



Survey Report

Service Company: Cathedral Energy Services

Location: 525' FNL & 660' FWL

Well: Gateway 2 State #2H

Rig: Patriot Drilling 4

API or UWI: 30-025-41096

Job Number: 137079

State: New Mexico

Operating Company: Caza Operating, LLC

County: Lea

Magnetic Declination: 0.00

Comment: Survey Corrected to Grid North 6.81°
Last Survey is Projected to Bit

Proposed Azimuth: 179.43

North Reference: GRID

Tie-In Data:

MD	Inclination	Azimuth	TVD	NS	EW
0.00	0.00	0.00	0.00	0.00	0.00

Survey Data:

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
100.00	0.22	328.51	100.00	0.16	-0.10	328.51	0.19	-0.16	0.22
200.00	0.22	338.44	200.00	0.51	-0.27	331.85	0.58	-0.51	0.04
300.00	0.20	26.01	300.00	0.85	-0.27	342.49	0.89	-0.85	0.17
400.00	0.58	45.42	400.00	1.36	0.17	7.13	1.37	-1.36	0.40
500.00	0.78	52.28	499.99	2.13	1.07	26.65	2.38	-2.12	0.22
600.00	0.49	33.80	599.98	2.90	1.85	32.45	3.44	-2.88	0.35
700.00	0.70	63.94	699.98	3.53	2.63	36.74	4.40	-3.50	0.37
800.00	0.45	63.17	799.97	3.97	3.53	41.64	5.31	-3.94	0.25
900.00	0.28	81.92	899.97	4.18	4.12	44.59	5.87	-4.14	0.21
1000.00	0.36	86.86	999.97	4.23	4.68	47.86	6.31	-4.19	0.08
1100.00	0.32	97.30	1099.97	4.22	5.27	51.34	6.75	-4.16	0.07
1200.00	0.78	99.42	1199.96	4.07	6.22	56.80	7.43	-4.01	0.46
1300.00	0.78	81.08	1299.95	4.06	7.56	61.75	8.58	-3.99	0.25
1400.00	0.70	80.30	1399.94	4.27	8.84	64.20	9.81	-4.18	0.08
1500.00	0.37	79.66	1499.94	4.43	9.76	65.57	10.72	-4.34	0.33
1600.00	0.43	69.93	1599.94	4.62	10.43	66.10	11.40	-4.52	0.09
1700.00	0.31	66.56	1699.94	4.86	11.03	66.23	12.05	-4.75	0.12
1800.00	0.40	69.52	1799.93	5.09	11.60	66.33	12.67	-4.97	0.09
1900.00	0.30	63.48	1899.93	5.32	12.16	66.36	13.28	-5.20	0.11
2000.00	0.19	66.87	1999.93	5.51	12.55	66.31	13.71	-5.38	0.11
2100.00	0.32	66.34	2099.93	5.68	12.96	66.32	14.15	-5.55	0.13
2200.00	0.38	79.80	2199.93	5.85	13.54	66.62	14.75	-5.72	0.10
2300.00	0.48	87.60	2299.93	5.93	14.29	67.45	15.47	-5.79	0.12
2400.00	0.77	95.91	2399.92	5.88	15.37	69.07	16.46	-5.73	0.30
2500.00	0.79	88.13	2499.91	5.83	16.73	70.78	17.72	-5.67	0.11
2600.00	0.65	98.70	2599.90	5.77	17.98	72.21	18.88	-5.59	0.19
2700.00	1.02	79.46	2699.89	5.85	19.42	73.24	20.28	-5.65	0.46
2800.00	1.24	75.85	2799.87	6.27	21.34	73.62	22.24	-6.06	0.23
2900.00	1.31	76.80	2899.85	6.80	23.50	73.86	24.47	-6.56	0.07
3000.00	1.30	67.30	2999.82	7.50	25.66	73.71	26.73	-7.24	0.22
3100.00	1.35	70.67	3099.79	8.33	27.82	73.34	29.04	-8.05	0.09
3200.00	1.22	50.60	3199.77	9.39	29.75	72.48	31.20	-9.09	0.47

