.14	778,783.13	0.58	1,322.2	37.50	
11,227.0	89.44	359.60	9,715.6	1,413.12 N	395.52 E	474,629.14	778,782.59	0.37	1,413.2	-157.25	
11,317.0	90.19	0.00	9,715.9	1,503.12 N	395.21 E	474,719.14	778,782.28	0.94	1,503.1	28.07	
11,408.0	90.74	0.47	9,715.2	1,594.11 N	395.58 E	474,810.13	778,782.65	0.80	1,594.1	40.51	
11,499.0	89.81	0.50	9,714.7	1,685.11 N	396.35 E	474,901.13	778,783.42	1.02	1,685.1	178.15	
11,591.0	88.89	359.80	9,715.8	1,777.10 N	396.59 E	474,993.12	778,783.66	1.26	1,777.1	-142.74	
11,681.0	89.01	359.49	9,717.4	1,867.08 N	396.04 E	475,083.10	778,783.11	0.37	1,867.1	-68.84	
11,863.0	90.25	358.95	9,718.6	2,049.06 N	393.56 E	475,265.08	778,780.63	0.74	2,049.1	-23.53	
11,953.0	89.44	358.93	9,718.9	2,139.04 N	391.89 E	475,355.06	778,778.96	0.90	2,139.1	-178.59	
12,044.0	89.14	358.80	9,720.0	2,230.02 N	390.09 E	475,446.04	778,777.16	0.36	2,230.0	-156.57	
12,133.0	89.51	359.04	9,721.0	2,318.99 N	388.41 E	475,535.01	778,775.48	0.50	2,319.0	32.97	
12,224.0	90.25	359.62	9,721.2	2,409.99 N	387.35 E	475,626.01	778,774.42	1.03	2,410.0	38.09	
12,319.0	91.17	359.90	9,720.0	2,504.98 N	386.95 E	475,721.00	778,774.02	1.01	2,505.0	16.92	
12,412.0	90.93	0.22	9,718.3	2,597.96 N	387.05 E	475,813.98	778,774.12	0.43	2,598.0	126.87	
12,508.0	90.25	359.98	9,717.4	2,693.95 N	387.22 E	475,909.97	778,774.29	0.75	2,694.0	-160.56	
12,601.0	89.20	0.29	9,717.8	2,786.95 N	387.44 E	476,002.97	778,774.51	1.18	2,787.0	163.55	
12,694.0	89.01	1.14	9,719.3	2,879.93 N	388.60 E	476,095.95	778,775.67	0.94	2,880.0	102.61	
12,789.0	88.70	0.90	9,721.1	2,974.90 N	390.29 E	476,190.92	778,777.36	0.41	2,974.9	-142.26	
12,868.7	88.86	0.69	9,722.8	3,054.54 N	391.39 E	476,270.56	778,778.46	0.33	3,054.6	-52.76	(TGT 2) 9749' TVD
12,884.0	88.89	0.65	9,723.1	3,069.87 N	391.57 E	476,285.89	778,778.64	0.33	3,069.9	-52.76	
12,979.0	89.94	0.66	9,724.1	3,164.86 N	392.66 E	476,380.88	778,779.73	1.11	3,164.9	0.55	
13,074.0	90.25	0.72	9,724.0	3,259.85 N	393.80 E	476,475.87	778,780.87	0.33	3,259.9	10.95	
13,169.0	89.94	0.65	9,723.8	3,354.84 N	394.94 E	476,570.86	778,782.01	0.33	3,354.9	-167.28	
13,264.0	89.32	1.17	9,724.4	3,449.83 N	396.45 E	476,665.85	778,783.52	0.85	3,449.9	140.02	
13,297.0	93.37	0.28	9,723.6	3,482.81 N	396.86 E	476,698.83	778,783.93	12.57	3,482.8	-12.38	
13,358.0	89.69	0.92	9,722.0	3,543.77 N	397.50 E	476,759.79	778,784.57	6.12	3,543.8	170.13	
13,453.0	90.87	359.91	9,721.5	3,638.77 N	398.19 E	476,854.79	778,785.26	1.63	3,638.8	-40.56	
13,547.0	91.73	0.03	9,719.4	3,732.74 N	398.14 E	476,948.76	778,785.21	0.92	3,732.8	7.94	
13,640.0	92.47	358.90	9,716.0	3,825.67 N	397.27 E	477,041.69	778,784.34	1.45	3,825.7	-56.74	
13,735.0	90.19	358.42	9,713.8	3,920.61 N	395.05 E	477,136.63	778,782.12	2.45	3,920.6	-168.11	
13,830.0	90.56	358.42	9,713.2	4,015.58 N	392.43 E	477,231.60	778,779.50	0.39	4,015.6	0.00	
13,924.0	90.19	358.45	9,712.6	4,109.54 N	389.87 E	477,325.56	778,776.94	0.39	4,109.6	175.36	
14,019.0	88.82	357.93	9,713.4	4,204.48 N	386.87 E	477,420.50	778,773.94	1.54	4,204.5	-159.22	
14,112.0	87.28	357.74	9,716.6	4,297.36 N	383.36 E	477,513.38	778,770.43	1.67	4,297.4	-172.97	
14,207.0	86.91	358.46	9,721.4	4,392.19 N	380.21 E	477,608.21	778,767.28	0.85	4,392.2	117.25	
14,300.0	87.46	358.40	9,725.9	4,485.04 N	377.66 E	477,701.06	778,764.73	0.59	4,485.1	-6.22	

