

OPERATOR
WELL/LEASE
COUNTY

COG OPERATING, LLC
HONEY GRAHAM STATE COM 5H
EDDY

079-0130

STATE OF NEW MEXICO
DEVIATION REPORT

15-41608

200	0.68
307	1.50
1,587	0.30
1,682	0.30
1,870	0.10
1,963	0.20
2,151	0.20
2,401	0.30
3,149	0.60
3,570	1.20
4,043	0.60
4,420	1.00
4,891	1.20
5,267	1.40
5,751	1.00
5,931	0.80
6,026	1.10
6,274	1.70
6,557	2.20
6,935	1.90

STATE OF TEXAS

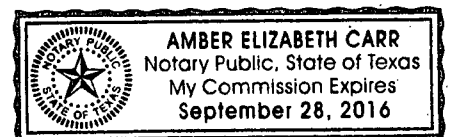
BY: Nora Garcia

COUNTY OF MIDLAND

The foregoing instrument was acknowledged before me on
Steve Moore on behalf of Patterson-UTI Drilling Company LLC.

2/21/14, by

Amber Elizabeth Carr
Notary Public for Midland County, Texas
My Commission Expires:



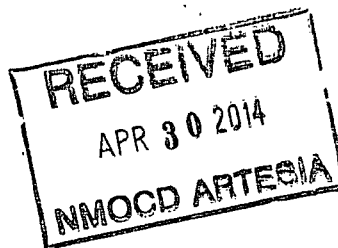


A GYRO TECHNOLOGIES INC. COMPANY

P.O. Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

February 20, 2014

COG Operating LLC (Concho)
One Concho Center
600 W. Illinois Avenue
Midland, TX 79701



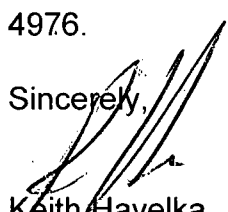
Attn: Kanicia Castillo

Re: **Honey Graham State Com No 005H**

Please find enclosed a copy of the survey from 0' to 7,252' ran on the above referenced well.

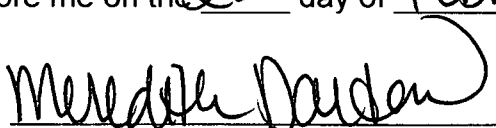
If I can be of any further service, please do not hesitate to call me at 800-606-4976.

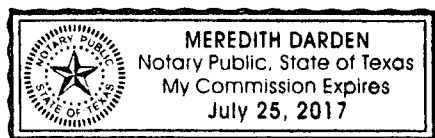
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 20th day of February A.D., 2014, by Keith Havelka.


Meredith Darden
Notary Public, State of Texas



Company: COG Operating-Concho
Lease/Well: Honey Graham State Com/No 005H



Rig Name: Patterson 79
State/County: New Mexico/Eddy
Latitude: 32.02, Longitude: -104.10
GRID North is 0.12 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 17.5 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ...m state com 5h_gyro survey.ut