NOV 06 2013

3300.00	0.97	61.41	3299.75	10.47	31.32	71.51	33.02	-10.16	0.32
3400.80	0.86	42.63	3400.54	11.44	32.58	70.66	34.53	-11.11	0.32
3500.00	0.63	28.91	3499.73	12.46	33.35	69.51	35.60	-12.13	0.29
3600.00	0.59	25.94	3599.73	13.41	33.84	68.39	36.40	-13.07	0.05
3700.00	0.27	13.62	3699.72	14.10	34.12	67.55	36.92	-13.76	0.33
3800.00	0.34	30.16	3799.72	14.58	34.32	66.98	37.29	-14.24	0.11
3900.00	0.30	16.36	3899.72	15.09	34.55	66.40	37.70	-14.75	0.09
4000.00	0.37	12.92	3999.72	15.66	34.69	65.71	38.06	-15.31	0.07
4100.00	0.40	12.12	4099.72	16.31	34.84	64.91	38.47	-15.97	0.03
4200.00	0.50	355.74	4199.71	17.09	34.88	63.90	38.84	-16.74	0.16
4300.00	0.41	351.34	4299.71	17.88	34.79	62.80	39.12	-17.53	0.10
4400.00	0.54	347.68	4399.71	18.69	34.64	61.65	39.36	-18.35	0.13
4500.00	0.49	359.39	4499.70	19.58	34.53	60.45	39.70	-19.24	0.12
4600.00	0.48	346.58	4599.70	20.42	34.43	59.34	40.03	-20.07	0.11
4700.00	0.58	1.08	4699.69	21.33	34.34	58.16	40.43	-20.99	0.17
4800.00	0.40	1.87	4799.69	22.18	34.37	57.16	40.90	-21.84	0.18
4900.00	0.36	8.46	4899.69	22.84	34.42	56.43	41.31	-22.50	0.06
5000.00	0.39	18.67	4999.69	23.48	34.58	55.83	41.79	-23.13	0.07
5100.00	0.29	38.95	5099.68	24.00	34.85	55.45	42.31	-23.65	0.15
5200.00	0.35	38.96	5199.68	24.43	35.20	55.24	42.85	-24.08	0.06
5300.00	0.30	28.55	5299.68	24.90	35.51	54.97	43.37	-24.54	0.08
5400.00	0.51	29.63	5399.68	25.51	35.86	54.57	44.01	-25.16	0.21
5500.00	0.32	27.94	5499.68	26.15	36.21	54.17	44.66	-25.79	0.19
5600.00	0.38	34.71	5599.67	26.67	36.53	53.87	45.23	-26.30	0.07
5700.00	0.35	39.20	5699.67	27.18	36.91	53.64	45.84	-26.81	0.04
5800.00	0.36	58.98	5799.67	27.58	37.37	53.58	46.45	-27.20	0.12
5900.00	0.56	44.88	5899.67	28.08	37.99	53.53	47.24	-27.70	0.23
6000.00	0.57	50.16	5999.66	28.75	38.72	53.40	48.22	-28.36	0.05
6100.00	0.57	66.32	6099.66	29.27	39.55	53.50	49.20	-28.87	0.16
6200.00	0.65	66.28	6199.65	29.69	40.53	53.77	50.24	-29.29	0.08
6300.00	0.68	59.34	6299.65	30.23	41.56	53.97	51.39	-29.81	0.09
6400.00	0.77	45.70	6399.64	31.00	42.55	53.93	52.64	-30.57	0.19
6500.00	0.91	61.88	6499.63	31.84	43.73	53.94	54.09	-31.40	0.27
6600.00	0.97	58.25	6599.61	32.66	45.15	54.12	55.72	-32.21	0.08
6700.00	0.94	58.73	6699.60	33.53	46.57	54.25	57.39	-33.07	0.03
6800.00	0.88	48.46	6799.59	34.47	47.85	54.23	58.97	-33.99	0.17
6900.00	1.03	41.11	6899.57	35.65	49.01	53.97	60.61	-35.16	0.19
7000.00	1.17	48.50	6999.55	37.01	50.37	53.69	62.50	-36.50	0.20
7100.00	1.35	51.54	7099.53	38.42	52.06	53.57	64.70	-37.90	0.19
7200.00	1.44	45.39	7199.50	40.03	53.87	53.38	67.12	-39.49	0.17
7300.00	1.42	40.18	7299.47	41.86	55.57	53.01	69.57	-41.31	0.13
7400.00	1.95	32.61	7399.43	44.24	57.28	52.32	72.38	-43.67	0.57
7500.00	2.40	19.89	7499.35	47.64	58.91	51.04	75.77	-47.05	0.66
7600.00	2.46	11.40	7599.26	51.71	60.05	49.26	79.25	-51.12	0.36
7700.00	2.51	11.97	7699.17	55.96	60.93	47.43	82.73	-55.35	0.06
7800.00	2.59	12.16	7799.07	60.31	61.86	45.72	86.39	-59.69	0.08
7900.00	2.67	1.78	7898.97	64.85	62.40	43.90	90.00	-64.22	0.48
8000.00	2.61	357.16	7998.86	69.45	62.36	41.92	93.34	-68.83	0.22
8100.00	2.72	354.40	8098.75	74.09	62.02	39.93	96.62	-73.47	0.17
8200.00	3.16	1.52	8198.62	79.20	61.86	37.99	100.50	-78.58	0.57
8300.00	2.79	5.45	8298.49	84.38	62.17	36.38	104.81	-83.76	0.42
8400.00	2.73	8.14	8398.37	89.16	62.73	35.13	109.02	-88.53	0.14
8500.00	2.74	3.69	8498.25	93.90	63.23	33.95	113.20	-93.27	0.21
8600.00	2.74	3.21	8598.14	98.68	63.51	32.77	117.35	-98.04	0.02
8700.00	2.87	0.06	8698.02	103.57	63.65	31.57	121.56	-102.93	0.20

