



PHOENIX
TECHNOLOGY SERVICES

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Centennial Resources Development, Inc.

**Lea County, NM (NAD83 - UTM Zone 13)
Duck Hunt 1 State Com
602H**

OH / 65514

Survey: Phoenix MWD Surveys

Standard Survey Report

04 November, 2019



CENTENNIAL
RESOURCE DEVELOPMENT, INC

Company:	Centennial Resources Development, Inc.	Local Co-ordinate Reference:	Well 602H
Project:	Lea County, NM (NAD83 - UTM Zone 13)	TVD Reference:	RKB @ 3394.00usft (H&P 650)
Site:	Duck Hunt 1 State Com	MD Reference:	RKB @ 3394.00usft (H&P 650)
Well:	602H	North Reference:	True
Wellbore:	OH / 65514	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 650)	Database:	USA Compass

Project	Lea County, NM (NAD83 - UTM Zone 13)		
Map System:	Universal Transverse Mercator (US Survey Feet)	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		Duck Hunt 1 State Com			
Site Position:		Northing:	11,740,221.78 usft	Latitude:	32.332815
From:	Map	Easting:	2,129,032.10 usft	Longitude:	-103.417617
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.85 °

Well	602H					
Well Position	+N/-S	0.00 usft	Northing:	11,740,201.91 usft	Latitude:	32.332811
	+E/-W	0.00 usft	Easting:	2,127,788.35 usft	Longitude:	-103.421645
Position Uncertainty		1.00 usft	Wellhead Elevation:	usft	Ground Level:	3,367.50 usft

Wellbore	OH / 65514				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	10/13/2019	6.63	60.03	47,868.00000000

Design	Surveys (H&P 650)				
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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	177.42

Survey Program		Date	10/25/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
26.50	1,825.50	Wildfire MWD Surveys (OH / 65514)	MWD	OWSG MWD - Standard	
1,898.00	15,779.00	Phoenix MWD Surveys (OH / 65514)	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)	
1,825.50	1.70	188.70	1,825.38	-7.18	-6.03	6.90	0.00	0.00	0.00	
Tie In - OH										
1,898.00	1.86	217.36	1,897.85	-9.18	-6.91	8.86	1.23	0.22	39.53	
First Phoenix MWD Survey - OH										
1,992.00	1.11	232.86	1,991.81	-10.94	-8.56	10.55	0.90	-0.80	16.49	
2,086.00	0.66	7.48	2,085.81	-10.96	-9.21	10.53	1.75	-0.48	143.21	
2,180.00	2.17	25.64	2,179.78	-8.82	-8.37	8.43	1.66	1.61	19.32	
2,274.00	3.62	26.98	2,273.66	-4.57	-6.26	4.28	1.54	1.54	1.43	
2,368.00	4.03	27.82	2,367.45	1.00	-3.37	-1.15	0.44	0.44	0.89	