Minimum Curvature Method

Report Date/Time: 2/20/2014 / 09:59

Vaughn Energy Services

Midland, Texas

432-563-5444

Surveyor: Gene Heiss

Honey Graham State Com No 005H / API 30-015-41608



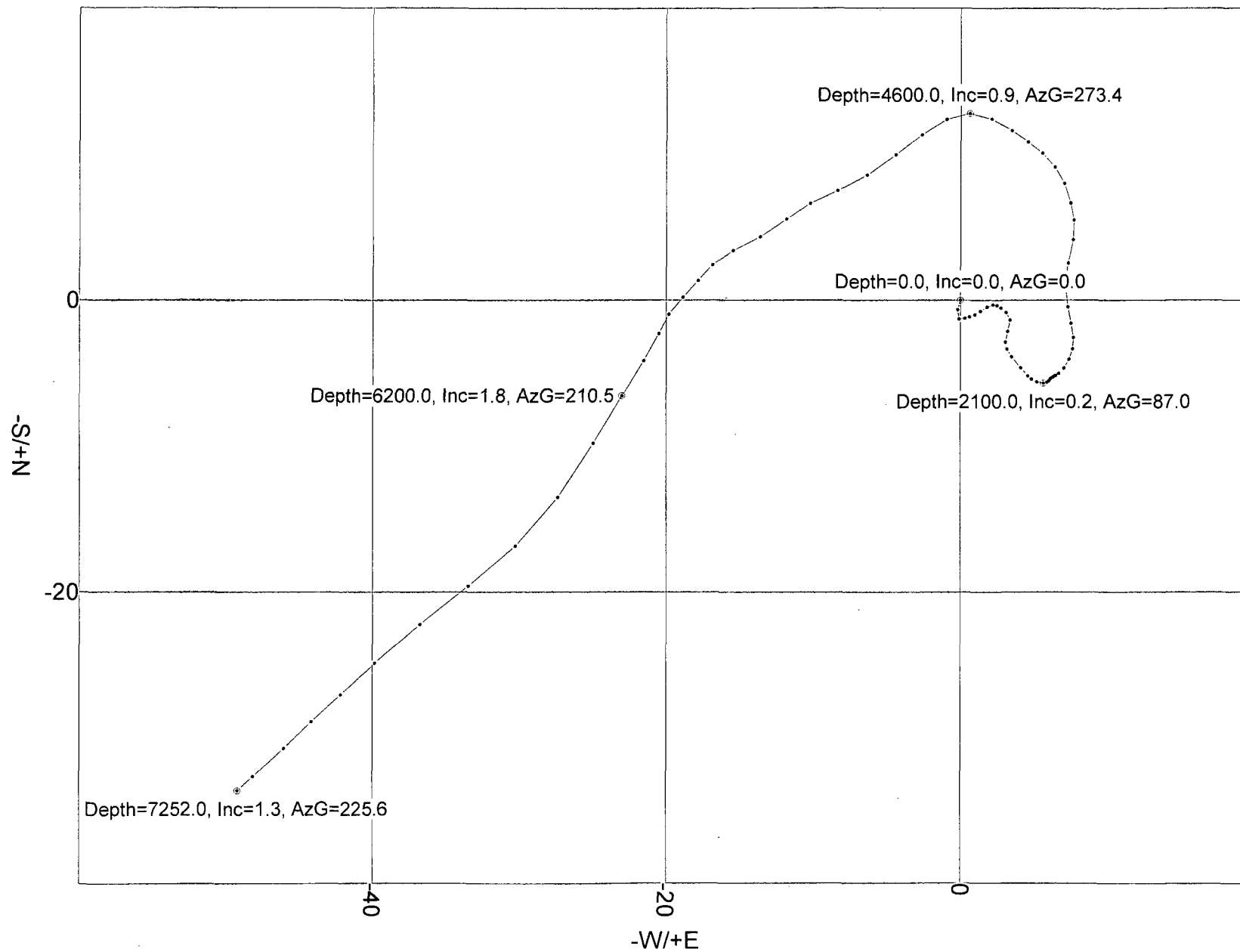
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.77	195.78	100.00	-0.64	-0.18	-0.64	0.67	195.78	0.77
200.00	0.29	87.78	199.99	-1.28	-0.11	-1.28	1.28	184.86	0.90
300.00	0.16	77.18	299.99	-1.24	0.29	-1.24	1.27	166.95	0.13
400.00	0.21	71.46	399.99	-1.15	0.60	-1.15	1.30	152.21	0.05
500.00	0.25	62.51	499.99	-0.99	0.98	-0.99	1.39	135.29	0.05
600.00	0.25	52.95	599.99	-0.75	1.34	-0.75	1.54	119.25	0.04
700.00	0.37	60.71	699.99	-0.46	1.80	-0.46	1.86	104.47	0.13
800.00	0.14	92.41	799.99	-0.31	2.20	-0.31	2.23	98.06	0.26
900.00	0.18	105.23	899.99	-0.36	2.48	-0.36	2.51	98.23	0.05
1000.00	0.19	141.28	999.99	-0.53	2.73	-0.53	2.79	100.94	0.11
1100.00	0.37	125.33	1099.99	-0.84	3.10	-0.84	3.21	105.22	0.19
1200.00	0.37	178.49	1199.98	-1.35	3.37	-1.35	3.63	111.83	0.33
1300.00	0.57	201.58	1299.98	-2.13	3.20	-2.13	3.84	123.74	0.27
1400.00	0.31	174.39	1399.98	-2.87	3.04	-2.87	4.18	133.31	0.33
1500.00	0.25	159.94	1499.98	-3.34	3.14	-3.34	4.59	136.76	0.09
1600.00	0.47	142.31	1599.97	-3.87	3.47	-3.87	5.20	138.15	0.24
1700.00	0.64	139.72	1699.97	-4.62	4.08	-4.62	6.16	138.57	0.17
1800.00	0.22	137.55	1799.97	-5.18	4.56	-5.18	6.91	138.63	0.42

