



HOBBS OCD

JUL 24 2014

RECEIVED

State of New Mexico
Energy, Mineral & Natural Resources Department
Oil Conservation Division
1625 N. French Dr.
Hobbs, New Mexico 88240

Re: Gramma 27 State 2H
Lea County, New Mexico
API No. 30-025-41888

CATHEDRAL ENERGY SERVICES

6622 Willow Brook Park
Houston, Texas 77066

281.440.1010 Office
877.825.1002 Toll-Free
281.440.1025 Fax

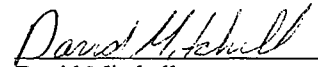
CathedralEnergyServices.com

Drilling + Completions

Enclosed, please find the original and one copy of the survey performed on the referenced well by Cathedral Energy Services. Other information required by your office is as follows:

Name & Title of Surveyor	Drainhole Number	Surveyed Depths	Date Performed	Type of Survey
David Mitchell LWD Specialist	Original Hole	9727' - 14650'	06/29/14-07/09/14	Directional MWD

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease line (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.


David Mitchell
LWD Specialist

Enclosures

cc: Caza Operating, LLC

AUG 01 2014



State of New Mexico
County of Lea, New Mexico

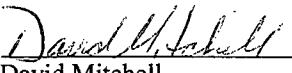
I, David Mitchell, certify that; I am employed by Cathedral Energy Services; that I did on the day(s) of 06/29/14 through 07/09/14 conduct or supervise the taking of a directional MWD survey from a depth of 9727 feet to a depth of 14650 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Cathedral Energy Services; that I am authorized and qualified to make this report; that this survey was conducted at the request of Caza Operating, LLC. for the Gramma 27 State 2H Well API No. 30-025-41888 in Lea County, New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Cathedral Energy Services.

CATHEDRAL ENERGY SERVICES

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David Mitchell
LWD Specialist

Drilling + Completions



Survey Report

Service Company: Cathedral Energy Services

Bottom Hole Location: 345' FSL & 340' FEL
 Surface Location: 330' FNL & 500' FEL
 Section 27 Township 21S Range 34E

Well: Gramma 27 State 2H

Rig: Patriot Drilling 1

API or UWI: 30-025-41888

Job Number: 147092

State: New Mexico

Operating Company: Caza Operating, LLC

County: Lea

Magnetic North: 6.70

Comment: Surveys Corrected to Grid North: 6.70
 Last Survey is Projected to Total Depth
 (TD)

Proposed Azimuth: 177.40

North Reference: TRUE

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	0.11	213.17	100.00	-0.08	-0.05	213.17	0.10	0.08	0.11
200.00	0.38	192.61	200.00	-0.48	-0.18	200.12	0.52	0.48	0.28
300.00	0.55	177.97	300.00	-1.29	-0.23	190.25	1.31	1.28	0.21
400.00	0.34	171.94	399.99	-2.06	-0.17	184.83	2.07	2.05	0.21
500.00	0.56	167.50	499.99	-2.83	-0.03	180.54	2.83	2.83	0.22
600.00	0.51	150.96	599.99	-3.70	0.29	175.44	3.71	3.71	0.16
700.00	0.35	162.34	699.98	-4.38	0.60	172.15	4.42	4.40	0.18
800.00	0.21	172.40	799.98	-4.85	0.72	171.55	4.90	4.88	0.15
900.00	0.27	140.97	899.98	-5.22	0.89	170.28	5.29	5.25	0.14
1000.00	0.42	120.17	999.98	-5.58	1.36	166.32	5.75	5.64	0.19
1100.00	0.41	112.62	1099.98	-5.90	2.01	161.24	6.24	5.99	0.06
1200.00	0.55	68.11	1199.97	-5.86	2.78	154.62	6.49	5.98	0.39
1300.00	0.63	81.72	1299.97	-5.61	3.77	146.07	6.76	5.77	0.16
1400.00	0.41	73.35	1399.96	-5.42	4.66	139.35	7.15	5.63	0.23
1500.00	0.11	79.07	1499.96	-5.30	5.09	136.15	7.35	5.53	0.30
1600.00	0.43	49.65	1599.96	-5.04	5.47	132.64	7.44	5.28	0.34
1700.00	0.60	47.52	1699.96	-4.45	6.15	125.87	7.59	4.72	0.17
1800.00	0.48	71.50	1799.95	-3.96	6.93	119.74	7.98	4.27	0.25
1900.00	0.28	50.32	1899.95	-3.67	7.52	116.03	8.36	4.01	0.24
2000.00	0.44	51.80	1999.95	-3.28	8.01	112.26	8.65	3.64	0.16
2100.00	0.14	95.20	2099.95	-3.05	8.43	109.89	8.96	3.43	0.35
2200.00	0.20	165.41	2199.95	-3.23	8.59	110.60	9.18	3.62	0.20
2300.00	0.10	123.77	2299.95	-3.45	8.71	111.59	9.37	3.84	0.14
2400.00	0.16	158.36	2399.95	-3.63	8.83	112.31	9.55	4.02	0.10
2500.00	0.14	193.88	2499.95	-3.87	8.86	113.62	9.67	4.27	0.09
2600.00	0.11	271.76	2599.95	-3.99	8.73	114.56	9.60	4.38	0.16
2700.00	0.09	251.98	2699.95	-4.01	8.56	115.10	9.45	4.40	0.04
2800.00	0.15	273.96	2799.95	-4.03	8.36	115.73	9.28	4.40	0.07
2900.00	0.14	203.05	2899.95	-4.13	8.18	116.79	9.16	4.50	0.17
3000.00	0.22	281.34	2999.94	-4.20	7.94	117.90	8.99	4.56	0.24
3100.00	0.22	303.29	3099.94	-4.06	7.59	118.14	8.61	4.40	0.08