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Survey

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2,462.00	4.86	25.29	2,461.16	7.52	-0.12	-7.52	0.91	0.88	-2.69
2,650.00	6.58	24.41	2,648.22	24.53	7.73	-24.16	0.92	0.91	-0.47
2,743.00	7.46	29.29	2,740.52	34.65	12.89	-34.03	1.14	0.95	5.25
2,837.00	8.30	28.80	2,833.63	45.92	19.14	-45.01	0.90	0.89	-0.52
2,931.00	9.38	25.26	2,926.52	58.79	25.68	-57.58	1.29	1.15	-3.77
3,026.00	10.87	23.19	3,020.03	74.03	32.51	-72.49	1.61	1.57	-2.18
3,120.00	11.85	23.93	3,112.19	91.00	39.91	-89.11	1.05	1.04	0.79
3,214.00	12.44	25.41	3,204.09	108.96	48.17	-106.69	0.71	0.63	1.57
3,308.00	12.43	26.70	3,295.88	127.15	57.06	-124.45	0.30	-0.01	1.37
3,402.00	12.37	26.24	3,387.69	145.22	66.06	-142.10	0.12	-0.06	-0.49
3,496.00	11.28	22.76	3,479.70	162.73	74.07	-159.23	1.39	-1.16	-3.70
3,591.00	10.87	22.70	3,572.93	179.56	81.12	-175.72	0.43	-0.43	-0.06
3,685.00	10.87	24.14	3,665.24	195.82	88.16	-191.65	0.29	0.00	1.53
3,779.00	10.89	25.82	3,757.55	211.90	95.66	-207.38	0.34	0.02	1.79
3,873.00	10.29	27.34	3,849.95	227.35	103.38	-222.47	0.70	-0.64	1.62
3,967.00	9.84	27.69	3,942.50	241.92	110.97	-236.68	0.48	-0.48	0.37
4,061.00	9.77	26.50	4,035.13	256.17	118.26	-250.59	0.23	-0.07	-1.27
4,155.00	10.92	25.55	4,127.60	271.35	125.66	-265.41	1.24	1.22	-1.01
4,249.00	11.45	23.81	4,219.81	287.91	133.27	-281.62	0.67	0.56	-1.85
4,343.00	10.77	23.33	4,312.05	304.52	140.51	-297.88	0.73	-0.72	-0.51
4,437.00	10.10	22.41	4,404.50	320.20	147.13	-313.25	0.73	-0.71	-0.98
4,532.00	9.97	22.16	4,498.04	335.52	153.41	-328.27	0.14	-0.14	-0.26
4,626.00	10.72	23.80	4,590.51	351.05	160.01	-343.49	0.86	0.80	1.74
4,720.00	11.78	26.85	4,682.71	367.61	167.87	-359.68	1.29	1.13	3.24
4,814.00	12.22	28.52	4,774.65	384.91	176.95	-376.56	0.60	0.47	1.78
4,908.00	11.93	29.03	4,866.57	402.15	186.42	-393.35	0.33	-0.31	0.54
5,003.00	11.52	29.34	4,959.59	419.01	195.83	-409.77	0.44	-0.43	0.33
5,096.00	11.06	29.54	5,050.79	434.86	204.78	-425.20	0.50	-0.49	0.22
5,190.00	10.42	29.36	5,143.14	450.12	213.39	-440.05	0.68	-0.68	-0.19
5,284.00	10.83	27.00	5,235.53	465.39	221.57	-454.95	0.64	0.44	-2.51
5,378.00	11.03	25.97	5,327.83	481.35	229.52	-470.53	0.30	0.21	-1.10
5,458.00	10.91	25.26	5,406.37	495.07	236.10	-483.94	0.23	-0.15	-0.89
5,551.00	10.56	24.91	5,497.74	510.76	243.44	-499.28	0.38	-0.38	-0.38
5,646.00	10.33	25.44	5,591.16	526.35	250.77	-514.53	0.26	-0.24	0.56
5,740.00	9.95	25.92	5,683.70	541.26	257.94	-529.10	0.41	-0.40	0.51
5,834.00	10.43	25.44	5,776.21	556.25	265.14	-543.75	0.52	0.51	-0.51
5,928.00	10.59	25.14	5,868.64	571.75	272.47	-558.91	0.18	0.17	-0.32
6,022.00	9.96	25.09	5,961.13	586.94	279.58	-573.76	0.67	-0.67	-0.05
6,116.00	8.78	25.09	6,053.87	600.80	286.07	-587.31	1.26	-1.26	0.00
6,211.00	8.26	24.77	6,147.82	613.56	292.01	-599.79	0.55	-0.55	-0.34
6,305.00	8.04	24.23	6,240.87	625.68	297.53	-611.66	0.25	-0.23	-0.57
6,399.00	8.06	22.19	6,333.95	637.78	302.72	-623.51	0.30	0.02	-2.17
6,493.00	8.03	19.93	6,427.02	650.05	307.45	-635.56	0.34	-0.03	-2.40

