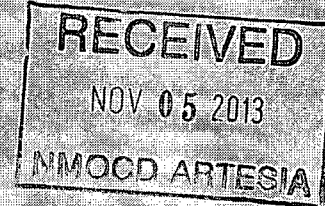




A GYRO TECHNOLOGIES INC. COMPANY

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

June 14, 2013



Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

Attn: Kanicia Castillo

30-015-40886

RE: **Burch Keely Unit 936H**

Please find enclosed a copy of the survey from 0.00' to 4280.00' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 14th day of June, A.D., 2013, by Keith Havelka.

Laura Ballew
Notary Public, State of Texas





Company: COG Operating LLC (Concho)
Lease/Well: Burch Keely Unit /936H
Location: Sec-13 T-17S R-29E
Rig Name: UDI 40
State/County: New Mexico/Eddy
Latitude: 32.83, Longitude: -104.04
GRID North is 0.16 Degrees East of True North
VS-Azi: 0.00 Degrees



30-015-40888

Depth Reference : RKB 14 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: burch keely unit #936h-de_01.ut

Minimum Curvature Method

Report Date/Time: 6/14/2013 / 11:30

Vaughn Energy Services

West, Texas

432-563-5444

Surveyor: Chris Bankson

Burch Keely Unit 936H / API 30-015-40888

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	0.18	116.03	100.00	-0.07	0.14	-0.07	0.15	116.03	0.18
200.00	0.28	125.25	200.00	-0.28	0.48	-0.28	0.55	120.09	0.11
300.00	0.25	131.96	300.00	-0.56	0.84	-0.56	1.01	123.90	0.04
400.00	0.58	104.41	400.00	-0.84	1.49	-0.84	1.71	119.27	0.38
500.00	0.74	92.88	499.99	-1.00	2.63	-1.00	2.81	110.72	0.21
600.00	0.85	82.31	599.98	-0.93	4.01	-0.93	4.12	103.03	0.18
700.00	1.04	71.46	699.97	-0.54	5.60	-0.54	5.63	95.53	0.26
800.00	0.97	66.60	799.95	0.08	7.24	0.08	7.24	89.36	0.11
900.00	1.00	60.12	899.94	0.85	8.77	0.85	8.82	84.45	0.12
1000.00	0.84	60.78	999.92	1.65	10.17	1.65	10.30	80.81	0.17
1100.00	1.02	49.02	1099.91	2.59	11.48	2.59	11.77	77.30	0.26
1200.00	1.07	48.11	1199.89	3.79	12.85	3.79	13.40	73.55	0.05
1300.00	1.08	48.59	1299.88	5.06	14.23	5.06	15.10	70.41	0.03
1400.00	1.37	48.40	1399.85	6.50	15.80	6.50	17.08	67.64	0.29
1500.00	1.21	45.18	1499.83	8.04	17.44	8.04	19.20	65.26	0.17
1600.00	1.26	43.34	1599.80	9.58	18.95	9.58	21.23	63.17	0.06
1700.00	1.05	44.47	1699.78	11.03	20.34	11.03	23.14	61.52	0.21
1800.00	1.31	46.26	1799.76	12.48	21.81	12.48	25.13	60.22	0.26

