



PHOENIX
TECHNOLOGY SERVICES

Centennial Resources Development, Inc.

Lea County, NM (NAD83 - UTM Zone 13)
Winnebago 30 State Com
504H

OH / 65921

Survey: Phoenix MWD Surveys

Standard Survey Report

06 February, 2020

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CENTENNIAL
RESOURCE DEVELOPMENT, INC

Company:	Centennial Resources Development, Inc.	Local Co-ordinate Reference:	Well 504H
Project:	Lea County, NM (NAD83 - UTM Zone 13)	TVD Reference:	RKB @ 3493.50usft (H&P 618)
Site:	Winnebago 30 State Com	MD Reference:	RKB @ 3493.50usft (H&P 618)
Well:	504H	North Reference:	True
Wellbore:	OH / 65921	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 618)	Database:	USA Compass

Project	Lea County, NM (NAD83 - UTM Zone 13)		
Map System:	Universal Transverse Mercator (US Survey Fee	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)	Using geodetic scale factor	

Site		Winnebago 30 State Com			
Site Position:		Northing:	11,748,785.38 usft	Latitude:	32.356247
From:	Map	Easting:	2,131,624.41 usft	Longitude:	-103.408813
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.85 °

Well	504H					
Well Position	+N/-S	0.00 usft	Northing:	11,748,785.75 usft	Latitude:	32.356247
	+E/-W	0.00 usft	Easting:	2,131,654.40 usft	Longitude:	-103.408716
Position Uncertainty		1.00 usft	Wellhead Elevation:	usft	Ground Level:	3,466.50 usft

Wellbore	OH / 65921				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	1/28/2020	6.63	60.02	47,846.00000000

Design	Surveys (H&P 618)				
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Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	1,831.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	3.84

Survey Program	Date	2/6/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
132.00	1,831.00	Invictus MWD Surveys (OH / Surface)	MWD	OWSG MWD - Standard	
1,900.00	15,271.00	Phoenix MWD Surveys (OH / 65921)	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)
1,831.00	0.70	254.66	1,830.90	-11.94	-10.27	-12.60	0.00	0.00	0.00
1,900.00	0.38	284.17	1,899.90	-12.00	-10.89	-12.70	0.60	-0.46	42.77
First Phoenix MWD Survey									
1,978.00	0.53	89.86	1,977.89	-11.94	-10.78	-12.63	1.16	0.19	212.42
2,073.00	2.41	103.18	2,072.86	-12.39	-8.40	-12.92	2.00	1.98	14.02
2,167.00	2.99	106.54	2,166.75	-13.54	-4.13	-13.78	0.64	0.62	3.57
2,261.00	2.53	108.02	2,260.65	-14.88	0.20	-14.83	0.50	-0.49	1.57
2,356.00	2.79	108.94	2,355.54	-16.28	4.38	-15.95	0.28	0.27	0.97
2,450.00	4.17	116.58	2,449.37	-18.55	9.60	-17.86	1.55	1.47	8.13
2,545.00	5.75	118.31	2,544.01	-22.35	16.88	-21.17	1.67	1.66	1.82