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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)
6,587.00	7.09	17.45	6,520.21	661.76	311.43	-647.07	1.06	-1.00	-2.64
6,681.00	5.72	18.09	6,613.62	671.75	314.62	-656.90	1.46	-1.46	0.68
6,775.00	4.70	24.62	6,707.23	679.70	317.68	-664.71	1.25	-1.09	6.95
6,869.00	3.20	30.42	6,801.00	685.47	320.61	-670.34	1.65	-1.60	6.17
6,963.00	1.62	40.20	6,894.92	688.74	322.80	-673.51	1.73	-1.68	10.40
7,057.00	1.30	44.32	6,988.89	690.52	324.40	-675.22	0.36	-0.34	4.38
7,152.00	1.26	43.85	7,083.86	692.05	325.88	-676.67	0.04	-0.04	-0.49
7,246.00	0.39	22.77	7,177.85	693.09	326.72	-677.68	0.96	-0.93	-22.43
7,341.00	0.20	272.68	7,272.85	693.39	326.68	-677.98	0.52	-0.20	-115.88
7,434.00	0.24	303.95	7,365.85	693.51	326.35	-678.11	0.13	0.04	33.62
7,528.00	0.24	256.52	7,459.85	693.57	326.00	-678.19	0.21	0.00	-50.46
7,623.00	0.28	208.06	7,554.85	693.32	325.70	-677.96	0.23	0.04	-51.01
7,717.00	0.50	244.96	7,648.85	692.94	325.22	-677.60	0.34	0.23	39.26
7,811.00	0.66	255.69	7,742.84	692.64	324.32	-677.34	0.21	0.17	11.41
7,905.00	0.72	266.48	7,836.83	692.47	323.21	-677.22	0.15	0.06	11.48
7,999.00	0.89	276.08	7,930.83	692.51	321.89	-677.32	0.23	0.18	10.21
8,093.00	1.09	279.62	8,024.81	692.73	320.28	-677.62	0.22	0.21	3.77
8,187.00	1.18	306.19	8,118.79	693.46	318.62	-678.41	0.56	0.10	28.27
8,281.00	1.10	2.53	8,212.78	694.93	317.88	-679.92	1.15	-0.09	59.94
8,375.00	1.18	71.32	8,306.76	696.14	318.84	-681.08	1.37	0.09	73.18
8,469.00	1.53	92.17	8,400.74	696.40	321.01	-681.25	0.64	0.37	22.18
8,562.00	1.37	87.35	8,493.71	696.41	323.36	-681.15	0.22	-0.17	-5.18
8,656.00	1.23	80.85	8,587.68	696.62	325.48	-681.26	0.22	-0.15	-6.91
8,750.00	0.98	82.99	8,681.67	696.88	327.27	-681.44	0.27	-0.27	2.28
8,844.00	0.79	84.18	8,775.65	697.04	328.71	-681.54	0.20	-0.20	1.27
8,938.00	0.68	64.70	8,869.65	697.35	329.86	-681.79	0.29	-0.12	-20.72
9,032.00	0.79	67.37	8,963.64	697.83	330.96	-682.23	0.12	0.12	2.84
9,127.00	0.85	55.03	9,058.63	698.49	332.15	-682.83	0.20	0.06	-12.99
9,220.00	0.67	65.22	9,151.62	699.11	333.20	-683.41	0.24	-0.19	10.96
9,314.00	0.76	92.37	9,245.61	699.32	334.33	-683.56	0.37	0.10	28.88
9,408.00	0.84	103.53	9,339.60	699.13	335.62	-683.31	0.19	0.09	11.87
9,502.00	0.58	135.19	9,433.60	698.63	336.62	-682.77	0.49	-0.28	33.68
9,597.00	1.89	157.47	9,528.57	696.84	337.56	-680.94	1.44	1.38	23.45
9,691.00	1.65	143.95	9,622.53	694.32	338.95	-678.36	0.51	-0.26	-14.38
9,785.00	1.22	120.59	9,716.50	692.71	340.61	-676.68	0.76	-0.46	-24.85
9,879.00	1.07	130.11	9,810.48	691.64	342.14	-675.54	0.26	-0.16	10.13
9,974.00	1.02	141.50	9,905.47	690.41	343.35	-674.25	0.22	-0.05	11.99
10,068.00	1.03	157.53	9,999.45	688.97	344.19	-672.78	0.30	0.01	17.05
10,162.00	1.10	152.78	10,093.44	687.39	344.93	-671.16	0.12	0.07	-5.05
10,256.00	1.53	137.74	10,187.41	685.66	346.19	-669.38	0.58	0.46	-16.00
10,350.00	1.94	144.39	10,281.37	683.43	347.96	-667.08	0.49	0.44	7.07
10,444.00	2.54	142.04	10,375.30	680.50	350.16	-664.05	0.65	0.64	-2.50
10,539.00	2.81	144.36	10,470.19	676.95	352.82	-660.38	0.31	0.28	2.44
10,633.00	3.18	143.94	10,564.06	672.97	355.69	-656.27	0.39	0.39	-0.45