HALLIBURTON**Design Report for North Thistle 15-10 State Com 2H - Actual Drilled**

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
14,395.0	89.32	358.55	9,728.6	4,579.96 N	375.14 E	477,795.98	778,762.21	1.96	4,580.0	4.61	
14,489.0	90.43	358.75	9,728.8	4,673.94 N	372.92 E	477,889.96	778,759.99	1.20	4,674.0	10.21	
14,584.0	91.11	358.64	9,727.5	4,768.90 N	370.76 E	477,984.92	778,757.83	0.73	4,768.9	-9.19	
14,678.0	91.42	0.43	9,725.5	4,862.87 N	370.00 E	478,078.89	778,757.07	1.93	4,862.9	80.15	
14,685.0	91.40	0.43	9,725.3	4,869.87 N	370.05 E	478,085.89	778,757.12	0.33	4,869.9	-170.84	Cross Sec Line (0.1556' FSL, 1221.5678' FWL) Section 10
14,773.0	91.11	0.38	9,723.4	4,957.85 N	370.67 E	478,173.87	778,757.74	0.33	4,957.9	-170.84	
14,872.0	91.36	1.40	9,721.2	5,056.81 N	372.21 E	478,272.83	778,759.28	1.06	5,056.8	76.21	
14,965.0	93.21	2.32	9,717.5	5,149.68 N	375.22 E	478,365.70	778,762.29	2.22	5,149.7	26.41	
15,058.0	94.57	359.89	9,711.2	5,242.44 N	377.01 E	478,458.46	778,764.08	2.99	5,242.5	-60.63	
15,151.0	92.78	354.94	9,705.2	5,335.12 N	372.82 E	478,551.14	778,759.89	5.65	5,335.2	-109.75	
15,245.0	88.64	354.04	9,704.1	5,428.66 N	363.80 E	478,644.68	778,750.87	4.51	5,428.7	-167.73	
15,340.0	87.34	355.62	9,707.4	5,523.21 N	355.24 E	478,739.23	778,742.31	2.15	5,523.2	129.49	
15,434.0	87.65	357.70	9,711.5	5,616.96 N	349.77 E	478,832.98	778,736.84	2.24	5,617.0	81.56	
15,529.0	88.46	357.91	9,714.7	5,711.83 N	346.14 E	478,927.85	778,733.21	0.88	5,711.9	14.53	
15,624.0	90.68	359.85	9,715.5	5,806.80 N	344.28 E	479,022.82	778,731.35	3.10	5,806.8	41.16	
15,708.2	92.28	2.39	9,713.3	5,890.90 N	345.93 E	479,106.92	778,733.00	3.57	5,890.9	57.74	(TGT 3) 9717' TVD
15,718.0	92.47	2.69	9,712.9	5,900.73 N	346.36 E	479,116.75	778,733.43	3.57	5,900.8	57.80	