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.17	122.05	1899.97	-5.40	4.82	-5.40	7.24	138.27	0.07
2000.00	0.31	112.65	1999.97	-5.59	5.19	-5.59	7.63	137.08	0.14
2100.00	0.22	86.96	2099.96	-5.68	5.63	-5.68	8.00	135.23	0.14
2200.00	0.11	54.59	2199.96	-5.61	5.90	-5.61	8.15	133.57	0.14
2300.00	0.08	35.67	2299.96	-5.50	6.02	-5.50	8.16	132.43	0.04
2400.00	0.10	44.35	2399.96	-5.38	6.12	-5.38	8.15	131.31	0.02
2500.00	0.11	58.45	2499.96	-5.27	6.27	-5.27	8.19	130.06	0.03
2600.00	0.03	72.57	2599.96	-5.21	6.37	-5.21	8.23	129.27	0.07
2700.00	0.08	60.51	2699.96	-5.17	6.47	-5.17	8.28	128.62	0.05
2800.00	0.23	53.60	2799.96	-5.01	6.69	-5.01	8.36	126.81	0.15
2900.00	0.35	38.48	2899.96	-4.65	7.05	-4.65	8.44	123.39	0.14
3000.00	0.45	21.48	2999.96	-4.04	7.38	-4.04	8.42	118.68	0.15
3100.00	0.40	18.76	3099.96	-3.34	7.64	-3.34	8.34	113.60	0.05
3200.00	0.52	352.42	3199.95	-2.56	7.70	-2.56	8.11	108.38	0.24
3300.00	0.61	349.13	3299.95	-1.59	7.54	-1.59	7.70	101.88	0.10
3400.00	0.70	349.53	3399.94	-0.46	7.32	-0.46	7.34	93.60	0.09
3500.00	0.95	357.20	3499.93	0.97	7.17	0.97	7.24	82.29	0.28
3600.00	0.87	14.65	3599.92	2.54	7.32	2.54	7.75	70.89	0.29
3700.00	1.01	9.68	3699.91	4.14	7.66	4.14	8.71	61.62	0.16
3800.00	0.55	348.77	3799.90	5.48	7.72	5.48	9.46	54.64	0.54
3900.00	0.83	349.43	3899.89	6.65	7.49	6.65	10.02	48.39	0.28
4000.00	0.79	335.42	3999.88	7.99	7.07	7.99	10.67	41.52	0.20
4100.00	0.70	323.55	4099.87	9.11	6.42	9.11	11.15	35.19	0.18
4200.00	0.78	313.51	4199.86	10.07	5.57	10.07	11.51	28.95	0.15
4300.00	0.66	301.09	4299.85	10.83	4.58	10.83	11.76	22.93	0.19
4400.00	0.91	307.12	4399.85	11.61	3.45	11.61	12.12	16.56	0.26
4500.00	0.92	293.56	4499.83	12.41	2.09	12.41	12.59	9.54	0.22
4600.00	0.86	273.36	4599.82	12.78	0.60	12.78	12.79	2.70	0.32
4700.00	1.08	242.51	4699.81	12.39	-0.98	12.39	12.43	355.48	0.56
4800.00	1.22	233.38	4799.79	11.32	-2.66	11.32	11.63	346.76	0.23
4900.00	1.35	231.23	4899.76	9.95	-4.44	9.95	10.89	335.97	0.14
5000.00	1.37	237.16	4999.73	8.56	-6.36	8.56	10.67	323.38	0.14
5100.00	1.23	247.28	5099.71	7.49	-8.36	7.49	11.23	311.87	0.27
5200.00	1.12	241.80	5199.69	6.62	-10.22	6.62	12.17	302.93	0.16
5300.00	1.10	230.63	5299.67	5.54	-11.82	5.54	13.06	295.12	0.22
5400.00	1.40	240.63	5399.64	4.34	-13.63	4.34	14.30	287.64	0.37
5500.00	0.98	246.67	5499.62	3.40	-15.48	3.40	15.84	282.39	0.44
5600.00	1.00	223.41	5599.61	2.43	-16.86	2.43	17.03	278.19	0.40
5700.00	0.65	218.96	5699.60	1.35	-17.82	1.35	17.87	274.33	0.35