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10,727.00	3.58	149.55	10,657.90	668.33	358.71	-651.50	0.55	0.43	5.97
10,821.00	3.54	161.11	10,751.72	663.05	361.14	-646.12	0.76	-0.04	12.30
10,876.00	3.16	170.26	10,806.63	659.95	361.95	-642.99	1.19	-0.69	16.64
10,908.00	2.95	166.71	10,838.58	658.28	362.29	-641.31	0.88	-0.66	-11.09
10,955.00	4.85	170.91	10,885.47	655.14	362.88	-638.14	4.09	4.04	8.94
11,002.00	9.21	179.39	10,932.11	649.42	363.23	-632.41	9.51	9.28	18.04
11,049.00	16.06	184.69	10,977.94	639.16	362.74	-622.19	14.77	14.57	11.28
11,096.00	21.29	186.86	11,022.45	624.20	361.19	-607.31	11.22	11.13	4.62
11,143.00	23.89	187.21	11,065.84	606.28	358.97	-589.51	5.54	5.53	0.74
11,190.00	27.22	184.93	11,108.24	586.13	356.86	-569.47	7.39	7.09	-4.85
11,237.00	31.34	182.67	11,149.23	563.20	355.36	-546.63	9.07	8.77	-4.81
11,284.00	36.02	181.56	11,188.33	537.16	354.42	-520.66	10.04	9.96	-2.36
11,331.00	39.75	182.38	11,225.42	508.32	353.41	-491.90	8.01	7.94	1.74
11,378.00	44.63	182.04	11,260.23	476.79	352.20	-460.45	10.39	10.38	-0.72
11,425.00	50.25	180.36	11,292.01	442.19	351.50	-425.92	12.24	11.96	-3.57
11,472.00	53.13	179.46	11,321.14	405.32	351.56	-389.08	6.31	6.13	-1.91
11,519.00	56.35	175.85	11,348.27	366.99	353.16	-350.72	9.29	6.85	-7.68
11,566.00	61.59	175.06	11,372.49	326.86	356.36	-310.49	11.24	11.15	-1.68
11,613.00	68.76	176.28	11,392.22	284.35	359.56	-267.88	15.44	15.26	2.60
11,660.00	73.69	177.77	11,407.34	239.93	361.86	-223.39	10.91	10.49	3.17
11,707.00	77.08	177.46	11,419.20	194.49	363.75	-177.92	7.24	7.21	-0.66
11,754.00	79.93	178.22	11,428.56	148.47	365.49	-131.87	6.27	6.06	1.62
11,801.00	82.39	179.13	11,435.78	102.05	366.56	-85.44	5.57	5.23	1.94
11,848.00	88.18	178.25	11,439.65	55.24	367.63	-38.64	12.46	12.32	-1.87
11,879.00	89.44	178.31	11,440.29	24.26	368.56	-7.65	4.07	4.06	0.19
11,901.00	88.18	177.95	11,440.75	2.28	369.28	14.35	5.96	-5.73	-1.64
11,976.00	89.08	177.92	11,442.54	-72.65	371.98	89.32	1.20	1.20	-0.04
12,023.00	88.29	180.71	11,443.62	-119.63	372.54	136.28	6.17	-1.68	5.94
12,069.00	87.90	183.42	11,445.15	-165.57	370.89	182.10	5.95	-0.85	5.89
12,119.00	88.71	183.33	11,446.63	-215.46	367.95	231.81	1.63	1.62	-0.18
12,163.00	89.61	183.66	11,447.27	-259.37	365.26	275.55	2.18	2.05	0.75
12,257.00	89.50	183.69	11,448.00	-353.18	359.24	368.99	0.12	-0.12	0.03
12,351.00	89.64	182.82	11,448.71	-447.02	353.90	462.50	0.94	0.15	-0.93
12,445.00	89.89	182.25	11,449.09	-540.93	349.74	556.13	0.66	0.27	-0.61
12,539.00	89.52	181.55	11,449.58	-634.88	346.63	649.84	0.84	-0.39	-0.74
12,633.00	89.10	181.27	11,450.71	-728.84	344.32	743.60	0.54	-0.45	-0.30
12,728.00	89.10	181.42	11,452.20	-823.80	342.09	838.37	0.16	0.00	0.16
12,822.00	89.24	180.62	11,453.56	-917.78	340.41	932.17	0.86	0.15	-0.85
12,916.00	89.41	180.59	11,454.67	-1,011.77	339.42	1,026.02	0.18	0.18	-0.03
13,010.00	88.82	180.13	11,456.12	-1,105.75	338.83	1,119.88	0.80	-0.63	-0.49
13,104.00	89.41	179.91	11,457.57	-1,199.74	338.80	1,213.77	0.67	0.63	-0.23
13,198.00	90.11	180.20	11,457.97	-1,293.74	338.71	1,307.67	0.81	0.74	0.31
13,292.00	89.52	179.66	11,458.27	-1,387.74	338.82	1,401.58	0.85	-0.63	-0.57