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	1.27	52.32	1899.74	13.94	23.51	13.94	27.33	59.33	0.14
2000.00	1.30	48.18	1999.71	15.37	25.23	15.37	29.54	58.64	0.10
2100.00	1.25	39.97	2099.69	16.97	26.77	16.97	31.70	57.64	0.19
2200.00	1.09	29.16	2199.67	18.63	27.94	18.63	33.58	56.30	0.28
2300.00	0.98	27.60	2299.65	20.22	28.80	20.22	35.18	54.93	0.11
2400.00	0.79	26.06	2399.64	21.59	29.49	21.59	36.55	53.79	0.19
2500.00	0.83	21.34	2499.63	22.89	30.06	22.89	37.78	52.72	0.08
2600.00	0.86	16.77	2599.62	24.28	30.54	24.28	39.02	51.51	0.07
2700.00	0.83	13.25	2699.61	25.70	30.92	25.70	40.21	50.27	0.06
2800.00	0.54	358.62	2799.60	26.87	31.08	26.87	41.08	49.15	0.34
2900.00	0.47	3.31	2899.60	27.75	31.09	27.75	41.67	48.25	0.08
3000.00	0.35	6.06	2999.59	28.46	31.14	28.46	42.19	47.57	0.11
3100.00	0.24	5.61	3099.59	28.98	31.20	28.98	42.58	47.11	0.11
3200.00	0.13	15.06	3199.59	29.30	31.25	29.30	42.84	46.84	0.11
3300.00	0.13	27.36	3299.59	29.51	31.33	29.51	43.04	46.71	0.03
3400.00	0.09	35.43	3399.59	29.67	31.42	29.67	43.21	46.65	0.04
3500.00	0.20	40.05	3499.59	29.86	31.58	29.86	43.46	46.60	0.12
3600.00	0.36	71.05	3599.59	30.10	31.99	30.10	43.92	46.74	0.21
3700.00	0.42	50.44	3699.59	30.43	32.56	30.43	44.57	46.94	0.15
3800.00	0.47	46.08	3799.58	30.96	33.15	30.96	45.35	46.96	0.06
3900.00	0.43	45.30	3899.58	31.50	33.71	31.50	46.14	46.93	0.05
4000.00	0.51	49.24	3999.58	32.06	34.31	32.06	46.95	46.94	0.09
4100.00	0.66	54.34	4099.57	32.68	35.11	32.68	47.97	47.05	0.16
4200.00	0.28	55.53	4199.57	33.16	35.78	33.16	48.78	47.18	0.39
4280.00	0.23	86.16	4279.57	33.28	36.10	33.28	49.10	47.33	0.18



Archer Directional Drilling Services.
12101 Cutten Road
Houston, Texas 77066
Tel: 281-301-2600
Fax: 281-301-2795

COG Operating, LLC
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

July 1, 2013

Re: COG Operating, LLC
Burch Keely Unit #936H
Field: Wildcat
Rig: UDI 40
Eddy County, New Mexico
API # 30-015-40888

Enclosed please find the original of the surveys performed on the referenced well by Archer Directional Drilling Services. Other information required by your office is as follows:

<u>Name & Title Of Surveyor</u>	<u>Wellhole Number</u>	<u>Survey Depths</u>	<u>Dates Performed</u>	<u>Type Survey</u>
Justin Warnack Field Engineer	Original Hole	4370-9275	06/08/13-06/14/13	MWD

If additional information is required, please contact the undersigned at the letterhead address and phone number.

Amador Baggerly
MWD Coordinator



Archer Directional Drilling Services,
12101 Cutten Road
Houston, Texas 77066
Tel: 281-301-2600
Fax: 281-301-2795

MWD Survey Certification

State of New Mexico
County of Eddy

I, Amador Baggerly, certify that; I am employed by Archer Directional Drilling Services; that I did on the day(s) of 06/08/13 through 06/14/13, conduct or supervise the taking of MWD surveys from a depth of 4370 feet to a depth of 9275 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Archer Directional Drilling Services; that I am authorized and qualified to make this report; that these surveys were conducted at the request of COG Operating, LLC for the Burch Keely Unit #936H (API # 30-015-40888), Well located in Eddy County, New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Archer Directional Drilling Services

Amador Baggerly
MWD Coordinator

State of Texas
County of Harris

Before me, a notary public, on this day personally appeared Amador Baggerly, on this 31 day of July, 2013, known to me to be the person whose name is subscribed to the foregoing document and; being by me first duly sworn, declared that the statement therein contained are true and correct.