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
3200.00	0.30	305.01	3199.94	-3.81	7.22	117.80	8.16	4.13	0.08
3300.00	0.12	304.14	3299.94	-3.60	6.92	117.47	7.80	3.91	0.18
3400.00	0.47	351.36	3399.94	-3.13	6.77	114.83	7.46	3.44	0.40
3500.00	0.39	356.86	3499.94	-2.39	6.69	109.64	7.10	2.69	0.09
3600.00	0.34	11.10	3599.94	-1.76	6.73	104.63	6.95	2.06	0.10
3700.00	0.39	105.68	3699.93	-1.56	7.11	102.35	7.28	1.88	0.54
3800.00	0.29	124.37	3799.93	-1.79	7.65	103.18	7.85	2.14	0.15
3900.00	0.19	9.92	3899.93	-1.77	7.89	102.66	8.08	2.13	0.41
4000.00	0.35	104.88	3999.93	-1.69	8.21	101.61	8.38	2.06	0.41
4100.00	0.34	97.29	4099.93	-1.80	8.80	101.58	8.98	2.20	0.05
4200.00	0.49	339.12	4199.93	-1.44	8.94	99.15	9.06	1.84	0.72
4300.00	0.68	297.78	4299.92	-0.76	8.26	95.29	8.30	1.14	0.45
4400.00	0.41	327.69	4399.92	-0.19	7.55	91.41	7.55	0.53	0.38
4500.00	0.58	0.94	4499.92	0.62	7.36	85.16	7.39	-0.29	0.33
4600.00	0.20	71.81	4599.91	1.18	7.54	81.08	7.63	-0.84	0.55
4700.00	0.34	139.49	4699.91	1.01	7.90	82.69	7.96	-0.65	0.32
4800.00	0.24	155.93	4799.91	0.60	8.17	85.83	8.20	-0.22	0.13
4900.00	0.14	123.35	4899.91	0.34	8.36	87.69	8.37	0.04	0.14
5000.00	0.34	111.18	4999.91	0.16	8.74	88.93	8.74	0.23	0.21
5100.00	0.39	155.47	5099.91	-0.25	9.16	91.59	9.16	0.67	0.28
5200.00	0.13	29.39	5199.91	-0.46	9.36	92.84	9.37	0.89	0.48
5300.00	0.22	340.59	5299.91	-0.18	9.35	91.13	9.35	0.61	0.17
5400.00	0.30	157.41	5399.91	-0.25	9.38	91.50	9.39	0.67	0.52
5500.00	0.49	136.67	5499.90	-0.80	9.78	94.67	9.81	1.24	0.23
5600.00	0.47	112.65	5599.90	-1.27	10.45	96.91	10.53	1.74	0.20
5700.00	0.50	79.03	5699.90	-1.34	11.26	96.80	11.34	1.85	0.28
5800.00	0.37	137.90	5799.90	-1.50	11.90	97.18	12.00	2.04	0.44
5900.00	0.19	207.99	5899.89	-1.88	12.04	98.90	12.19	2.43	0.35
6000.00	0.43	323.39	5999.89	-1.73	11.74	98.38	11.87	2.26	0.54
6100.00	0.28	314.02	6099.89	-1.26	11.34	96.33	11.41	1.77	0.16
6200.00	0.17	325.31	6199.89	-0.97	11.08	94.99	11.12	1.47	0.12
6300.00	0.29	296.15	6299.89	-0.73	10.77	93.90	10.79	1.22	0.16
6400.00	0.60	326.06	6399.89	-0.19	10.25	91.05	10.25	0.65	0.38
6500.00	0.26	319.47	6499.88	0.42	9.81	87.55	9.82	0.03	0.34
6600.00	0.41	233.81	6599.88	0.38	9.37	87.68	9.38	0.05	0.47
6700.00	0.36	309.74	6699.88	0.37	8.84	87.60	8.85	0.03	0.48
6800.00	0.46	308.42	6799.88	0.82	8.29	84.35	8.33	-0.44	0.10
6900.00	0.17	229.21	6899.88	0.97	7.86	82.94	7.92	-0.62	0.46
7000.00	0.21	231.93	6999.88	0.76	7.60	84.27	7.64	-0.42	0.04
7100.00	0.24	328.03	7099.88	0.83	7.35	83.57	7.39	-0.49	0.34
7200.00	0.25	268.23	7199.87	1.00	7.02	81.90	7.09	-0.68	0.24
7300.00	0.19	335.51	7299.87	1.14	6.73	80.37	6.83	-0.84	0.25
7400.00	0.10	231.08	7399.87	1.24	6.60	79.36	6.71	-0.94	0.24
7500.00	0.13	224.01	7499.87	1.10	6.45	80.30	6.54	-0.81	0.03
7600.00	0.27	256.25	7599.87	0.96	6.14	81.07	6.22	-0.69	0.17
7700.00	0.31	242.24	7699.87	0.78	5.67	82.14	5.73	-0.52	0.08
7800.00	0.29	302.44	7799.87	0.79	5.22	81.37	5.28	-0.55	0.30
7900.00	0.82	344.82	7899.87	1.62	4.82	71.43	5.08	-1.40	0.64
8000.00	0.91	344.57	7999.85	3.07	4.42	55.17	5.38	-2.87	0.09
8100.00	1.05	345.53	8099.84	4.73	3.98	40.09	6.18	-4.54	0.14
8200.00	1.19	328.77	8199.82	6.50	3.21	26.29	7.25	-6.35	0.35
8300.00	1.22	338.38	8299.80	8.38	2.28	15.23	8.69	-8.27	0.20
8400.00	1.12	351.83	8399.78	10.34	1.75	9.61	10.48	-10.25	0.29

