



PHOENIX
TECHNOLOGY SERVICES

Centennial Resources Development, Inc.

Lea County, NM (NAD83 - NME)
Tour Bus 23 State
101H

OH / 65471

Survey: Phoenix MWD Surveys

HOBBS OCD

DEC 13 2019

RECEIVED

Standard Survey Report

11 October, 2019



Company:	Centennial Resources Development, Inc.	Local Co-ordinate Reference:	Well 101H
Project:	Lea County, NM (NAD83 - NME)	TVD Reference:	RKB @ 3506.90usft (H&P 618)
Site:	Tour Bus 23 State	MD Reference:	RKB @ 3506.90usft (H&P 618)
Well:	101H	North Reference:	True
Wellbore:	OH / 65471	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 618)	Database:	USA Compass

Project	Lea County, NM (NAD83 - NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Tour Bus 23 State		
Site Position:		Northing:	504,400.90 usft
From:	Map	Easting:	819,372.55 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 23' 0.417970 N
		Longitude:	103° 25' 57.572003 W
		Grid Convergence:	0.48 °

Well	101H		
Well Position	+N/-S	0.00 usft	Northing: 504,400.90 usft
	+E/-W	0.00 usft	Easting: 819,372.55 usft
Position Uncertainty	1.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 23' 0.417970 N
		Longitude:	103° 25' 57.572003 W
		Ground Level:	3,481.90 usft

Wellbore	OH / 65471				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	10/2/2019	6.63	60.06	47,912.00000000

Design	Surveys (H&P 618)				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	1,853.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	182.39	

Survey Program	Date 10/11/2019				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
151.00	1,853.00	Invictus MWD Surveys (OH / Surface)	MWD	OWSG MWD - Standard	
1,911.00	13,668.00	Phoenix MWD Surveys (OH / 65471)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction	

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)
	1,853.00	2.30	185.72	1,852.67	-31.20	-3.23	31.31	0.00	0.00	0.00
Tie In	1,911.00	2.62	204.70	1,910.62	-33.56	-3.90	33.70	1.50	0.55	32.72
First Phoenix MWD Survey	2,005.00	1.09	207.62	2,004.57	-36.31	-5.21	36.49	1.63	-1.63	3.11
	2,100.00	1.37	359.55	2,099.56	-35.97	-5.64	36.18	2.51	0.29	159.93
	2,193.00	3.17	355.78	2,192.48	-32.30	-5.84	32.51	1.94	1.94	-4.05
	2,287.00	4.83	350.09	2,286.25	-25.80	-6.71	26.06	1.81	1.77	-6.05
	2,381.00	6.29	345.12	2,379.81	-16.93	-8.72	17.28	1.63	1.55	-5.29

Company:	Centennial Resources Development, Inc.	Local Co-ordinate Reference:	Well 101H
Project:	Lea County, NM (NAD83 - NME)	TVD Reference:	RKB @ 3506.90usft (H&P 618)
Site:	Tour Bus 23 State	MD Reference:	RKB @ 3506.90usft (H&P 618)
Well:	101H	North Reference:	True
Wellbore:	OH / 65471	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 618)	Database:	USA Compass