15,813.0	92.04	4.46	9,709.1	5,995.46 N	352.28 E	479,211.48	778,739.35	1.92	5,995.5	103.63	
15,908.0	90.93	4.45	9,708.7	6,090.14 N	359.66 E	479,306.16	778,746.73	1.17	6,090.2	-179.48	
16,003.0	90.19	3.75	9,705.7	6,184.90 N	366.45 E	479,400.92	778,753.52	1.07	6,184.9	-136.59	
16,090.0	90.80	2.35	9,705.0	6,271.77 N	371.08 E	479,487.79	778,758.15	1.76	6,271.8	-66.45	
16,183.0	90.49	1.38	9,703.9	6,364.71 N	374.11 E	479,580.73	778,761.18	1.09	6,364.7	-107.72	
16,277.0	89.94	1.98	9,703.6	6,458.67 N	376.86 E	479,674.69	778,763.93	0.87	6,458.7	132.51	
16,371.0	89.32	3.56	9,704.2	6,552.55 N	381.40 E	479,768.57	778,768.47	1.81	6,552.6	111.43	
16,465.0	89.32	3.68	9,705.3	6,646.36 N	387.34 E	479,862.38	778,774.41	0.13	6,646.4	90.00	
16,559.0	90.03	3.52	9,705.8	6,740.17 N	393.24 E	479,956.19	778,780.31	0.77	6,740.2	-12.70	
16,653.0	90.99	2.15	9,705.0	6,834.05 N	397.89 E	480,050.07	778,784.96	1.78	6,834.1	-54.97	
16,748.0	90.77	359.91	9,703.6	6,929.02 N	399.60 E	480,145.04	778,786.67	2.37	6,929.1	-95.59	
16,842.0	90.28	359.40	9,702.7	7,023.01 N	399.03 E	480,239.03	778,786.10	0.75	7,023.0	-133.85	
16,936.0	89.66	359.22	9,702.7	7,117.00 N	397.90 E	480,333.02	778,784.97	0.69	7,117.0	-163.81	
17,031.0	88.71	357.83	9,704.1	7,211.96 N	395.45 E	480,427.98	778,782.52	1.77	7,212.0	-124.36	
17,126.0	89.20	357.59	9,705.8	7,306.87 N	391.66 E	480,522.89	778,778.73	0.57	7,306.9	-26.09	
17,220.0	91.54	357.61	9,705.2	7,400.78 N	387.72 E	480,616.80	778,774.79	2.49	7,400.8	0.49	
17,315.0	91.79	357.03	9,702.5	7,495.63 N	383.28 E	480,711.65	778,770.35	0.66	7,495.7	-66.67	
17,409.0	92.58	357.36	9,698.9	7,589.45 N	378.69 E	480,805.47	778,765.76	0.91	7,589.5	22.65	
17,503.0	90.99	359.14	9,695.9	7,683.35 N	375.82 E	480,899.37	778,762.89	2.54	7,683.4	131.76	
17,598.0	90.25	359.55	9,694.9	7,778.34 N	374.73 E	480,994.36	778,761.80	0.89	7,778.4	151.01	