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
8500.00	0.90	356.12	8499.76	12.09	1.56	7.35	12.19	-12.01	0.23
8600.00	0.70	34.45	8599.75	13.38	1.85	7.88	13.50	-13.28	0.56
8700.00	0.80	51.43	8699.75	14.31	2.74	10.84	14.57	-14.18	0.24
8800.00	1.51	23.62	8799.72	15.96	3.82	13.45	16.41	-15.77	0.88
8900.00	0.85	354.24	8899.70	17.90	4.27	13.41	18.40	-17.69	0.88
9000.00	0.39	328.11	8999.70	18.93	4.02	11.98	19.35	-18.73	0.53
9100.00	1.08	292.49	9099.69	19.58	2.96	8.61	19.80	-19.42	0.80
9200.00	1.17	278.22	9199.67	20.09	1.08	3.09	20.11	-20.02	0.29
9300.00	1.27	272.89	9299.65	20.29	-1.03	357.08	20.31	-20.31	0.15
9400.00	2.40	260.18	9399.59	19.99	-4.20	348.12	20.42	-20.16	1.19
9500.00	3.60	250.66	9499.46	18.59	-9.23	333.60	20.75	-18.99	1.30
9600.00	3.68	235.10	9599.26	15.71	-14.82	316.67	21.60	-16.37	0.99
9700.00	3.75	221.97	9699.05	11.45	-19.64	300.23	22.73	-12.32	0.85
9727.00	4.60	211.70	9725.98	9.87	-20.80	295.38	23.02	-10.80	4.18
9756.00	6.90	198.10	9754.83	7.22	-21.95	288.21	23.11	-8.21	9.17
9788.00	10.20	191.40	9786.47	2.62	-23.11	276.46	23.26	-3.66	10.75
9819.00	14.70	188.80	9816.74	-3.96	-24.26	260.72	24.58	2.86	14.62
9851.00	18.90	187.30	9847.36	-13.12	-25.54	242.80	28.71	11.95	13.19
9883.00	22.90	185.20	9877.25	-24.47	-26.76	227.56	36.26	23.23	12.72
9915.00	25.50	180.90	9906.44	-37.56	-27.43	216.14	46.51	36.28	9.81
9947.00	29.20	178.40	9934.86	-52.25	-27.32	207.60	58.97	50.96	12.10
9978.00	31.90	176.90	9961.55	-68.00	-26.67	201.42	73.04	66.72	9.05
10010.00	34.80	175.40	9988.28	-85.54	-25.48	196.59	89.26	84.30	9.42
10042.00	37.80	175.20	10014.07	-104.42	-23.93	192.91	107.13	103.23	9.38
10070.00	39.90	175.70	10035.87	-121.93	-22.53	190.47	123.99	120.78	7.58
10105.00	41.50	177.20	10062.41	-144.71	-21.13	188.31	146.24	143.60	5.36
10147.00	43.40	177.40	10093.40	-173.02	-19.79	186.53	174.15	171.95	4.54