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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)
2,639.00	6.31	118.44	2,637.49	-27.04	25.57	-25.27	0.60	0.60	0.14
2,733.00	6.21	119.07	2,730.93	-31.98	34.55	-29.59	0.13	-0.11	0.67
2,828.00	5.98	119.84	2,825.39	-36.93	43.34	-33.95	0.26	-0.24	0.81
2,922.00	5.79	119.51	2,918.90	-41.71	51.71	-38.15	0.21	-0.20	-0.35
3,017.00	5.48	119.19	3,013.44	-46.28	59.84	-42.17	0.33	-0.33	-0.34
3,111.00	5.15	118.82	3,107.03	-50.50	67.45	-45.87	0.35	-0.35	-0.39
3,205.00	5.36	118.37	3,200.64	-54.62	75.01	-49.48	0.23	0.22	-0.48
3,299.00	6.52	117.78	3,294.13	-59.20	83.60	-53.46	1.24	1.23	-0.63
3,394.00	6.37	116.22	3,388.53	-64.04	93.10	-57.66	0.24	-0.16	-1.64
3,488.00	6.28	113.39	3,481.96	-68.38	102.50	-61.36	0.35	-0.10	-3.01
3,582.00	6.54	111.38	3,575.37	-72.37	112.20	-64.70	0.37	0.28	-2.14
3,676.00	6.53	111.09	3,668.76	-76.25	122.17	-67.90	0.04	-0.01	-0.31
3,771.00	6.34	108.43	3,763.16	-79.85	132.19	-70.82	0.37	-0.20	-2.80
3,865.00	6.44	113.03	3,856.58	-83.56	141.96	-73.86	0.55	0.11	4.89
3,959.00	6.76	116.64	3,949.96	-88.10	151.76	-77.74	0.56	0.34	3.84
4,054.00	6.91	116.69	4,044.28	-93.17	161.86	-82.12	0.16	0.16	0.05
4,148.00	6.59	116.93	4,137.63	-98.15	171.72	-86.43	0.34	-0.34	0.26
4,242.00	5.69	116.26	4,231.09	-102.66	180.71	-90.33	0.96	-0.96	-0.71
4,336.00	5.78	117.19	4,324.62	-106.88	189.10	-93.98	0.14	0.10	0.99
4,431.00	6.31	116.24	4,419.09	-111.38	198.04	-97.87	0.57	0.56	-1.00
4,525.00	5.81	115.72	4,512.56	-115.73	206.96	-101.61	0.54	-0.53	-0.55
4,620.00	5.59	119.12	4,607.09	-120.07	215.33	-105.37	0.42	-0.23	3.58
4,714.00	5.63	123.08	4,700.64	-124.81	223.20	-109.58	0.41	0.04	4.21
4,808.00	5.28	124.61	4,794.22	-129.78	230.62	-114.05	0.40	-0.37	1.63
4,902.00	4.80	124.22	4,887.86	-134.45	237.43	-118.25	0.51	-0.51	-0.41
4,996.00	4.19	127.24	4,981.57	-138.74	243.42	-122.13	0.70	-0.65	3.21
5,091.00	3.86	125.73	5,076.33	-142.71	248.78	-125.73	0.36	-0.35	-1.59
5,185.00	3.97	124.29	5,170.11	-146.39	254.03	-129.05	0.16	0.12	-1.53
5,280.00	3.77	122.57	5,264.90	-149.92	259.38	-132.22	0.24	-0.21	-1.81
5,374.00	3.71	123.28	5,358.70	-153.26	264.53	-135.20	0.08	-0.06	0.76
5,468.00	3.31	126.09	5,452.52	-156.52	269.26	-138.14	0.46	-0.43	2.99
5,537.00	2.98	124.52	5,521.41	-158.71	272.35	-140.12	0.49	-0.48	-2.28
5,658.00	2.67	126.61	5,642.27	-162.18	277.21	-143.25	0.27	-0.26	1.73
5,751.00	2.49	130.69	5,735.17	-164.79	280.48	-145.63	0.28	-0.19	4.39
5,846.00	2.67	129.35	5,830.08	-167.53	283.75	-148.15	0.20	0.19	-1.41
5,940.00	2.56	129.73	5,923.98	-170.26	287.06	-150.66	0.12	-0.12	0.40
6,034.00	2.49	135.96	6,017.89	-173.07	290.09	-153.26	0.30	-0.07	6.63
6,128.00	2.19	129.57	6,111.81	-175.69	292.90	-155.68	0.42	-0.32	-6.80
6,223.00	2.07	128.73	6,206.74	-177.92	295.63	-157.72	0.13	-0.13	-0.88
6,317.00	1.62	125.15	6,300.70	-179.74	298.05	-159.38	0.49	-0.48	-3.81
6,411.00	1.69	112.43	6,394.66	-181.04	300.41	-160.51	0.40	0.07	-13.53
6,506.00	1.74	122.50	6,489.61	-182.35	302.92	-161.65	0.32	0.05	10.60
6,600.00	1.81	116.20	6,583.57	-183.77	305.46	-162.90	0.22	0.07	-6.70