Company:	Centennial Resources Development, Inc.	Local Co-ordinate Reference:	Well 602H
Project:	Lea County, NM (NAD83 - UTM Zone 13)	TVD Reference:	RKB @ 3394.00usft (H&P 650)
Site:	Duck Hunt 1 State Com	MD Reference:	RKB @ 3394.00usft (H&P 650)
Well:	602H	North Reference:	True
Wellbore:	OH / 65514	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 650)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
13,386.00	89.24	179.45	11,459.29	-1,481.73	339.55	1,495.51	0.37	-0.30	-0.22
13,480.00	89.64	178.62	11,460.21	-1,575.71	341.13	1,589.47	0.98	0.43	-0.88
13,574.00	89.47	177.81	11,460.94	-1,669.66	344.06	1,683.46	0.88	-0.18	-0.86
13,669.00	89.78	177.16	11,461.56	-1,764.57	348.23	1,778.45	0.76	0.33	-0.68
13,763.00	90.92	178.36	11,460.98	-1,858.49	351.90	1,872.45	1.76	1.21	1.28
13,825.00	93.78	178.93	11,458.44	-1,920.41	353.37	1,934.37	4.70	4.61	0.92
13,856.00	93.47	178.52	11,456.48	-1,951.34	354.06	1,965.30	1.66	-1.00	-1.32
13,951.00	90.25	176.83	11,453.40	-2,046.20	357.91	2,060.24	3.83	-3.39	-1.78
14,045.00	88.68	177.10	11,454.28	-2,140.06	362.89	2,154.23	1.69	-1.67	0.29
14,139.00	88.40	176.57	11,456.67	-2,233.89	368.08	2,248.19	0.64	-0.30	-0.56
14,193.00	86.98	176.31	11,458.85	-2,287.74	371.43	2,302.14	2.67	-2.63	-0.48
14,233.00	87.14	176.62	11,460.90	-2,327.61	373.89	2,342.08	0.87	0.40	0.78
14,280.00	87.23	176.88	11,463.21	-2,374.48	376.55	2,389.02	0.58	0.19	0.55
14,327.00	87.73	177.17	11,465.27	-2,421.37	378.99	2,435.97	1.23	1.06	0.62
14,374.00	88.24	178.12	11,466.93	-2,468.30	380.92	2,482.94	2.29	1.09	2.02
14,421.00	88.12	178.74	11,468.42	-2,515.26	382.20	2,529.91	1.34	-0.26	1.32
14,468.00	86.69	178.68	11,470.55	-2,562.19	383.26	2,576.85	3.05	-3.04	-0.13
14,515.00	86.67	179.35	11,473.27	-2,609.11	384.07	2,623.75	1.42	-0.04	1.43
14,562.00	87.00	180.25	11,475.86	-2,656.04	384.23	2,670.64	2.04	0.70	1.91
14,609.00	87.45	181.04	11,478.14	-2,702.98	383.70	2,717.51	1.93	0.96	1.68
14,656.00	87.34	182.14	11,480.28	-2,749.91	382.40	2,764.34	2.35	-0.23	2.34
14,703.00	87.59	182.95	11,482.36	-2,796.82	380.32	2,811.10	1.80	0.53	1.72
14,750.00	88.21	183.51	11,484.08	-2,843.71	377.67	2,857.83	1.78	1.32	1.19
14,797.00	88.26	183.77	11,485.53	-2,890.59	374.69	2,904.53	0.56	0.11	0.55
14,891.00	89.38	183.91	11,487.46	-2,984.36	368.39	2,997.92	1.20	1.19	0.15
14,985.00	89.41	183.44	11,488.45	-3,078.16	362.37	3,091.35	0.50	0.03	-0.50
15,079.00	88.07	183.60	11,490.52	-3,171.96	356.60	3,184.80	1.44	-1.43	0.17
15,173.00	88.68	183.82	11,493.19	-3,265.72	350.52	3,278.19	0.69	0.65	0.23
15,267.00	89.05	183.46	11,495.05	-3,359.52	344.55	3,371.62	0.55	0.39	-0.38
15,361.00	88.54	182.97	11,497.02	-3,453.35	339.28	3,465.12	0.75	-0.54	-0.52
15,456.00	88.94	182.39	11,499.11	-3,548.22	334.84	3,559.70	0.74	0.42	-0.61
15,549.00	88.01	181.90	11,501.59	-3,641.12	331.36	3,652.35	1.13	-1.00	-0.53
15,644.00	85.49	182.88	11,506.97	-3,735.88	327.41	3,746.83	2.85	-2.65	1.03
15,737.00	86.11	183.43	11,513.79	-3,828.48	322.30	3,839.11	0.89	0.67	0.59
Final Phoenix MWD Survey - OH									
15,779.00	86.11	183.43	11,516.63	-3,870.31	319.79	3,880.79	0.00	0.00	0.00
Projection to TD - OH									