8800.00	2.84	355.35	8797.90	108.54	63.45	30.31	125.72	-107.90	0.24
8865.00	2.34	355.34	8862.83	111.47	63.21	29.56	128.14	-110.83	0.77
8891.00	1.70	190.50	8888.82	111.62	63.10	29.48	128.22	-110.98	15.41
8923.00	2.90	186.90	8920.80	110.35	62.92	29.69	127.02	-109.71	3.78
8954.00	4.40	180.80	8951.73	108.38	62.80	30.09	125.26	-107.75	4.99
8984.00	7.00	178.10	8981.58	105.40	62.85	30.81	122.72	-104.77	8.71
9018.00	9.70	178.00	9015.22	100.47	63.02	32.10	118.59	-99.83	7.94
9049.00	12.50	178.00	9045.64	94.50	63.23	33.78	113.70	-93.87	9.03
9080.00	15.10	177.30	9075.74	87.11	63.53	36.10	107.82	-86.48	8.40
9112.00	18.90	178.40	9106.34	77.77	63.87	39.40	100.64	-77.13	11.92
9144.00	21.10	177.70	9136.41	66.83	64.25	43.87	92.71	-66.19	6.92
9173.00	24.30	179.60	9163.16	55.64	64.50	49.22	85.19	-55.00	11.32
9205.00	29.00	182.90	9191.75	41.30	64.16	57.23	76.30	-40.66	15.39
9239.00	31.40	182.90	9221.13	24.22	63.29	69.06	67.77	-23.59	7.06
9270.00	34.60	180.80	9247.13	7.35	62.76	83.32	63.19	-6.73	10.96
9302.00	38.90	181.70	9272.76	-11.78	62.33	100.71	63.44	12.40	13.54
9333.00	40.70	183.50	9296.58	-31.60	61.43	117.23	69.08	32.21	6.89
9363.00	40.50	184.30	9319.36	-51.08	60.10	130.36	78.88	51.68	1.86
9393.00	44.30	182.40	9341.51	-71.27	58.93	140.41	92.48	71.85	13.37
9422.00	47.30	183.10	9361.72	-92.03	57.93	147.81	108.75	92.61	10.49
9451.00	51.30	182.90	9380.63	-113.99	56.78	153.52	127.35	114.55	13.80
9484.00	58.10	181.40	9399.69	-140.88	55.79	158.40	151.53	141.43	20.94
9516.00	63.40	182.90	9415.32	-168.77	54.73	162.03	177.42	169.31	17.06
9546.00	69.10	181.80	9427.40	-196.20	53.61	164.72	203.39	196.72	19.29
9580.00	73.40	183.20	9438.33	-228.35	52.20	167.12	234.24	228.86	13.23
9612.00	76.90	182.70	9446.53	-259.24	50.61	168.95	264.13	259.73	11.04
9640.00	80.00	182.20	9452.13	-286.64	49.44	170.21	290.87	287.12	11.21
9675.00	83.20	181.60	9457.24	-321.24	48.29	171.45	324.85	321.71	9.30
9739.00	88.00	180.40	9462.15	-385.03	47.18	173.01	387.91	385.48	7.73
9834.00	89.30	181.00	9464.39	-479.99	46.02	174.52	482.19	480.42	1.51
9929.00	88.90	181.40	9465.88	-574.96	44.03	175.62	576.64	575.37	0.60
10024.00	87.30	180.80	9469.03	-669.88	42.21	176.39	671.21	670.27	1.80
10119.00	84.60	180.50	9475.74	-764.63	41.13	176.92	765.74	765.00	2.86
10214.00	86.10	180.00	9483.44	-859.31	40.72	177.29	860.28	859.68	1.66
10309.00	87.20	180.70	9489.00	-954.15	40.14	177.59	954.99	954.50	1.37
10404.00	87.10	180.70	9493.72	-1049.02	38.98	177.87	1049.75	1049.36	0.11
10500.00	86.70	179.90	9498.91	-1144.88	38.48	178.08	1145.53	1145.21	0.93
10594.00	88.10	180.40	9503.17	-1238.78	38.23	178.23	1239.37	1239.10	1.58
10690.00	88.20	180.60	9506.27	-1334.73	37.39	178.40	1335.25	1335.03	0.23
10785.00	86.10	180.10	9511.00	-1429.60	36.81	178.52	1430.08	1429.90	2.27
10880.00	86.60	180.00	9517.04	-1524.41	36.73	178.62	1524.85	1524.70	0.54
10975.00	86.20	180.00	9523.01	-1619.22	36.73	178.70	1619.64	1619.51	0.42
11071.00	86.20	180.30	9529.37	-1715.01	36.48	178.78	1715.40	1715.29	0.31
11166.00	85.80	180.40	9536.00	-1809.78	35.90	178.86	1810.13	1810.04	0.43
11261.00	85.70	180.60	9543.04	-1904.51	35.08	178.94	1904.84	1904.77	0.23
11356.00	85.70	181.20	9550.16	-1999.23	33.59	179.04	1999.51	1999.47	0.63
11451.00	86.50	181.90	9556.62	-2093.98	31.02	179.15	2094.21	2094.18	1.12
11547.00	87.20	182.20	9561.90	-2189.77	27.59	179.28	2189.94	2189.94	0.79
11642.00	87.10	182.20	9566.62	-2284.58	23.95	179.40	2284.71	2284.71	0.11
11738.00	86.70	182.10	9571.81	-2380.37	20.36	179.51	2380.46	2380.46	0.43
11833.00	86.30	182.10	9577.61	-2475.13	16.88	179.61	2475.19	2475.18	0.42
11928.00	85.90	181.90	9584.08	-2569.85	13.57	179.70	2569.89	2569.86	0.47
12023.00	85.50	182.10	9591.20	-2664.53	10.27	179.78	2664.55	2664.50	0.47
12119.00	84.90	181.90	9599.23	-2760.13	6.93	179.86	2760.14	2760.07	0.66
12218.00	84.80	182.30	9608.12	-2858.67	3.32	179.93	2858.67	2858.56	0.41