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	1.12	223.35	5799.59	0.20	-18.85	0.20	18.85	270.60	0.47
5900.00	0.64	213.63	5899.57	-0.98	-19.83	-0.98	19.85	267.17	0.50
6000.00	1.06	203.89	5999.56	-2.29	-20.51	-2.29	20.64	263.63	0.44
6100.00	1.40	212.78	6099.54	-4.16	-21.54	-4.16	21.94	259.08	0.39
6200.00	1.81	210.46	6199.50	-6.54	-23.00	-6.54	23.92	254.12	0.42
6300.00	2.53	211.10	6299.43	-9.80	-24.95	-9.80	26.80	248.56	0.72
6400.00	2.55	214.34	6399.33	-13.52	-27.34	-13.52	30.50	243.68	0.14
6500.00	2.54	227.79	6499.23	-16.85	-30.24	-16.85	34.61	240.87	0.60
6600.00	2.28	231.29	6599.14	-19.58	-33.43	-19.58	38.75	239.64	0.30
6700.00	2.56	231.69	6699.05	-22.22	-36.74	-22.22	42.94	238.84	0.28
6800.00	2.09	226.32	6798.97	-24.86	-39.81	-24.86	46.94	238.02	0.52
6900.00	1.58	228.90	6898.92	-27.03	-42.18	-27.03	50.09	237.34	0.51
7000.00	1.57	226.17	6998.88	-28.89	-44.20	-28.89	52.81	236.84	0.08
7100.00	1.45	225.54	7098.85	-30.72	-46.10	-30.72	55.40	236.32	0.11
7200.00	1.81	228.64	7198.81	-32.66	-48.19	-32.66	58.21	235.88	0.37
7252.00	1.35	225.62	7250.79	-33.63	-49.24	-33.63	59.63	235.67	0.91



Vaughn Energy Services
Midland, Texas
432-563-5444
Surveyor: Gene Heiss
Honey Graham State Com No 005H / API 30-015-41608



VES Survey Date: 02/04/2014



COG Operating, LLC

Eddy County, NM (NAD 27)

Sec 29, T26S, R28E

Honey Graham State Com #5H

Wellbore #1

Survey: MWD

DDC Survey Report

17 February, 2014





Survey Certification Sheet

COG Operating LLC
Company

WT-140072
Job Number

2/17/14
Date

Sec29, T26S, R28E
Lease

Honey Graham State Com #5H
Well Name

Eddy, NM
County & State

API: 30-015-41608

Surveyed from a depth of: 7252 feet to 14617 feet MD

Type of Survey: MWD

Directional Supervisor/Surveyor: George Sample

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by **The Directional Drilling Company (DDC)**. This report represents a true and correct Directional survey of this well based on the original data obtained at the well site. Wellbore Coordinates are calculated using minimum curvature.

Digitally signed by Larry Wright
DN: cn=Larry Wright, o=The
Directional Drilling Company,
ou=GM of Guidance Services,
email=larryw@directionaldrillers.
com, c=US
Date: 2014.02.19 16:21:20 -06'00'

Larry Wright
MWD General Manager



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)
TIE IN @ 7252 MD / 7251 TVD									
7,252.0	1.35	225.62	7,250.8	-33.6	-49.3	33.6	0.00	0.00	0.00
7,275.0	1.10	236.90	7,273.8	-34.0	-49.6	33.9	1.51	-1.09	49.04
7,306.0	2.40	185.40	7,304.8	-34.8	-50.0	34.7	6.19	4.19	-166.13
7,338.0	4.80	172.10	7,336.7	-36.8	-49.8	36.7	7.89	7.50	-41.56
7,370.0	8.60	161.90	7,368.5	-40.4	-48.9	40.3	12.40	11.88	-31.88
7,401.0	11.00	157.30	7,399.0	-45.3	-47.0	45.2	8.14	7.74	-14.84
7,432.0	12.90	159.40	7,429.4	-51.3	-44.7	51.2	6.29	6.13	6.77
7,464.0	16.00	161.70	7,460.3	-58.8	-42.0	58.7	9.85	9.69	7.19
7,495.0	19.70	164.00	7,489.8	-67.9	-39.3	67.8	12.15	11.94	7.42



DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Honey Graham State Com #5H
Project:	Eddy County, NM (NAD 27)	TVD Reference:	WELL @ 3027.0usft (Patterson #79)
Site:	Sec 29, T26S, R28E	MD Reference:	WELL @ 3027.0usft (Patterson #79)
Well:	Honey Graham State Com #5H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM/5000.1/Single User Db

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)
7,527.0	22.20	167.20	7,519.7	-79.0	-36.4	78.9	8.59	7.81	10.00
7,558.0	25.80	170.30	7,548.0	-91.3	-34.0	91.3	12.30	11.61	10.00
7,590.0	29.30	173.30	7,576.4	-106.0	-31.9	105.9	11.76	10.94	9.38
7,621.0	33.10	174.70	7,602.9	-121.9	-30.2	121.9	12.48	12.26	4.52
7,653.0	36.90	175.60	7,629.1	-140.2	-28.7	140.2	11.98	11.88	2.81
7,684.0	39.50	177.20	7,653.5	-159.4	-27.5	159.3	8.97	8.39	5.16
7,716.0	42.40	179.30	7,677.7	-180.3	-26.9	180.3	10.03	9.06	6.56
7,747.0	45.60	181.90	7,700.0	-201.8	-27.1	201.8	11.85	10.32	8.39
7,779.0	49.00	182.10	7,721.7	-225.3	-27.9	225.3	10.63	10.63	0.63
7,810.0	51.20	180.90	7,741.5	-249.1	-28.6	249.1	7.69	7.10	-3.87
7,842.0	53.40	181.00	7,761.1	-274.4	-29.0	274.4	6.88	6.88	0.31
7,874.0	56.00	178.90	7,779.6	-300.5	-28.9	300.5	9.73	8.13	-6.56
7,905.0	59.30	176.60	7,796.2	-326.7	-27.9	326.6	12.35	10.65	-7.42
7,937.0	63.30	174.50	7,811.5	-354.7	-25.7	354.6	13.76	12.50	-6.56
7,968.0	67.40	175.20	7,824.5	-382.7	-23.2	382.7	13.38	13.23	2.26
8,000.0	70.20	177.00	7,836.0	-412.5	-21.2	412.5	10.20	8.75	5.63
8,032.0	72.70	178.10	7,846.2	-442.8	-19.9	442.8	8.46	7.81	3.44
8,063.0	76.40	180.30	7,854.5	-472.7	-19.5	472.6	13.76	11.94	7.10
8,095.0	80.90	181.20	7,860.8	-504.0	-19.9	504.0	14.33	14.06	2.81
8,126.0	85.30	183.00	7,864.5	-534.8	-21.0	534.7	15.32	14.19	5.81
8,189.0	90.80	186.30	7,866.6	-597.5	-26.1	597.5	10.18	8.73	5.24
8,284.0	90.10	186.80	7,865.9	-691.9	-36.9	691.8	0.91	-0.74	0.53
8,378.0	89.10	183.90	7,866.6	-785.4	-45.7	785.4	3.26	-1.06	-3.09
8,472.0	89.10	178.80	7,868.0	-879.4	-47.9	879.3	5.42	0.00	-5.43
8,567.0	90.00	177.70	7,868.8	-974.3	-45.0	974.3	1.50	0.95	-1.16
8,661.0	90.50	174.70	7,868.4	-1,068.1	-38.8	1,068.0	3.24	0.53	-3.19
8,756.0	91.80	176.60	7,866.5	-1,162.8	-31.6	1,162.8	2.42	1.37	2.00
8,851.0	89.20	177.20	7,865.6	-1,257.7	-26.4	1,257.6	2.81	-2.74	0.63
8,947.0	90.90	178.10	7,865.6	-1,353.6	-22.5	1,353.5	2.00	1.77	0.94
9,043.0	91.40	178.60	7,863.6	-1,449.5	-19.7	1,449.5	0.74	0.52	0.52
9,138.0	90.50	181.90	7,862.0	-1,544.5	-20.2	1,544.5	3.60	-0.95	3.47
9,233.0	90.40	180.70	7,861.3	-1,639.5	-22.3	1,639.4	1.27	-0.11	-1.26
9,328.0	89.70	180.90	7,861.2	-1,734.5	-23.6	1,734.4	0.77	-0.74	0.21
9,424.0	89.30	180.20	7,862.1	-1,830.4	-24.6	1,830.4	0.84	-0.42	-0.73
9,519.0	91.60	179.10	7,861.3	-1,925.4	-24.0	1,925.4	2.68	2.42	-1.16
9,614.0	89.90	178.60	7,860.1	-2,020.4	-22.1	2,020.4	1.87	-1.79	-0.53
9,710.0	89.80	181.60	7,860.3	-2,116.4	-22.2	2,116.3	3.13	-0.10	3.13
9,807.0	91.40	180.00	7,859.3	-2,213.4	-23.6	2,213.3	2.33	1.65	-1.65
9,902.0	91.70	178.60	7,856.7	-2,308.3	-22.4	2,308.3	1.51	0.32	-1.47
9,997.0	91.30	177.90	7,854.2	-2,403.2	-19.5	2,403.2	0.85	-0.42	-0.74
10,093.0	92.20	179.80	7,851.3	-2,499.2	-17.6	2,499.1	2.19	0.94	1.98
10,188.0	92.70	180.00	7,847.3	-2,594.1	-17.4	2,594.1	0.57	0.53	0.21
10,286.0	91.30	179.50	7,843.8	-2,692.0	-17.0	2,692.0	1.52	-1.43	-0.51



DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well: Honey Graham State Corn #5H
Project:	Eddy County, NM (NAD 27)	TVD Reference:	WELL @ 3027.0usft (Patterson #79)
Site:	Sec 29, T26S, R28E	MD Reference:	WELL @ 3027.0usft (Patterson #79)
Well:	Honey Graham State Corn #5H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
10,381.0	89.60	178.20	7,843.1	-2,787.0	-15.1	2,787.0	2.25	-1.79	-1.37
10,476.0	89.20	177.70	7,844.1	-2,881.9	-11.7	2,881.9	0.67	-0.42	-0.53
10,572.0	87.20	178.10	7,847.1	-2,977.8	-8.2	2,977.8	2.12	-2.08	0.42
10,667.0	87.70	178.80	7,851.3	-3,072.7	-5.6	3,072.7	0.90	0.53	0.74
10,763.0	87.20	178.90	7,855.6	-3,168.6	-3.7	3,168.6	0.53	-0.52	0.10
10,858.0	89.30	179.60	7,858.5	-3,263.5	-2.5	3,263.5	2.33	2.21	0.74
10,953.0	90.50	178.90	7,858.7	-3,358.5	-1.2	3,358.5	1.46	1.26	-0.74
11,049.0	91.80	179.10	7,856.7	-3,454.5	0.5	3,454.5	1.37	1.35	0.21
11,145.0	91.40	179.10	7,854.1	-3,550.4	2.0	3,550.4	0.42	-0.42	0.00
11,240.0	91.40	177.70	7,851.7	-3,645.3	4.6	3,645.3	1.47	0.00	-1.47
11,335.0	91.10	178.90	7,849.7	-3,740.3	7.4	3,740.3	1.30	-0.32	1.26
11,430.0	91.10	178.40	7,847.8	-3,835.2	9.7	3,835.2	0.53	0.00	-0.53
11,525.0	90.80	180.90	7,846.3	-3,930.2	10.2	3,930.2	2.65	-0.32	2.63
11,620.0	90.90	179.80	7,844.9	-4,025.2	9.7	4,025.2	1.16	0.11	-1.16
11,715.0	89.10	180.50	7,844.9	-4,120.2	9.4	4,120.2	2.03	-1.89	0.74
11,811.0	89.30	180.30	7,846.2	-4,216.2	8.7	4,216.2	0.29	0.21	-0.21
11,906.0	89.50	181.20	7,847.2	-4,311.2	7.5	4,311.2	0.97	0.21	0.95
12,001.0	89.00	180.30	7,848.4	-4,406.2	6.3	4,406.2	1.08	-0.53	-0.95
12,096.0	88.80	180.70	7,850.3	-4,501.1	5.4	4,501.1	0.47	-0.21	0.42
12,192.0	90.30	180.90	7,851.0	-4,597.1	4.1	4,597.1	1.58	1.56	0.21
12,286.0	91.40	180.30	7,849.6	-4,691.1	3.1	4,691.1	1.33	1.17	-0.64
12,382.0	91.50	180.00	7,847.2	-4,787.1	2.9	4,787.1	0.33	0.10	-0.31
12,477.0	91.70	180.30	7,844.5	-4,882.0	2.6	4,882.0	0.38	0.21	0.32
12,572.0	90.50	181.00	7,842.7	-4,977.0	1.5	4,977.0	1.46	-1.26	0.74
12,667.0	90.00	179.60	7,842.3	-5,072.0	1.0	5,072.0	1.56	-0.53	-1.47
12,760.0	90.00	179.80	7,842.3	-5,165.0	1.5	5,165.0	0.22	0.00	0.22