Notary Public's Signature





Company: COG Operating, LLC

Job Number: 04291-433-22

Calculation Method

Minimum Curvature

Well: Burch Keely Unit #936H

Mag Decl.: 7.45

Proposed Azimuth

90.1

Location: Eddy County, New Mexico

Dir Driller: Cody Styles

Depth Reference

KBG

Rig: UDI 40

MWD Eng: Justin Warnack

Tie Into: Gyro Survey

Job Date: 06/08/13 - 06/14/13

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth			
Tie In	4280.00	0.23	86.16	0	4279.57	36.07	33.31 N	36.14 E	0.00	0.00	0	0	0
1	4370	0.7	94.9	90	4369.57	36.80	33.28 N	36.87 E	49.66	47.93	0.53	0.52	9.71
2	4401	2.4	89.8	31	4400.55	37.64	33.26 N	37.71 E	50.28	48.58	5.50	5.48	-16.45
3	4433	5.1	87.0	32	4432.48	39.73	33.34 N	39.80 E	51.92	50.05	8.45	8.44	-8.75
4	4465	7.8	86.6	32	4464.28	43.31	33.54 N	43.39 E	54.84	52.29	8.44	8.44	-1.25
5	4496	10.6	88.6	31	4494.88	48.27	33.74 N	48.34 E	58.95	55.09	9.09	9.03	6.45
6	4528	13.8	89.9	32	4526.15	55.03	33.81 N	55.10 E	64.65	58.46	10.04	10.00	4.06
7	4560	17.1	90.2	32	4556.99	63.55	33.80 N	63.62 E	72.04	62.02	10.32	10.31	0.94
8	4592	20.3	90.5	32	4587.30	73.81	33.74 N	73.88 E	81.22	65.45	10.00	10.00	0.94
9	4623	23.6	91.6	31	4616.04	85.39	33.52 N	85.46 E	91.80	68.58	10.73	10.65	3.55
10	4655	26.6	93.8	32	4645.02	98.95	32.87 N	99.02 E	104.33	71.64	9.82	9.38	6.88
11	4687	29.5	95.3	32	4673.26	113.95	31.66 N	114.01 E	118.33	74.48	9.33	9.06	4.69
12	4718	32.8	95.1	31	4699.78	129.92	30.21 N	129.98 E	133.45	76.92	10.65	10.65	-0.65
13	4750	36.6	94.6	32	4726.09	148.07	28.67 N	148.13 E	150.88	79.04	11.91	11.88	-1.56
14	4782	40.2	94.8	32	4751.16	167.88	27.05 N	167.94 E	170.10	80.85	11.26	11.25	0.63
15	4813	43.6	94.8	31	4774.23	188.51	25.31 N	188.56 E	190.26	82.35	10.97	10.97	0.00
16	4845	47.1	95.1	32	4796.72	211.19	23.35 N	211.24 E	212.53	83.69	10.96	10.94	0.94
17	4877	50.6	95.4	32	4817.77	235.19	21.14 N	235.23 E	236.18	84.86	10.96	10.94	0.94
18	4909	53.9	95.8	32	4837.36	260.37	18.67 N	260.41 E	261.08	85.90	10.36	10.31	1.25
19	4940	57.0	96.1	31	4854.94	285.77	16.02 N	285.80 E	286.25	86.79	10.03	10.00	0.97
20	4972	59.2	96.7	32	4871.85	312.77	12.99 N	312.80 E	313.07	87.62	7.06	6.88	1.88
21	5004	62.3	96.3	32	4887.48	340.51	9.83 N	340.53 E	340.68	88.35	9.75	9.69	-1.25
22	5035	66.2	95.5	31	4900.95	368.29	6.97 N	368.30 E	368.37	88.92	12.79	12.58	-2.58
23	5067	69.6	95.3	32	4912.99	397.80	4.18 N	397.81 E	397.84	89.40	10.64	10.63	-0.63
24	5099	72.7	95.0	32	4923.32	427.97	1.46 N	427.97 E	427.97	89.80	9.73	9.69	-0.94
25	5131	75.9	94.5	32	4931.98	458.67	1.09 S	458.67 E	458.67	90.14	10.11	10.00	-1.56
26	5162	79.2	95.0	31	4938.66	488.84	3.60 S	488.83 E	488.84	90.42	10.76	10.65	1.61
27	5194	82.5	95.9	32	4943.75	520.29	6.60 S	520.28 E	520.32	90.73	10.68	10.31	2.81
28	5226	85.0	96.0	32	4947.23	551.93	9.89 S	551.91 E	552.00	91.03	7.82	7.81	0.31
29	5257	87.2	96.1	31	4949.34	582.69	13.15 S	582.67 E	582.82	91.29	7.10	7.10	0.32
30	5289	88.4	95.6	32	4950.57	614.51	16.41 S	614.48 E	614.70	91.53	4.06	3.75	-1.56
31	5321	88.5	95.6	32	4951.44	646.35	19.53 S	646.31 E	646.61	91.73	0.31	0.31	0.00
32	5416	89.1	94.9	95	4953.43	740.95	28.22 S	740.89 E	741.43	92.18	0.97	0.63	-0.74
33	5511	90.1	94.0	95	4954.09	835.67	35.60 S	835.60 E	836.36	92.44	1.42	1.05	-0.95
34	5606	91.3	93.1	95	4952.93	930.49	41.48 S	930.41 E	931.33	92.55	1.58	1.26	-0.95
35	5701	91.0	91.3	95	4951.02	1025.41	45.12 S	1025.32 E	1026.31	92.52	1.92	-0.32	-1.89
36	5796	92.0	90.0	95	4948.54	1120.37	46.20 S	1120.27 E	1121.23	92.36	1.73	1.05	-1.37
37	5891	92.6	89.7	95	4944.72	1215.29	45.95 S	1215.20 E	1216.06	92.17	0.71	0.63	-0.32