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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)
6,694.00	1.59	118.28	6,677.53	-185.04	307.94	-164.00	0.24	-0.23	2.21
6,789.00	1.51	112.91	6,772.49	-186.15	310.25	-164.96	0.17	-0.08	-5.65
6,883.00	1.61	111.38	6,866.46	-187.12	312.62	-165.76	0.12	0.11	-1.63
6,977.00	1.50	106.28	6,960.42	-187.94	315.04	-166.42	0.19	-0.12	-5.43
7,071.00	1.30	113.33	7,054.40	-188.71	317.20	-167.04	0.28	-0.21	7.50
7,166.00	1.43	116.16	7,149.37	-189.66	319.25	-167.85	0.15	0.14	2.98
7,260.00	1.45	103.05	7,243.34	-190.44	321.46	-168.49	0.35	0.02	-13.95
7,354.00	1.53	98.62	7,337.31	-190.90	323.86	-168.78	0.15	0.09	-4.71
7,448.00	1.10	95.81	7,431.28	-191.18	326.00	-168.92	0.46	-0.46	-2.99
7,543.00	1.11	105.85	7,526.26	-191.52	327.79	-169.14	0.20	0.01	10.57
7,637.00	1.05	93.99	7,620.25	-191.83	329.53	-169.33	0.25	-0.06	-12.62
7,731.00	1.11	78.72	7,714.23	-191.72	331.28	-169.10	0.31	0.06	-16.24
7,826.00	0.90	71.38	7,809.22	-191.30	332.89	-168.57	0.26	-0.22	-7.73
7,920.00	1.18	56.01	7,903.20	-190.52	334.39	-167.70	0.42	0.30	-16.35
8,014.00	0.88	35.78	7,997.19	-189.39	335.61	-166.49	0.50	-0.32	-21.52
8,109.00	1.03	32.70	8,092.17	-188.08	336.50	-165.13	0.17	0.16	-3.24
8,203.00	0.93	9.46	8,186.16	-186.62	337.08	-163.63	0.43	-0.11	-24.72
8,297.00	1.41	359.45	8,280.14	-184.71	337.20	-161.71	0.55	0.51	-10.65
8,392.00	1.47	0.87	8,375.11	-182.32	337.20	-159.33	0.07	0.06	1.49
8,486.00	1.53	0.32	8,469.08	-179.86	337.23	-156.87	0.07	0.06	-0.59
8,580.00	1.30	351.93	8,563.05	-177.55	337.09	-154.58	0.33	-0.24	-8.93
8,676.00	1.30	337.84	8,659.03	-175.47	336.52	-152.53	0.33	0.00	-14.68
8,769.00	1.30	303.41	8,752.00	-173.91	335.25	-151.07	0.83	0.00	-37.02
8,864.00	1.00	270.47	8,846.98	-173.31	333.52	-150.58	0.75	-0.32	-34.67
8,958.00	1.18	267.57	8,940.97	-173.34	331.73	-150.74	0.20	0.19	-3.09
9,052.00	0.75	268.55	9,034.95	-173.40	330.15	-150.90	0.46	-0.46	1.04
9,147.00	0.47	237.85	9,129.95	-173.62	329.20	-151.19	0.44	-0.29	-32.32
9,241.00	0.82	228.38	9,223.94	-174.27	328.37	-151.89	0.39	0.37	-10.07
9,335.00	1.17	224.03	9,317.93	-175.41	327.20	-153.10	0.38	0.37	-4.63
9,430.00	2.27	229.61	9,412.88	-177.33	325.09	-155.16	1.17	1.16	5.87
9,524.00	2.85	235.57	9,506.79	-179.85	321.74	-157.90	0.68	0.62	6.34
9,618.00	3.16	230.25	9,600.66	-182.83	317.82	-161.14	0.44	0.33	-5.66
9,712.00	2.66	227.82	9,694.54	-185.95	314.22	-164.49	0.55	-0.53	-2.59
9,800.00	2.72	234.56	9,782.44	-188.54	311.00	-167.28	0.37	0.07	7.66
9,847.00	3.55	22.64	9,829.41	-187.84	310.65	-166.61	12.83	1.77	315.06
9,894.00	9.12	11.32	9,876.11	-182.84	311.95	-161.54	12.09	11.85	-24.09
9,941.00	15.11	4.01	9,922.05	-173.07	313.11	-151.71	13.13	12.74	-15.55
9,988.00	19.09	0.13	9,966.96	-159.26	313.55	-137.91	8.80	8.47	-8.26
10,035.00	22.74	356.36	10,010.86	-142.51	312.99	-121.22	8.27	7.77	-8.02
10,083.00	26.48	354.83	10,054.49	-122.58	311.44	-101.45	7.90	7.79	-3.19
10,130.00	31.99	352.86	10,095.49	-99.78	308.95	-78.86	11.90	11.72	-4.19
10,177.00	35.79	353.27	10,134.50	-73.76	305.79	-53.12	8.10	8.09	0.87
10,224.00	39.44	353.94	10,171.72	-45.26	302.60	-24.89	7.81	7.77	1.43