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)	
2,475.00	7.46	338.03	2,473.13	-6.29	-12.32	6.80	1.54	1.24	-7.54	
2,569.00	7.99	334.64	2,566.28	5.27	-17.40	-4.54	0.74	0.56	-3.61	
2,663.00	7.70	336.49	2,659.40	16.95	-22.71	-15.99	0.41	-0.31	1.97	
2,757.00	7.45	337.20	2,752.58	28.34	-27.59	-27.17	0.28	-0.27	0.76	
2,851.00	7.20	337.91	2,845.81	39.42	-32.16	-38.04	0.28	-0.27	0.76	
2,945.00	7.77	341.08	2,939.01	50.89	-36.44	-49.32	0.75	0.61	3.37	
3,040.00	8.50	345.94	3,033.05	63.77	-40.23	-62.04	1.06	0.77	5.12	
3,134.00	8.24	348.81	3,126.05	77.12	-43.22	-75.25	0.52	-0.28	3.05	
3,229.00	7.61	350.39	3,220.15	90.00	-45.59	-88.02	0.70	-0.66	1.66	
3,323.00	7.20	351.78	3,313.36	101.97	-47.47	-99.90	0.48	-0.44	1.48	
3,417.00	7.26	346.67	3,406.61	113.58	-49.69	-111.41	0.69	0.06	-5.44	
3,511.00	7.36	341.94	3,499.85	125.08	-52.92	-122.76	0.65	0.11	-5.03	
3,606.00	6.93	342.09	3,594.11	136.32	-56.57	-133.84	0.45	-0.45	0.16	
3,700.00	6.66	336.25	3,687.45	146.70	-60.51	-144.05	0.79	-0.29	-6.21	
3,794.00	6.50	332.03	3,780.84	156.39	-65.20	-153.54	0.54	-0.17	-4.49	
3,889.00	6.96	327.77	3,875.18	166.01	-70.79	-162.91	0.71	0.48	-4.48	
3,983.00	8.06	322.20	3,968.37	176.04	-77.87	-172.64	1.40	1.17	-5.93	
4,077.00	7.48	324.67	4,061.51	186.23	-85.45	-182.51	0.71	-0.62	2.63	
4,171.00	7.18	324.99	4,154.74	196.04	-92.36	-192.02	0.32	-0.32	0.34	
4,266.00	6.98	323.14	4,249.02	205.52	-99.22	-201.20	0.32	-0.21	-1.95	
4,360.00	6.64	326.18	4,342.36	214.60	-105.68	-210.01	0.53	-0.36	3.23	
4,454.00	6.16	329.31	4,435.77	223.46	-111.27	-218.62	0.63	-0.51	3.33	
4,548.00	6.03	324.63	4,529.24	231.82	-116.71	-226.75	0.55	-0.14	-4.98	
4,642.00	6.01	314.53	4,622.72	239.30	-123.07	-233.96	1.13	-0.02	-10.74	
4,736.00	5.74	309.47	4,716.23	245.74	-130.21	-240.09	0.62	-0.29	-5.38	
4,830.00	5.44	313.97	4,809.78	251.82	-137.04	-245.88	0.56	-0.32	4.79	
4,924.00	4.64	299.89	4,903.42	256.81	-143.55	-250.60	1.56	-0.85	-14.98	
5,018.00	4.35	290.45	4,997.14	259.95	-150.19	-253.46	0.84	-0.31	-10.04	
5,113.00	4.25	291.20	5,091.87	262.48	-156.84	-255.71	0.12	-0.11	0.79	
5,207.00	3.97	291.57	5,185.63	264.93	-163.12	-257.90	0.30	-0.30	0.39	
5,301.00	3.66	293.10	5,279.42	267.31	-168.90	-260.03	0.35	-0.33	1.63	
5,353.00	3.49	295.00	5,331.32	268.63	-171.86	-261.23	0.40	-0.33	3.65	
5,477.00	3.04	300.87	5,455.12	271.91	-178.11	-264.25	0.45	-0.36	4.73	
5,571.00	1.71	283.19	5,549.03	273.51	-181.61	-265.70	1.60	-1.41	-18.81	
5,665.00	1.27	208.06	5,643.01	272.91	-183.47	-265.02	1.97	-0.47	-79.93	
5,759.00	1.84	170.94	5,736.98	270.50	-183.72	-262.60	1.20	0.61	-39.49	
5,853.00	0.67	214.93	5,830.95	268.56	-183.80	-260.66	1.53	-1.24	46.80	
5,947.00	0.50	273.63	5,924.95	268.13	-184.52	-260.21	0.63	-0.18	62.45	
6,041.00	0.42	262.90	6,018.95	268.12	-185.27	-260.16	0.12	-0.09	-11.41	
6,136.00	0.19	268.58	6,113.95	268.07	-185.77	-260.09	0.24	-0.24	5.98	
6,230.00	0.37	233.66	6,207.94	267.89	-186.17	-259.89	0.26	0.19	-37.15	
6,324.00	0.33	306.88	6,301.94	267.87	-186.64	-259.85	0.45	-0.04	77.89	
6,418.00	0.28	308.18	6,395.94	268.17	-187.03	-260.14	0.05	-0.05	1.38	

Company:	Centennial Resources Development, Inc.	Local Co-ordinate Reference:	Well 101H
Project:	Lea County, NM (NAD83 - NME)	TVD Reference:	RKB @ 3506.90usft (H&P 618)
Site:	Tour Bus 23 State	MD Reference:	RKB @ 3506.90usft (H&P 618)
Well:	101H	North Reference:	True
Wellbore:	OH / 65471	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 618)	Database:	USA Compass