Company: COG Operating, LLC

Job Number: 04291-433-22

Calculation Method

Minimum Curvature

Well: Burch Keely Unit #936H

Mag Decl.: 7.45

Proposed Azimuth

90.1

Location: Eddy County, New Mexico

Dir Driller: Cody Styles

Depth Reference

KBG

Rig: UDI 40

MWD Eng: Justin Warnack

Tie Into: Gyro Survey

Job Date: 06/08/13 - 06/14/13

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth			
38	5986	91.4	89.5	95	4941.41	1310.23	45.29 S	1310.13 E	1310.92	91.98	1.28	-1.26	-0.21
39	6081	91.6	89.7	95	4938.92	1405.19	44.63 S	1405.10 E	1405.81	91.82	0.30	0.21	0.21
40	6176	91.0	88.8	95	4936.77	1500.15	43.38 S	1500.06 E	1500.69	91.66	1.14	-0.63	-0.95
41	6272	91.3	89.0	96	4934.84	1596.11	41.54 S	1596.03 E	1596.57	91.49	0.38	0.31	0.21
42	6367	91.3	88.5	95	4932.68	1691.06	39.47 S	1690.98 E	1691.44	91.34	0.53	0.00	-0.53
43	6462	91.6	88.8	95	4930.28	1786.00	37.23 S	1785.92 E	1786.31	91.19	0.45	0.32	0.32
44	6557	90.4	89.5	95	4928.62	1880.97	35.82 S	1880.90 E	1881.24	91.09	1.46	-1.26	0.74
45	6652	90.5	89.6	95	4927.88	1975.96	35.08 S	1975.89 E	1976.20	91.02	0.15	0.11	0.11
46	6747	90.7	90.0	95	4926.88	2070.95	34.74 S	2070.88 E	2071.18	90.96	0.47	0.21	0.42
47	6842	90.8	90.0	95	4925.64	2165.94	34.74 S	2165.88 E	2166.15	90.92	0.11	0.11	0.00
48	6938	90.9	90.5	96	4924.21	2261.93	35.16 S	2261.86 E	2262.14	90.89	0.53	0.10	0.52
49	7033	91.2	90.9	95	4922.47	2356.91	36.32 S	2356.84 E	2357.12	90.88	0.53	0.32	0.42
50	7128	91.3	90.0	95	4920.40	2451.89	37.07 S	2451.81 E	2452.09	90.87	0.95	0.11	-0.95
51	7223	91.6	89.6	95	4918.00	2546.85	36.74 S	2546.78 E	2547.05	90.83	0.53	0.32	-0.42
52	7319	90.2	89.4	96	4916.49	2642.83	35.90 S	2642.77 E	2643.01	90.78	1.47	-1.46	-0.21
53	7414	90.4	89.2	95	4915.99	2737.82	34.74 S	2737.76 E	2737.98	90.73	0.30	0.21	-0.21
54	7509	90.9	89.3	95	4914.91	2832.81	33.50 S	2832.74 E	2832.94	90.68	0.54	0.53	0.11
55	7604	91.3	89.5	95	4913.09	2927.78	32.50 S	2927.72 E	2927.90	90.64	0.47	0.42	0.21
56	7699	91.6	89.8	95	4910.68	3022.75	31.92 S	3022.69 E	3022.86	90.61	0.45	0.32	0.32
57	7794	90.1	89.4	95	4909.28	3117.73	31.26 S	3117.67 E	3117.83	90.57	1.63	-1.58	-0.42
58	7890	90.2	89.4	96	4909.02	3213.72	30.25 S	3213.67 E	3213.81	90.54	0.10	0.10	0.00
59	7985	90.2	89.5	95	4908.69	3308.71	29.34 S	3308.66 E	3308.79	90.51	0.11	0.00	0.11
60	8080	90.2	89.3	95	4908.36	3403.71	28.35 S	3403.65 E	3403.77	90.48	0.21	0.00	-0.21
61	8175	91.1	89.8	95	4907.28	3498.69	27.60 S	3498.64 E	3498.75	90.45	1.08	0.95	0.53
62	8270	91.2	89.8	95	4905.38	3593.67	27.27 S	3593.62 E	3593.73	90.43	0.11	0.11	0.00
63	8365	91.2	89.7	95	4903.39	3688.65	26.85 S	3688.60 E	3688.70	90.42	0.11	0.00	-0.11
64	8461	91.3	89.8	96	4901.29	3784.63	26.44 S	3784.58 E	3784.67	90.40	0.15	0.10	0.10
65	8556	91.4	90.0	95	4899.05	3879.60	26.27 S	3879.55 E	3879.64	90.39	0.24	0.11	0.21
66	8651	91.6	90.2	95	4896.57	3974.57	26.44 S	3974.52 E	3974.61	90.38	0.30	0.21	0.21
67	8746	91.9	90.4	95	4893.67	4069.52	26.93 S	4069.47 E	4069.56	90.38	0.38	0.32	0.21
68	8841	90.5	90.2	95	4891.68	4164.50	27.43 S	4164.45 E	4164.54	90.38	1.49	-1.47	-0.21
69	8936	90.5	90.2	95	4890.85	4259.49	27.76 S	4259.44 E	4259.54	90.37	0.00	0.00	0.00
70	9032	90.7	90.5	96	4889.84	4355.49	28.35 S	4355.44 E	4355.53	90.37	0.38	0.21	0.31
71	9127	91.1	90.6	95	4888.35	4450.47	29.26 S	4450.42 E	4450.52	90.38	0.43	0.42	0.11
72	9207	91.3	90.7	80	4886.68	4530.45	30.17 S	4530.40 E	4530.50	90.38	0.28	0.25	0.13
Proj.	9275	91.3	90.7	68	4885.13	4598.43	31.00 S	4598.38 E	4598.48	90.39	0.00	0.00	0.00