12313.00	86.10	182.10	9615.66	-2953.30	-0.32	180.01	2953.30	2953.15	1.38
12408.00	86.50	182.20	9621.79	-3048.03	-3.88	180.07	3048.03	3047.84	0.43
12504.00	85.80	180.30	9628.23	-3143.79	-5.97	180.11	3143.79	3143.57	2.11
12599.00	85.80	180.30	9635.19	-3238.53	-6.46	180.11	3238.54	3238.31	0.00
12694.00	85.80	180.50	9642.15	-3333.27	-7.12	180.12	3333.28	3333.04	0.21
12789.00	85.80	180.70	9649.11	-3428.01	-8.12	180.14	3428.02	3427.76	0.21
12884.00	85.60	181.10	9656.23	-3522.73	-9.60	180.16	3522.75	3522.46	0.47
12979.00	85.50	181.20	9663.60	-3617.43	-11.50	180.18	3617.45	3617.13	0.15
13074.00	85.00	181.30	9671.47	-3712.08	-13.57	180.21	3712.10	3711.76	0.54
13170.00	85.60	181.30	9679.33	-3807.73	-15.74	180.24	3807.76	3807.39	0.63
13265.00	85.20	181.40	9686.95	-3902.40	-17.97	180.26	3902.44	3902.03	0.43
13360.00	84.60	181.90	9695.40	-3996.98	-20.70	180.30	3997.04	3996.58	0.82
13455.00	84.10	182.30	9704.75	-4091.46	-24.16	180.34	4091.53	4091.01	0.67
13550.00	84.10	182.40	9714.52	-4185.87	-28.03	180.38	4185.97	4185.39	0.10