12,855.0	89.60	178.90	7,842.6	-5,260.0	2.6	5,260.0	1.04	-0.42	-0.95
12,950.0	89.60	178.90	7,843.3	-5,355.0	4.4	5,355.0	0.00	0.00	0.00
13,045.0	89.40	178.80	7,844.1	-5,449.9	6.3	5,449.9	0.24	-0.21	-0.11
13,140.0	89.10	178.10	7,845.4	-5,544.9	8.9	5,544.9	0.80	-0.32	-0.74
13,235.0	89.60	178.80	7,846.4	-5,639.9	11.5	5,639.9	0.91	0.53	0.74
13,330.0	89.50	178.40	7,847.2	-5,734.8	13.8	5,734.8	0.43	-0.11	-0.42
13,426.0	90.40	178.60	7,847.3	-5,830.8	16.3	5,830.8	0.96	0.94	0.21
13,521.0	90.60	178.10	7,846.4	-5,925.8	19.0	5,925.8	0.57	0.21	-0.53
13,617.0	90.00	177.70	7,845.9	-6,021.7	22.6	6,021.7	0.75	-0.63	-0.42
13,713.0	91.70	176.60	7,844.5	-6,117.6	27.3	6,117.6	2.11	1.77	-1.15
13,807.0	91.70	177.40	7,841.7	-6,211.4	32.2	6,211.4	0.85	0.00	0.85
13,903.0	91.00	177.20	7,839.5	-6,307.2	36.8	6,307.3	0.76	-0.73	-0.21
13,998.0	90.90	177.20	7,837.9	-6,402.1	41.4	6,402.2	0.11	-0.11	0.00
14,093.0	90.90	177.40	7,836.4	-6,497.0	45.9	6,497.1	0.21	0.00	0.21
14,187.0	90.80	176.80	7,835.0	-6,590.9	50.6	6,590.9	0.65	-0.11	-0.64
14,282.0	90.60	175.90	7,833.8	-6,685.7	56.7	6,685.8	0.97	-0.21	-0.95
14,377.0	90.40	175.60	7,833.0	-6,780.4	63.7	6,780.5	0.38	-0.21	-0.32



DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well: Honey Graham State Com #5H
Project:	Eddy County, NM (NAD 27)	TVD Reference:	WELL @ 3027.0usft (Patterson #79)
Site:	Sec 29, T26S, R28E	MD Reference:	WELL @ 3027.0usft (Patterson #79)
Well:	Honey Graham State Com #5H	North Reference:	Grid:
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM: 5000.1 Single User Db

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)
14,472.0	90.20	174.20	7,832.5	-6,875.0	72.2	6,875.1	1.49	-0.21	-1.47
14,567.0	90.00	174.50	7,832.3	-6,969.6	81.5	6,969.7	0.38	-0.21	0.32
TD @ 14617' MD / 7832' TVD									
14,617.0	90.00	174.50	7,832.3	-7,019.3	86.3	7,019.5	0.00	0.00	0.00

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,252.0	7,250.8	-33.6	-49.3	TIE IN @ 7252' MD / 7251' TVD
14,617.0	7,832.3	-7,019.3	86.3	TD @ 14617' MD / 7832' TVD

Checked By: _____	Approved By: _____	Date: _____
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