10169.00	44.10	177.60	10109.29	-188.22	-19.13	185.80	189.19	187.16	3.24
10201.00	46.40	177.60	10131.82	-210.93	-18.18	184.93	211.71	209.88	7.19
10232.00	49.10	177.80	10152.66	-233.85	-17.26	184.22	234.49	232.83	8.72
10264.00	51.30	178.40	10173.14	-258.42	-16.44	183.64	258.94	257.41	7.02
10296.00	53.90	178.40	10192.57	-283.83	-15.73	183.17	284.27	282.83	8.13
10327.00	56.60	178.70	10210.24	-309.29	-15.09	182.79	309.66	308.29	8.75
10359.00	58.90	179.00	10227.32	-336.35	-14.55	182.48	336.66	335.34	7.23
10391.00	61.70	178.40	10243.17	-364.13	-13.92	182.19	364.40	363.13	8.90
10423.00	64.60	177.70	10257.62	-392.66	-12.94	181.89	392.88	391.67	9.27
10454.00	67.90	177.30	10270.10	-421.01	-11.70	181.59	421.17	420.04	10.71
10486.00	71.60	176.80	10281.18	-450.98	-10.16	181.29	451.10	450.06	11.66
10517.00	74.90	177.00	10290.11	-480.62	-8.55	181.02	480.70	479.74	10.66
10549.00	77.60	177.80	10297.72	-511.67	-7.14	180.80	511.72	510.82	8.78
10581.00	80.80	177.60	10303.71	-543.07	-5.88	180.62	543.11	542.25	10.02
10613.00	84.10	176.90	10307.92	-574.75	-4.36	180.43	574.77	573.97	10.54
10644.00	87.40	176.30	10310.21	-605.61	-2.53	180.24	605.62	604.87	10.82
10676.00	90.40	176.20	10310.83	-637.53	-0.43	180.04	637.53	636.86	9.38
10708.00	91.20	176.20	10310.38	-669.46	1.69	179.86	669.46	668.85	2.50
10740.00	91.90	175.70	10309.51	-701.37	3.95	179.68	701.38	700.82	2.69
10835.00	91.00	176.00	10307.11	-796.09	10.82	179.22	796.16	795.76	1.00
10930.00	89.30	175.90	10306.86	-890.85	17.53	178.87	891.02	890.72	1.79
11025.00	90.50	176.10	10307.03	-985.61	24.15	178.60	985.91	985.69	1.28
11120.00	90.60	177.10	10306.12	-1080.44	29.79	178.42	1080.85	1080.68	1.06
11215.00	92.60	176.10	10303.46	-1175.23	35.42	178.27	1175.76	1175.63	2.35
11310.00	91.30	176.40	10300.23	-1269.97	41.63	178.12	1270.65	1270.55	1.40
11405.00	91.10	177.20	10298.24	-1364.80	46.93	178.03	1365.61	1365.52	0.87