Design Report for North Thistle 15-10 State Com 2H - Actual Drilled

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
17,693.0	88.37	358.51	9,696.1	7,873.31 N	373.12 E	481,089.33	778,760.19	2.26	7,873.3	-151.06	
17,788.0	89.38	359.38	9,697.9	7,968.28 N	371.37 E	481,184.30	778,758.44	1.40	7,968.3	40.75	
17,963.6	92.09	0.88	9,695.7	8,143.89 N	371.78 E	481,359.91	778,758.85	1.76	8,143.9	29.03	(TGT 4) 9708' TVD
17,976.0	92.28	0.99	9,695.2	8,156.23 N	371.98 E	481,372.25	778,759.05	1.76	8,156.3	29.05	
18,089.0	93.52	1.31	9,690.5	8,249.09 N	373.84 E	481,465.11	778,760.91	1.38	8,249.1	14.44	
18,164.0	93.51	1.42	9,684.7	8,343.89 N	376.10 E	481,559.91	778,763.17	0.12	8,343.9	95.20	
18,259.0	91.33	2.49	9,680.7	8,438.74 N	379.34 E	481,654.76	778,766.41	2.56	8,438.8	153.85	
18,353.0	90.31	0.55	9,679.3	8,532.69 N	381.83 E	481,748.71	778,768.90	2.33	8,532.7	-117.72	
18,447.0	87.90	358.90	9,680.8	8,626.67 N	381.38 E	481,842.69	778,768.45	3.11	8,626.7	-145.61	
18,542.0	88.49	357.66	9,683.8	8,721.58 N	378.53 E	481,937.60	778,765.60	1.44	8,721.6	-64.56	
18,637.0	88.40	357.67	9,686.4	8,816.46 N	374.66 E	482,032.48	778,761.73	0.10	8,816.5	173.68	
18,731.0	87.08	357.31	9,690.1	8,910.30 N	370.55 E	482,126.32	778,757.62	1.46	8,910.3	-164.76	
18,826.0	87.19	356.33	9,694.8	9,005.03 N	365.29 E	482,221.05	778,752.36	1.04	9,005.1	-83.61	
18,921.0	88.67	356.66	9,698.2	9,099.79 N	359.48 E	482,315.81	778,746.55	1.60	9,099.8	12.57	
19,015.0	90.43	358.63	9,699.0	9,193.70 N	355.62 E	482,409.72	778,742.69	2.81	9,193.7	48.23	
19,109.0	91.73	1.08	9,697.2	9,287.67 N	355.38 E	482,503.69	778,742.45	2.95	9,287.7	62.03	
19,203.0	92.16	1.53	9,694.0	9,381.59 N	357.52 E	482,597.61	778,744.59	0.66	9,381.6	46.28	
19,297.0	93.37	0.28	9,689.5	9,475.47 N	359.01 E	482,691.49	778,746.08	1.85	9,475.5	-45.87	
19,392.0	90.28	0.11	9,686.5	9,570.41 N	359.33 E	482,786.43	778,746.40	3.26	9,570.4	-176.85	
19,485.0	89.72	359.65	9,686.5	9,663.41 N	359.14 E	482,879.43	778,746.21	0.78	9,663.4	-140.60	
19,672.0	90.89	359.38	9,685.5	9,850.39 N	357.55 E	483,066.41	778,744.62	0.64	9,850.4	-12.99	
19,861.0	91.29	359.90	9,681.9	10,039.35 N	356.37 E	483,255.37	778,743.44	0.35	10,039.4	52.42	
19,872.0	91.28	359.89	9,681.6	10,050.35 N	356.34 E	483,266.37	778,743.41	0.17	10,050.4	-126.88	Cross 100' Perf Line (100.1166' FNL, 1248.5502' FWL)
19,891.0	91.26	359.86	9,681.2	10,069.35 N	356.30 E	483,285.37	778,743.37	0.17	10,069.4	-126.88	Section 10 Last MWD Survey
19,952.0	91.26	359.86	9,679.9	10,130.33 N	356.15 E	483,346.35	778,743.22	0.00	10,130.4	-90.00	20.1366' FNL, 1248.9817' FWL) Section 10 - PBHL North Thistle 1H (20' FNL - 380' FWL)

Design Report for North Thistle 15-10 State Com 2H - Actual Drilled

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
228.0	228.0	-0.7	-0.7	First MWD Survey
6,218.0	6,192.9	-313.0	345.6	Cross 100' Perf Line (100.0326' FSL, 1152.6007' FWL) Section 15
9,110.0	9,081.3	-370.0	395.2	KOP (42.7888' FSL, 1201.6598' FWL) Section 15
9,365.0	9,327.5	-312.4	392.3	Cross 100' Perf Line (100.3441' FSL, 1199.3290' FWL) Section 15
14,685.0	9,725.3	4,869.9	370.0	Cross Sec Line (0.1556' FSL, 1221.5678' FWL) Section 10
19,872.0	9,681.6	10,050.4	356.3	Cross 100' Perf Line (100.1166' FNL, 1248.5502' FWL) Section 10
19,891.0	9,681.2	10,069.3	356.3	Last MWD Survey
19,952.0	9,679.9	10,130.3	356.2	20.1366' FNL, 1248.9817' FWL) Section 10