Company:	Centennial Resources Development, Inc.	Local Co-ordinate Reference:	Well 602H
Project:	Lea County, NM (NAD83 - UTM Zone 13)	TVD Reference:	RKB @ 3394.00usft (H&P 650)
Site:	Duck Hunt 1 State Com	MD Reference:	RKB @ 3394.00usft (H&P 650)
Well:	602H	North Reference:	True
Wellbore:	OH / 65514	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 650)	Database:	USA Compass

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,825.50	1,825.38	-7.18	-6.03	Tie In - OH
1,898.00	1,897.85	-9.18	-6.91	First Phoenix MWD Survey - OH
15,737.00	11,513.79	-3,828.48	322.30	Final Phoenix MWD Survey - OH
15,779.00	11,516.63	-3,870.31	319.79	Projection to TD - OH



PHOENIX
TECHNOLOGY SERVICES

Centennial Resources Development, Inc.

**Lea County, NM (NAD83 - UTM Zone 13)
Duck Hunt 1 State Com
602H**

ST01/ 65514

Survey: Phoenix MWD Surveys

Standard Survey Report

04 November, 2019



Company: Centennial Resources Development, Inc.
Project: Lea County, NM (NAD83 - UTM Zone 13)
Site: Duck Hunt 1 State Com
Well: 602H
Wellbore: ST01 / 65514
Design: Surveys (H&P 650)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3394.00usft (H&P 650)
MD Reference: RKB @ 3394.00usft (H&P 650)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: USA Compass

Project	Lea County, NM (NAD83 - UTM Zone 13)		
Map System:	Universal Transverse Mercator (US Survey Feet)	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 Duck Hunt 1 State Com

Site Position:
From: Map
Position Uncertainty: 0.00 usft
Northing: 11,740,221.78 usft
Easting: 2,129,032.10 usft
Slot Radius: 13-3/16 "
Latitude: 32.332815
Longitude: -103.417617
Grid Convergence: 0.85 °

Well 602H

Well Position +N/-S 0.00 usft **Northing:** 11,740,201.91 usft **Latitude:** 32.332811
+/-E/-W 0.00 usft **Easting:** 2,127,788.35 usft **Longitude:** -103.421645
Position Uncertainty 1.00 usft **Wellhead Elevation:** usft **Ground Level:** 3,367.50 usft

Wellbore ST01 / 65514

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	10/13/2019	6.63	60.03	47,868.00000000

Design Surveys (H&P 650)

Audit Notes:

Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 13,763.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+/-E/-W (usft)	Direction (°)
	0.00	0.00	0.00	177.42

Survey Program Date 11/4/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
26.50	1,825.50	Wildfire MWD Surveys (OH / 65514)	MWD	OWSG MWD - Standard
1,898.00	13,763.00	Phoenix MWD Surveys (OH / 65514)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction
13,788.00	18,944.00	Phoenix MWD Surveys (ST01 / 65514)	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)
13,763.00	90.92	178.36	11,460.98	-1,858.49	351.90	1,872.45	0.00	0.00	0.00
Tie In - ST01									
13,788.00	90.08	179.39	11,460.77	-1,883.48	352.40	1,897.44	5.32	-3.36	4.12
First Phoenix MWD Survey - ST01									
13,819.00	88.01	180.26	11,461.28	-1,914.48	352.49	1,928.40	7.24	-6.68	2.81
13,850.00	87.70	180.48	11,462.44	-1,945.45	352.29	1,959.34	1.23	-1.00	0.71
13,897.00	87.51	179.92	11,464.41	-1,992.41	352.13	2,006.24	1.26	-0.40	-1.19
13,944.00	86.36	181.21	11,466.92	-2,039.34	351.66	2,053.10	3.67	-2.45	2.74