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)	
6,512.00	0.05	197.03	6,489.94	268.28	-187.23	-260.24	0.32	-0.24	-118.24	
6,606.00	0.22	256.98	6,583.94	268.20	-187.41	-260.15	0.21	0.18	63.78	
6,701.00	0.25	53.66	6,678.94	268.28	-187.42	-260.23	0.48	0.03	164.93	
6,795.00	0.16	133.88	6,772.94	268.31	-187.16	-260.27	0.29	-0.10	85.34	
6,889.00	0.18	112.60	6,866.94	268.16	-186.93	-260.13	0.07	0.02	-22.64	
6,984.00	0.43	137.06	6,961.94	267.84	-186.55	-259.83	0.29	0.26	25.75	
7,079.00	0.61	132.42	7,056.93	267.24	-185.94	-259.25	0.19	0.19	-4.88	
7,173.00	0.83	136.96	7,150.93	266.41	-185.10	-258.45	0.24	0.23	4.83	
7,268.00	0.98	138.85	7,245.92	265.29	-184.10	-257.38	0.16	0.16	1.99	
7,362.00	1.06	135.60	7,339.90	264.06	-182.96	-256.21	0.10	0.09	-3.46	
7,456.00	1.14	135.95	7,433.88	262.77	-181.70	-254.97	0.09	0.09	0.37	
7,550.00	1.36	143.79	7,527.86	261.20	-180.39	-253.45	0.30	0.23	8.34	
7,645.00	1.24	146.94	7,622.84	259.43	-179.17	-251.73	0.15	-0.13	3.32	
7,739.00	1.55	142.26	7,716.81	257.57	-177.83	-249.93	0.35	0.33	-4.98	
7,833.00	1.27	162.98	7,810.78	255.57	-176.75	-247.98	0.61	-0.30	22.04	
7,928.00	1.34	204.93	7,905.76	253.55	-176.91	-245.96	0.99	0.07	44.16	
8,022.00	1.04	211.09	7,999.74	251.83	-177.81	-244.19	0.35	-0.32	6.55	
8,116.00	0.75	204.79	8,093.73	250.54	-178.51	-242.88	0.33	-0.31	-6.70	
8,211.00	0.63	234.83	8,188.72	249.67	-179.20	-241.98	0.40	-0.13	31.62	
8,335.00	6.26	173.21	8,312.46	242.56	-178.96	-234.89	4.83	4.54	-49.69	
8,382.00	14.34	171.07	8,358.66	234.25	-177.75	-226.64	17.21	17.19	-4.55	
8,429.00	21.08	172.17	8,403.41	220.11	-175.69	-212.60	14.36	14.34	2.34	
8,476.00	28.03	172.31	8,446.13	200.77	-173.06	-193.38	14.79	14.79	0.30	
8,523.00	32.23	174.27	8,486.77	177.35	-170.33	-170.09	9.18	8.94	4.17	
8,570.00	39.41	174.41	8,524.86	149.99	-167.62	-142.87	15.28	15.28	0.30	
8,617.00	43.43	175.50	8,560.10	119.02	-164.90	-112.04	8.69	8.55	2.32	
8,664.00	44.93	176.63	8,593.80	86.35	-162.66	-79.49	3.60	3.19	2.40	
8,711.00	46.77	178.42	8,626.54	52.66	-161.21	-45.89	4.77	3.91	3.81	
8,758.00	46.65	178.29	8,658.77	18.46	-160.23	-11.77	0.33	-0.26	-0.28	
8,805.00	49.10	177.39	8,690.29	-16.37	-158.91	22.98	5.40	5.21	-1.91	
8,852.00	52.23	177.67	8,720.08	-52.68	-157.34	59.20	6.68	6.66	0.60	
8,899.00	54.70	181.36	8,748.06	-90.43	-157.04	96.90	8.21	5.26	7.85	
8,946.00	56.27	184.72	8,774.70	-129.09	-159.11	135.61	6.77	3.34	7.15	
8,994.00	59.66	185.83	8,800.16	-169.60	-162.85	176.25	7.33	7.06	2.31	
9,041.00	62.40	186.29	8,822.92	-210.49	-167.20	217.28	5.89	5.83	0.98	
9,088.00	67.50	184.46	8,842.81	-252.86	-171.17	259.78	11.41	10.85	-3.89	
9,135.00	73.05	182.86	8,858.67	-297.00	-173.98	304.00	12.24	11.81	-3.40	
9,181.00	76.01	182.91	8,870.94	-341.27	-176.21	348.32	6.44	6.43	0.11	
9,208.00	78.53	182.90	8,876.89	-367.57	-177.55	374.66	9.33	9.33	-0.04	
9,291.00	86.85	181.78	8,887.44	-449.75	-180.90	456.91	10.11	10.02	-1.35	
9,386.00	86.87	181.38	8,892.64	-544.58	-183.51	551.75	0.42	0.02	-0.42	
9,480.00	87.19	181.54	8,897.51	-638.42	-185.91	645.62	0.38	0.34	0.17	
9,574.00	88.93	181.48	8,900.70	-732.33	-188.38	739.55	1.85	1.85	-0.06	
9,669.00	88.92	180.90	8,902.48	-827.29	-190.35	834.51	0.61	-0.01	-0.61	