COG Operating, LLC

Eddy County(NM27E)

Sec.13-T17S-R29E

Burch Keely Unit #936H

Wellbore #1

Survey: Survey #2-Archer MWD

Standard Survey Report

14 June, 2013

Archer



Archer
Survey Report

Archer

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Burch Keely Unit #936H
Project:	Eddy County(NM27E)	TVD Reference:	WELL @ 3628.00usft
Site:	Sec.13-T17S-R29E	MD Reference:	WELL @ 3628.00usft
Well:	Burch Keely Unit #936H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM-5000.1 Single User Db

Project	Eddy County(NM27E)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Sec.13-T17S-R29E		
Site Position:		Northing:	669,803.500 usft
From:	Map	Easting:	591,706.400 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 50' 27.669 N
		Longitude:	104° 2' 5.079 W
		Grid Convergence:	0.16"

Well	Burch Keely Unit #936H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 49' 47.617 N
		Longitude:	104° 2' 6.973 W
		Ground Level:	3,614.00 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	05/19/13	7.61
		Dip Angle	60.62
		Field Strength	48,735

Design	Wellbore #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
		Direction	(°)
		90.12	

Survey Program	Date 08/14/13		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	4,280.00	Survey #1-VES Gyro (Wellbore #1)	GYD_DP_MS
4,370.00	9,275.77	Survey #2-Archer MWD (Wellbore #1)	MWD
			Description
			Gyrodeta gyro-compassing and drop
			MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate	
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
Tie-in / Ves Gyro										
4,280.00	0.23	86.16	4,279.57	33.31	36.14	36.07	0.00	0.00	0.00	
First Archer Survey										
4,370.00	0.70	94.90	4,369.56	33.28	36.86	36.80	0.53	0.52	9.71	
4,401.00	2.40	89.80	4,400.55	33.26	37.70	37.63	5.50	5.48	-16.45	
4,433.00	5.10	87.00	4,432.48	33.34	39.79	39.72	8.45	8.44	-8.75	
4,465.00	7.80	86.60	4,464.27	33.54	43.38	43.31	8.44	8.44	-1.25	
4,496.00	10.60	88.60	4,494.87	33.74	48.33	48.26	9.09	9.03	6.45	
4,528.00	13.80	89.90	4,526.15	33.81	55.09	55.02	10.04	10.00	4.06	
4,560.00	17.10	90.20	4,556.99	33.80	63.62	63.55	10.32	10.31	0.94	
4,592.00	20.30	90.50	4,587.29	33.74	73.87	73.81	10.00	10.00	0.94	
4,623.00	23.60	91.60	4,616.04	33.52	85.46	85.39	10.73	10.65	3.55	