MD	Inclination	Azimuth	TVD	NS	EW	CA	CD	VS	DLS
11500.00	90.40	179.10	10297.00	-1459.74	50.00	178.04	1460.59	1460.50	2.13
11595.00	90.30	180.00	10296.42	-1554.73	50.74	178.13	1555.56	1555.43	0.95
11690.00	90.40	179.60	10295.84	-1649.73	51.07	178.23	1650.52	1650.35	0.43
11786.00	90.00	177.80	10295.50	-1745.70	53.25	178.25	1746.51	1746.32	1.92
11881.00	91.40	176.80	10294.34	-1840.58	57.73	178.20	1841.49	1841.31	1.81
11976.00	90.00	177.60	10293.18	-1935.46	62.37	178.15	1936.46	1936.30	1.70
12071.00	90.90	177.60	10292.44	-2030.37	66.34	178.13	2031.46	2031.29	0.95
12166.00	90.20	176.80	10291.52	-2125.25	70.99	178.09	2126.44	2126.28	1.12
12261.00	89.60	176.50	10291.69	-2220.09	76.54	178.03	2221.41	2221.28	0.71
12356.00	91.30	175.80	10290.94	-2314.87	82.91	177.95	2316.35	2316.25	1.94
12452.00	90.50	175.40	10289.44	-2410.57	90.28	177.86	2412.26	2412.19	0.93
12547.00	89.90	175.90	10289.10	-2505.30	97.48	177.77	2507.19	2507.14	0.82
12641.00	90.50	176.40	10288.78	-2599.08	103.80	177.71	2601.16	2601.12	0.83
12737.00	90.20	177.10	10288.19	-2694.93	109.24	177.68	2697.14	2697.11	0.79
12832.00	92.20	176.90	10286.20	-2789.77	114.21	177.66	2792.11	2792.08	2.12
12927.00	90.20	177.60	10284.21	-2884.64	118.77	177.64	2887.08	2887.05	2.23
13022.00	89.50	178.20	10284.46	-2979.57	122.25	177.65	2982.08	2982.05	0.97
13118.00	89.30	177.60	10285.46	-3075.50	125.76	177.66	3078.07	3078.04	0.66
13213.00	89.50	178.50	10286.46	-3170.44	129.00	177.67	3173.06	3173.03	0.97
13308.00	91.20	179.00	10285.88	-3265.41	131.07	177.70	3268.04	3267.99	1.87
13403.00	91.00	178.50	10284.06	-3360.37	133.14	177.73	3363.01	3362.95	0.57
13499.00	90.50	178.00	10282.80	-3456.32	136.07	177.75	3458.99	3458.93	0.74
13594.00	90.10	177.60	10282.30	-3551.24	139.72	177.75	3553.99	3553.93	0.60
13689.00	88.80	178.30	10283.21	-3646.18	143.12	177.75	3648.98	3648.92	1.55
13784.00	88.10	178.50	10285.78	-3741.10	145.77	177.77	3743.94	3743.87	0.77
13879.00	89.70	177.30	10287.61	-3836.02	149.25	177.77	3838.92	3838.84	2.11
13974.00	89.70	176.90	10288.10	-3930.90	154.06	177.76	3933.91	3933.84	0.42
14069.00	90.40	177.60	10288.02	-4025.78	158.61	177.74	4028.91	4028.84	1.04
14165.00	90.00	177.20	10287.69	-4121.69	162.97	177.74	4124.91	4124.83	0.59
14260.00	90.50	176.90	10287.27	-4216.56	167.86	177.72	4219.90	4219.83	0.61
14355.00	90.70	175.90	10286.28	-4311.36	173.82	177.69	4314.87	4314.81	1.07
14451.00	92.10	175.20	10283.93	-4407.04	181.27	177.64	4410.77	4410.73	1.63
14546.00	94.50	174.60	10278.46	-4501.50	189.70	177.59	4505.50	4505.47	2.60
14597.00	96.20	174.10	10273.71	-4552.03	194.70	177.55	4556.19	4556.18	3.47
14650.00	96.20	174.10	10267.99	-4604.44	200.11	177.51	4608.79	4608.78	0.00