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10,272.00	42.04	357.92	10,208.09	-14.03	300.40	6.12	7.65	5.42	8.29
10,319.00	45.05	358.62	10,242.16	18.33	299.43	38.34	6.49	6.40	1.49
10,366.00	47.82	359.63	10,274.54	52.38	298.92	72.28	6.10	5.89	2.15
10,413.00	51.12	1.26	10,305.08	88.10	299.21	107.94	7.50	7.02	3.47
10,460.00	53.29	2.96	10,333.89	125.21	300.58	145.05	5.43	4.62	3.62
10,507.00	54.39	2.67	10,361.62	163.11	302.45	182.99	2.39	2.34	-0.62
10,555.00	55.10	2.04	10,389.33	202.27	304.06	222.18	1.83	1.48	-1.31
10,602.00	57.27	0.76	10,415.48	241.30	305.01	261.19	5.14	4.62	-2.72
10,649.00	60.50	359.90	10,439.77	281.53	305.23	301.34	7.05	6.87	-1.83
10,696.00	65.82	0.79	10,460.98	323.45	305.49	343.19	11.44	11.32	1.89
10,744.00	69.52	1.65	10,479.21	367.84	306.44	387.53	7.88	7.71	1.79
10,791.00	73.26	1.94	10,494.21	412.35	307.84	432.04	7.98	7.96	0.62
10,838.00	77.34	2.63	10,506.13	457.76	309.65	477.47	8.80	8.68	1.47
10,933.00	89.02	359.90	10,517.40	551.90	311.70	571.53	12.62	12.29	-2.87
11,027.00	90.85	0.58	10,517.50	645.89	312.10	665.34	2.08	1.95	0.72
11,121.00	91.24	0.76	10,515.79	739.87	313.20	759.18	0.46	0.41	0.19
11,216.00	90.93	0.51	10,513.99	834.85	314.25	854.02	0.42	-0.33	-0.26
11,310.00	90.59	0.44	10,512.74	928.84	315.03	947.85	0.37	-0.36	-0.07
11,405.00	92.74	0.31	10,509.98	1,023.79	315.65	1,042.63	2.27	2.26	-0.14
11,499.00	94.36	0.72	10,504.16	1,117.60	316.49	1,136.29	1.78	1.72	0.44
11,593.00	91.47	0.36	10,499.38	1,211.46	317.38	1,230.00	3.10	-3.07	-0.38
11,687.00	92.26	0.27	10,496.32	1,305.41	317.89	1,323.77	0.85	0.84	-0.10
11,782.00	92.89	0.28	10,492.06	1,400.31	318.35	1,418.49	0.66	0.66	0.01
11,876.00	92.61	0.13	10,487.55	1,494.21	318.69	1,512.19	0.34	-0.30	-0.16
11,970.00	93.17	359.96	10,482.81	1,588.09	318.76	1,605.87	0.62	0.60	-0.18
12,065.00	92.63	359.37	10,478.00	1,682.96	318.20	1,700.49	0.84	-0.57	-0.62
12,159.00	89.93	0.40	10,475.90	1,776.93	318.02	1,794.24	3.07	-2.87	1.10
12,253.00	90.19	0.35	10,475.80	1,870.93	318.63	1,888.06	0.28	0.28	-0.05
12,348.00	90.86	359.98	10,474.93	1,965.92	318.91	1,982.86	0.81	0.71	-0.39
12,442.00	91.55	359.66	10,472.96	2,059.90	318.61	2,076.61	0.81	0.73	-0.34
12,536.00	89.24	0.92	10,472.31	2,153.89	319.09	2,170.42	2.80	-2.46	1.34
12,631.00	89.98	0.96	10,472.95	2,248.87	320.64	2,265.30	0.78	0.78	0.04
12,724.00	92.04	1.69	10,471.31	2,341.83	322.79	2,358.19	2.35	2.22	0.78
12,819.00	92.29	1.39	10,467.73	2,436.72	325.35	2,453.04	0.41	0.26	-0.32
12,913.00	92.63	0.97	10,463.69	2,530.62	327.28	2,546.85	0.57	0.36	-0.45
13,007.00	93.20	0.34	10,458.91	2,624.49	328.35	2,640.59	0.90	0.61	-0.67
13,101.00	93.55	0.74	10,453.38	2,718.32	329.24	2,734.27	0.56	0.37	0.43
13,196.00	91.12	359.95	10,449.51	2,813.23	329.81	2,829.00	2.69	-2.56	-0.83
13,290.00	91.50	359.62	10,447.36	2,907.21	329.46	2,922.74	0.54	0.40	-0.35
13,384.00	92.13	359.09	10,444.38	3,001.15	328.40	3,016.41	0.88	0.67	-0.56
13,479.00	92.27	358.54	10,440.73	3,096.06	326.43	3,110.97	0.60	0.15	-0.58
13,573.00	92.40	357.97	10,436.90	3,189.94	323.57	3,204.45	0.62	0.14	-0.61
13,667.00	92.89	357.48	10,432.57	3,283.77	319.85	3,297.81	0.74	0.52	-0.52
13,761.00	91.52	359.12	10,428.95	3,377.65	317.06	3,391.30	2.27	-1.46	1.74