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	+N/-S (usft)	+E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	0.00	Slot	0.0	0.0	0.0

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
228.0	19,891.0	MWD	2_MWD
19,952.0	19,952.0	Projection to Bit	2_Blind

Design Targets

Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	()	()	()	()	()	()	()		
- Shape									
()									

Design Report for North Thistle 15-10 State Com 2H - Actual Drilled

Directional Difficulty Index

Average Dogleg over Survey: 1.37 °/100usft

Maximum Dogleg over Survey: 24.74 °/100usft at 783.0
usft

Net Tortousity applicable to Plans: 0.85 °/100usft

Directional Difficulty Index: 6.792

Audit Info

North Reference Sheet for North Thistle Pad - North Thistle 15-10 State Com 2H - Wellbore #1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to RKB (Nabors X05) 33' + GL @ 3744.0usft. Northing and Easting are relative to North Thistle 15-10 State Com 2H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is 104° 20' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:0° 0' 0.000 N°

False Easting: 541,337.50usft, False Northing: 0.00usft, Scale Reduction: 0.99997345

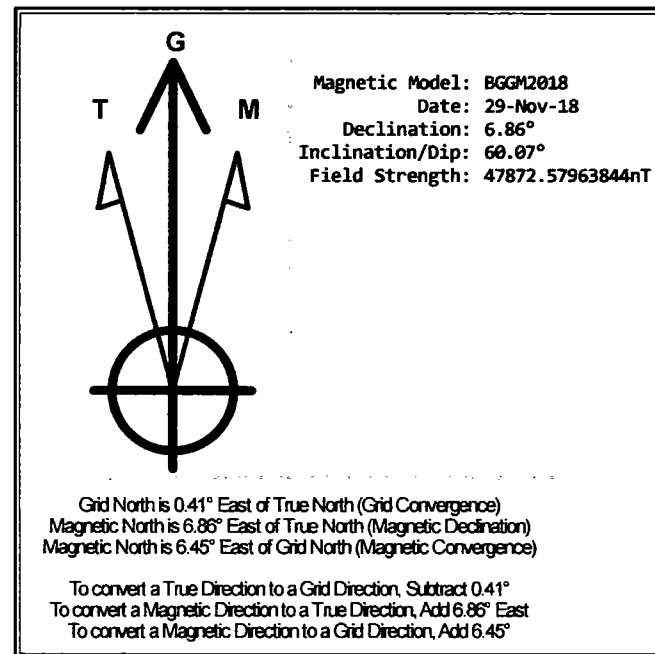
Grid Coordinates of Well: 473,216.02 usft N, 778,387.07 usft E

Geographical Coordinates of Well: 32° 17' 55.01" N, 103° 33' 58.11" W

Grid Convergence at Surface is: 0.41°

Based upon Minimum Curvature type calculations, at a Measured Depth of 19,952.00usft
the Bottom Hole Displacement is 10,136.59usft in the Direction of 2.01° (Grid).

Magnetic Convergence at surface is: -8.45° (29 November 2018, , BGGM2018)

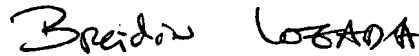


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State of New Mexico, Lea

I, Breidin Lozada certify that I am employed by Halliburton Energy Services, Inc. (aka Sperry Drilling) and that on the dates of January 17, 2019 through February 06, 2019, I did conduct or supervise the taking of MWD directional surveys for the North Thistle 15-10 State Com 2H well from a depth of 228' MD to a depth of 19891' MD. This data is true, correct, complete and within the limitations of the tools as set forth by Halliburton Energy Services, Inc. (aka Sperry Drilling). I am authorized and qualified to make this report and these surveys were conducted at the request of Devon Energy Corporation, for the North Thistle 15-10 State Com 2H well in Lea. I have reviewed this report and find that it confirms to the principles and procedures as set forth by Halliburton Energy Services, Inc. (aka Sperry Drilling.)



Breidin Lozada
Field Engineer