Company:	Centennial Resources Development, Inc.	Local Co-ordinate Reference:	Well 101H
Project:	Lea County, NM (NAD83 - NME)	TVD Reference:	RKB @ 3506.90usft (H&P 618)
Site:	Tour Bus 23 State	MD Reference:	RKB @ 3506.90usft (H&P 618)
Well:	101H	North Reference:	True
Wellbore:	OH / 65471	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 618)	Database:	USA Compass

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)	
9,763.00	88.52	180.77	8,904.58	-921.26	-191.72	928.45	0.45	-0.43	-0.14	
9,857.00	88.89	180.44	8,906.70	-1,015.23	-192.72	1,022.38	0.53	0.39	-0.35	
9,952.00	89.45	180.16	8,908.08	-1,110.22	-193.21	1,117.31	0.66	0.59	-0.29	
10,047.00	89.96	179.86	8,908.57	-1,205.21	-193.23	1,212.22	0.62	0.54	-0.32	
10,141.00	90.96	179.49	8,907.81	-1,299.21	-192.70	1,306.11	1.13	1.06	-0.39	
10,236.00	91.01	179.45	8,906.18	-1,394.19	-191.82	1,400.98	0.07	0.05	-0.04	
10,330.00	89.96	179.79	8,905.39	-1,488.18	-191.19	1,494.86	1.17	-1.12	0.36	
10,425.00	89.76	179.20	8,905.62	-1,583.18	-190.36	1,589.74	0.66	-0.21	-0.62	
10,519.00	89.12	179.55	8,906.54	-1,677.17	-189.33	1,683.60	0.78	-0.68	0.37	
10,613.00	90.87	181.43	8,906.54	-1,771.16	-190.14	1,777.55	2.73	1.86	2.00	
10,707.00	88.19	181.46	8,907.32	-1,865.12	-192.51	1,871.52	2.85	-2.85	0.03	
10,802.00	87.67	181.16	8,910.75	-1,960.03	-194.68	1,966.44	0.63	-0.55	-0.32	
10,896.00	88.19	181.25	8,914.14	-2,053.95	-196.65	2,060.36	0.56	0.55	0.10	
10,928.00	88.39	181.34	8,915.10	-2,085.92	-197.37	2,092.34	0.69	0.63	0.28	
10,959.00	89.22	181.40	8,915.74	-2,116.91	-198.12	2,123.33	2.68	2.68	0.19	
10,991.00	91.22	181.51	8,915.62	-2,148.90	-198.93	2,155.32	6.26	6.25	0.34	
11,022.00	91.76	181.56	8,914.81	-2,179.87	-199.76	2,186.31	1.75	1.74	0.16	
11,054.00	92.18	181.49	8,913.71	-2,211.84	-200.61	2,218.28	1.33	1.31	-0.22	
11,085.00	92.54	181.29	8,912.44	-2,242.81	-201.36	2,249.25	1.33	1.16	-0.65	
11,117.00	92.98	181.46	8,910.90	-2,274.76	-202.13	2,281.21	1.47	1.38	0.53	
11,148.00	93.38	181.26	8,909.18	-2,305.70	-202.86	2,312.16	1.44	1.29	-0.65	
11,180.00	92.08	180.80	8,907.65	-2,337.66	-203.44	2,344.11	4.31	-4.06	-1.44	
11,211.00	91.99	180.64	8,906.55	-2,368.64	-203.83	2,375.08	0.59	-0.29	-0.52	
11,243.00	92.47	180.61	8,905.31	-2,400.61	-204.18	2,407.04	1.50	1.50	-0.09	
11,274.00	92.71	180.46	8,903.91	-2,431.58	-204.46	2,437.99	0.91	0.77	-0.48	
11,306.00	92.87	180.68	8,902.35	-2,463.54	-204.78	2,469.94	0.85	0.50	0.69	
11,337.00	92.81	180.53	8,900.81	-2,494.50	-205.11	2,500.89	0.52	-0.19	-0.48	
11,368.00	92.52	180.12	8,899.37	-2,525.47	-205.28	2,531.83	1.62	-0.94	-1.32	
11,400.00	92.19	179.60	8,898.06	-2,557.44	-205.21	2,563.77	1.92	-1.03	-1.63	
11,431.00	92.24	179.60	8,896.86	-2,588.42	-204.99	2,594.71	0.16	0.16	0.00	
11,463.00	91.81	179.34	8,895.73	-2,620.39	-204.69	2,626.65	1.57	-1.34	-0.81	
11,557.00	90.90	178.30	8,893.50	-2,714.35	-202.76	2,720.44	1.47	-0.97	-1.11	
11,652.00	90.42	177.41	8,892.41	-2,809.27	-199.20	2,815.14	1.06	-0.51	-0.94	
11,746.00	88.89	176.99	8,892.98	-2,903.16	-194.61	2,908.75	1.69	-1.63	-0.45	
11,840.00	89.68	176.42	8,894.15	-2,996.99	-189.21	3,002.27	1.04	0.84	-0.61	
11,935.00	90.01	177.25	8,894.41	-3,091.85	-183.96	3,096.83	0.94	0.35	0.87	
12,029.00	91.05	179.60	8,893.54	-3,185.80	-181.38	3,190.59	2.73	1.11	2.50	
12,124.00	88.95	180.16	8,893.54	-3,280.79	-181.18	3,285.49	2.29	-2.21	0.59	
12,218.00	88.75	180.29	8,895.42	-3,374.77	-181.55	3,379.41	0.25	-0.21	0.14	
12,313.00	87.01	181.35	8,898.94	-3,469.69	-182.91	3,474.30	2.14	-1.83	1.12	
12,407.00	87.29	181.55	8,903.61	-3,563.55	-185.29	3,568.17	0.37	0.30	0.21	
12,502.00	87.93	181.68	8,907.57	-3,658.43	-187.96	3,663.08	0.69	0.67	0.14	
12,596.00	89.84	181.13	8,909.40	-3,752.37	-190.26	3,757.04	2.11	2.03	-0.59	