Company: Centennial Resources Development, Inc.
Project: Lea County, NM (NAD83 - UTM Zone 13)
Site: Duck Hunt 1 State Com
Well: 602H
Wellbore: ST01 / 65514
Design: Surveys (H&P 650)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3394.00usft (H&P 650)
MD Reference: RKB @ 3394.00usft (H&P 650)
North Reference: True
Survey Calculation Method: Minimum Curvature
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)
13,991.00	86.13	181.14	11,470.00	-2,086.23	350.70	2,099.90	0.51	-0.49	-0.15
14,039.00	87.12	180.30	11,472.82	-2,134.14	350.10	2,147.74	2.70	2.06	-1.75
14,086.00	86.53	180.10	11,475.43	-2,181.07	349.94	2,194.61	1.33	-1.26	-0.43
14,133.00	87.51	180.68	11,477.87	-2,228.00	349.62	2,241.48	2.42	2.09	1.23
14,227.00	88.74	181.09	11,480.95	-2,321.94	348.17	2,335.26	1.38	1.31	0.44
14,321.00	89.13	180.57	11,482.69	-2,415.91	346.80	2,429.08	0.69	0.41	-0.55
14,415.00	89.86	180.74	11,483.52	-2,509.90	345.73	2,522.92	0.80	0.78	0.18
14,509.00	91.51	180.61	11,482.40	-2,603.89	344.62	2,616.76	1.76	1.76	-0.14
14,603.00	91.18	180.36	11,480.19	-2,697.86	343.83	2,710.60	0.44	-0.35	-0.27
14,697.00	87.96	179.60	11,480.90	-2,791.84	343.86	2,804.49	3.52	-3.43	-0.81
14,791.00	87.67	180.98	11,484.48	-2,885.77	343.38	2,898.30	1.50	-0.31	1.47
14,885.00	88.12	180.94	11,487.93	-2,979.69	341.81	2,992.06	0.48	0.48	-0.04
14,985.00	87.76	182.67	11,491.53	-3,079.58	338.66	3,091.70	1.77	-0.36	1.73
15,079.00	88.85	184.46	11,494.31	-3,173.35	332.82	3,185.11	2.23	1.16	1.90
15,173.00	88.66	183.59	11,496.35	-3,267.09	326.22	3,278.47	0.95	-0.20	-0.93
15,267.00	89.27	183.82	11,498.05	-3,360.88	320.15	3,371.88	0.69	0.65	0.24
15,362.00	89.58	183.78	11,499.00	-3,455.67	313.85	3,466.29	0.33	0.33	-0.04
15,456.00	88.91	182.44	11,500.24	-3,549.52	308.76	3,559.82	1.59	-0.71	-1.43
15,550.00	88.10	180.09	11,502.69	-3,643.45	306.68	3,653.57	2.64	-0.86	-2.50
15,644.00	87.40	180.12	11,506.38	-3,737.38	306.51	3,747.39	0.75	-0.74	0.03
15,737.00	89.27	179.76	11,509.09	-3,830.34	306.61	3,840.26	2.05	2.01	-0.39
15,847.00	86.67	179.64	11,512.98	-3,940.26	307.18	3,950.09	2.37	-2.36	-0.11
15,941.00	86.67	178.76	11,518.44	-4,034.09	308.49	4,043.89	0.93	0.00	-0.94
16,035.00	88.57	178.88	11,522.35	-4,127.98	310.43	4,137.77	2.03	2.02	0.13
16,129.00	88.43	177.79	11,524.81	-4,221.91	313.16	4,231.73	1.17	-0.15	-1.16
16,223.00	88.66	176.83	11,527.19	-4,315.78	317.57	4,325.70	1.05	0.24	-1.02
16,317.00	88.57	175.98	11,529.47	-4,409.56	323.46	4,419.65	0.91	-0.10	-0.90
16,410.00	88.43	175.64	11,531.90	-4,502.28	330.25	4,512.58	0.40	-0.15	-0.37
16,504.00	88.38	175.11	11,534.52	-4,595.94	337.83	4,606.49	0.57	-0.05	-0.56
16,598.00	88.35	175.08	11,537.20	-4,689.56	345.86	4,700.37	0.05	-0.03	-0.03
16,692.00	88.01	175.85	11,540.18	-4,783.21	353.29	4,794.27	0.90	-0.36	0.82
16,786.00	88.80	177.04	11,542.80	-4,876.99	359.12	4,888.22	1.52	0.84	1.27
16,880.00	88.38	178.09	11,545.11	-4,970.88	363.11	4,982.19	1.20	-0.45	1.12
16,974.00	88.57	179.02	11,547.62	-5,064.82	365.48	5,076.13	1.01	0.20	0.99
17,068.00	88.12	179.66	11,550.33	-5,158.77	366.56	5,170.04	0.83	-0.48	0.68
17,162.00	88.57	180.90	11,553.05	-5,252.73	366.10	5,263.88	1.40	0.48	1.32
17,256.00	88.85	181.28	11,555.16	-5,346.69	364.31	5,357.67	0.50	0.30	0.40
17,350.00	89.50	182.88	11,556.52	-5,440.61	360.90	5,451.34	1.84	0.69	1.70
17,444.00	89.24	183.53	11,557.55	-5,534.46	355.65	5,544.86	0.74	-0.28	0.69
17,538.00	89.50	183.43	11,558.58	-5,628.28	349.94	5,638.33	0.30	0.28	-0.11
17,632.00	88.57	184.02	11,560.17	-5,722.06	343.84	5,731.74	1.17	-0.99	0.63
17,726.00	87.90	183.82	11,563.06	-5,815.80	337.41	5,825.09	0.74	-0.71	-0.21
17,820.00	89.92	183.49	11,564.85	-5,909.59	331.42	5,918.52	2.18	2.15	-0.35
17,914.00	90.08	182.03	11,564.85	-6,003.47	326.90	6,012.10	1.56	0.17	-1.55