Company:	Centennial Resources Development, Inc.	Local Co-ordinate Reference:	Well 504H
Project:	Lea County, NM (NAD83 - UTM Zone 13)	TVD Reference:	RKB @ 3493.50usft (H&P 618)
Site:	Winnebago 30 State Com	MD Reference:	RKB @ 3493.50usft (H&P 618)
Well:	504H	North Reference:	True
Wellbore:	OH / 65921	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)
13,856.00	90.87	358.43	10,426.97	3,472.61	315.03	3,485.91	1.00	-0.68	-0.73
13,950.00	90.50	357.77	10,425.84	3,566.55	311.91	3,579.43	0.80	-0.39	-0.70
14,044.00	90.36	359.47	10,425.14	3,660.51	309.65	3,673.03	1.81	-0.15	1.81
14,138.00	90.41	359.27	10,424.51	3,754.51	308.62	3,766.74	0.22	0.05	-0.21
14,233.00	90.53	358.63	10,423.73	3,849.49	306.88	3,861.40	0.69	0.13	-0.67
14,327.00	90.84	358.16	10,422.60	3,943.44	304.24	3,954.96	0.60	0.33	-0.50
14,421.00	92.26	0.50	10,420.06	4,037.39	303.14	4,048.63	2.91	1.51	2.49
14,516.00	92.53	359.86	10,416.09	4,132.31	303.44	4,143.35	0.73	0.28	-0.67
14,610.00	92.95	359.54	10,411.60	4,226.20	302.95	4,237.00	0.56	0.45	-0.34
14,704.00	93.29	359.73	10,406.48	4,320.06	302.35	4,330.61	0.41	0.36	0.20
14,799.00	91.79	0.74	10,402.27	4,414.96	302.74	4,425.32	1.90	-1.58	1.06
14,893.00	92.12	0.48	10,399.06	4,508.90	303.74	4,519.12	0.45	0.35	-0.28
14,987.00	92.27	0.11	10,395.46	4,602.83	304.23	4,612.87	0.42	0.16	-0.39
15,081.00	92.84	359.85	10,391.27	4,696.73	304.19	4,706.56	0.67	0.61	-0.28
15,176.00	90.52	0.32	10,388.49	4,791.69	304.34	4,801.31	2.49	-2.44	0.49
15,211.00	90.47	0.06	10,388.19	4,826.69	304.45	4,836.24	0.76	-0.14	-0.74
Final Phoenix MWD Survey									
15,271.00	90.47	0.06	10,387.69	4,886.68	304.51	4,896.11	0.00	0.00	0.00
Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
1,831.00				Tie In
1,900.00	1,899.90	-12.00	-10.89	First Phoenix MWD Survey
15,211.00	10,388.19	4,826.69	304.45	Final Phoenix MWD Survey
15,271.00	10,387.69	4,886.68	304.51	Projection to TD