Company:	Centennial Resources Development, Inc.	Local Co-ordinate Reference:	Well 101H
Project:	Lea County, NM (NAD83 - NME)	TVD Reference:	RKB @ 3506.90usft (H&P 618)
Site:	Tour Bus 23 State	MD Reference:	RKB @ 3506.90usft (H&P 618)
Well:	101H	North Reference:	True
Wellbore:	OH / 65471	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 618)	Database:	USA Compass

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)
12,691.00	88.64	180.58	8,910.66	-3,847.35	-191.68	3,852.00	1.39	-1.26	-0.58
12,785.00	86.98	180.23	8,914.25	-3,941.28	-192.35	3,945.87	1.80	-1.77	-0.37
12,879.00	88.90	180.45	8,917.63	-4,035.21	-192.90	4,039.75	2.06	2.04	0.23
12,974.00	89.98	180.94	8,918.56	-4,130.20	-194.06	4,134.70	1.25	1.14	0.52
13,068.00	89.98	180.51	8,918.59	-4,224.19	-195.25	4,228.66	0.46	0.00	-0.46
13,163.00	88.76	179.66	8,919.64	-4,319.18	-195.39	4,323.57	1.57	-1.28	-0.89
13,257.00	88.10	178.70	8,922.21	-4,413.14	-194.04	4,417.39	1.24	-0.70	-1.02
13,351.00	87.91	178.43	8,925.49	-4,507.05	-191.69	4,511.12	0.35	-0.20	-0.29
13,446.00	88.31	178.17	8,928.62	-4,601.96	-188.87	4,605.83	0.50	0.42	-0.27
13,540.00	88.22	177.76	8,931.47	-4,695.85	-185.54	4,699.51	0.45	-0.10	-0.44
13,605.00	88.19	177.59	8,933.50	-4,760.77	-182.90	4,764.25	0.27	-0.05	-0.26
Final Phoenix MWD Survey									
13,668.00	88.19	177.59	8,935.49	-4,823.68	-180.25	4,827.00	0.00	0.00	0.00
Projection to TD									

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,853.00	1,852.67	-31.20	-3.23	Tie In
1,911.00	1,910.62	-33.56	-3.90	First Phoenix MWD Survey
13,605.00	8,933.50	265.00	-163.28	Final Phoenix MWD Survey
13,668.00	8,935.49	265.00	-183.84	Projection to TD