Company: Centennial Resources Development, Inc.
Project: Lea County, NM (NAD83 - UTM Zone 13)
Site: Duck Hunt 1 State Com
Well: 602H
Wellbore: ST01 / 65514
Design: Surveys (H&P 650)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3394.00usft (H&P 650)
MD Reference: RKB @ 3394.00usft (H&P 650)
North Reference: True
Survey Calculation Method: Minimum Curvature
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)
18,009.00	89.78	181.28	11,564.97	-6,098.43	324.15	6,106.84	0.85	-0.32	-0.79
18,103.00	90.76	181.34	11,564.52	-6,192.41	322.00	6,200.63	1.04	1.04	0.06
18,196.00	90.28	180.24	11,563.68	-6,285.39	320.72	6,293.46	1.29	-0.52	-1.18
18,290.00	89.36	179.35	11,563.97	-6,379.39	321.06	6,387.38	1.36	-0.98	-0.95
18,384.00	90.22	178.77	11,564.32	-6,473.38	322.60	6,481.34	1.10	0.91	-0.62
18,478.00	89.66	177.53	11,564.42	-6,567.32	325.63	6,575.33	1.45	-0.60	-1.32
18,572.00	90.14	177.67	11,564.58	-6,661.24	329.57	6,669.32	0.53	0.51	0.15
18,667.00	91.23	177.77	11,563.44	-6,756.16	333.35	6,764.32	1.15	1.15	0.11
18,729.00	93.36	177.83	11,560.96	-6,818.06	335.73	6,826.26	3.44	3.44	0.10
18,761.00	93.98	177.76	11,558.91	-6,849.97	336.96	6,858.19	1.95	1.94	-0.22
18,808.00	95.30	177.72	11,555.11	-6,896.78	338.80	6,905.04	2.81	2.81	-0.09
18,855.00	95.92	177.42	11,550.52	-6,943.51	340.79	6,951.81	1.46	1.32	-0.64
18,902.00	96.94	177.35	11,545.25	-6,990.17	342.92	6,998.52	2.18	2.17	-0.15
Final Phoenix MWD Survey - ST01									
18,944.00	96.94	177.35	11,540.18	-7,031.81	344.85	7,040.21	0.00	0.00	0.00
Projection to TD - ST01									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
13,763.00	11,460.98	-1,858.49	351.90	Tie In - ST01
13,788.00	11,460.77	-1,883.48	352.40	First Phoenix MWD Survey - ST01
18,902.00	11,545.25	-6,990.17	342.92	Final Phoenix MWD Survey - ST01
18,944.00	11,540.18	-7,031.81	344.85	Projection to TD - ST01

SURVEY DATA CERTIFICATION



PHOENIX
TECHNOLOGY SERVICES

Job #: 65514
Client: Centennial Resources Production
County & State: Lea County, New Mexico
Well: Duck Hunt 1 State Com 602H
API No: 30-025-46347
Proposed Direction: 1747.42°

TIE-IN DATA

MD	TVD	INC	AZM	N/-S	E/-W	DATA SOURCE
1825.50 ft	1825.38 ft	1.70°	188.70°	7.18 S	6.03 W	Gyro
Data Source Company:						Centennial

SURVEY DATA

First Survey Date	First Survey Depth	INC	AZM
14-Oct-19	1,898 ft	1.86°	217.36°

Last Survey Date	Last Survey Depth	INC	AZM
2-Nov-19	18,902 ft	96.94°	177.35°

Survey Instrument Type
Phoenix MWD

Projected TD Survey Date	Projected TD Survey Depth	INC	AZM
2-Nov-19	18,944 ft	96.94°	177.35°

CORRECTION INFORMATION

Magnetic Declination Used	6.63 degrees
Grid Convergence Used	0.00 degrees
Total Correction	6.63 degrees

Corrected to True/Grid North
True North

TO THE BEST OF MY KNOWLEDGE, I
CERTIFY THIS SURVEY DATA TO BE TRUE
AND CORRECT.

Carlos Hicks

Signature

2-Nov-19

Date