Archer
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Burch Keely Unit #936H
Project:	Eddy County(NM27E)	TVD Reference:	WELL @ 3628.00usft
Site:	Sec.13-T17S-R29E	MD Reference:	WELL @ 3628.00usft
Well:	Burch Keely Unit #936H	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)
4,655.00	26.60	93.80	4,645.02	32.87	99.01	98.95	9.82	9.37	6.87
4,687.00	29.50	95.30	4,673.26	31.66	114.01	113.95	9.33	9.06	4.69
4,718.00	32.80	95.10	4,699.78	30.21	129.98	129.92	10.65	10.65	-0.65
4,750.00	36.60	94.60	4,726.09	28.68	148.13	148.07	11.91	11.87	-1.56
4,782.00	40.20	94.80	4,751.16	27.05	167.93	167.88	11.26	11.25	0.62
4,813.00	43.60	94.80	4,774.23	25.31	188.56	188.51	10.97	10.97	0.00
4,845.00	47.10	95.10	4,796.72	23.35	211.24	211.19	10.96	10.94	0.94
4,877.00	50.60	95.40	4,817.77	21.14	235.23	235.18	10.96	10.94	0.94
4,909.00	53.90	95.80	4,837.36	18.67	260.40	260.37	10.36	10.31	1.25
4,940.00	57.00	96.10	4,854.94	16.02	285.80	285.76	10.03	10.00	0.97
4,972.00	59.20	96.70	4,871.85	12.99	312.79	312.77	7.06	6.87	1.87
5,004.00	62.30	96.30	4,887.48	9.83	340.53	340.51	9.75	9.69	-1.25
5,035.00	66.20	95.50	4,900.94	6.97	368.30	368.28	12.79	12.58	-2.58
5,067.00	69.80	95.30	4,912.98	4.18	397.81	397.80	10.64	10.62	-0.62
5,099.00	72.70	95.00	4,923.32	1.46	427.97	427.96	9.73	9.69	-0.94
5,131.00	75.90	94.50	4,931.98	-1.09	458.67	458.67	10.11	10.00	-1.56
5,162.00	79.20	95.00	4,938.66	-3.60	488.83	488.83	10.76	10.65	1.61
5,194.00	82.50	95.90	4,943.75	-6.60	520.27	520.29	10.68	10.31	2.81
5,226.00	85.00	96.00	4,947.23	-9.89	551.91	551.93	7.82	7.81	0.31
5,257.00	87.20	96.10	4,949.34	-13.15	582.66	582.69	7.10	7.10	0.32
5,289.00	88.40	95.60	4,950.57	-16.41	614.47	614.50	4.06	3.75	-1.56
5,321.00	88.50	95.60	4,951.43	-19.53	646.31	646.35	0.31	0.31	0.00
5,416.00	89.10	94.90	4,953.42	-28.22	740.89	740.94	0.97	0.63	-0.74
5,511.00	90.10	94.00	4,954.09	-35.59	835.60	835.67	1.42	1.05	-0.95
5,606.00	91.30	93.10	4,952.93	-41.48	930.40	930.49	1.58	1.26	-0.95
5,701.00	91.00	91.30	4,951.02	-45.12	1,025.31	1,025.40	1.92	-0.32	-1.89
5,796.00	92.00	90.00	4,948.53	-46.20	1,120.27	1,120.36	1.73	1.05	-1.37
5,891.00	92.60	89.70	4,944.72	-45.95	1,215.19	1,215.28	0.71	0.63	-0.32
5,986.00	91.40	89.50	4,941.40	-45.29	1,310.13	1,310.22	1.28	-1.26	-0.21
6,081.00	91.60	89.70	4,938.92	-44.63	1,405.10	1,405.18	0.30	0.21	0.21
6,176.00	91.00	88.80	4,936.76	-43.38	1,500.06	1,500.15	1.14	-0.63	-0.95
6,272.00	91.30	89.00	4,934.84	-41.54	1,596.02	1,596.11	0.38	0.31	0.21
6,367.00	91.30	88.50	4,932.68	-39.47	1,690.98	1,691.05	0.53	0.00	-0.53
6,462.00	91.60	88.80	4,930.28	-37.23	1,785.92	1,785.99	0.45	0.32	0.32
6,557.00	90.40	89.50	4,928.62	-35.82	1,880.89	1,880.96	1.46	-1.26	0.74
6,652.00	90.50	89.60	4,927.87	-35.08	1,975.89	1,975.95	0.15	0.11	0.11
6,747.00	90.70	90.00	4,926.88	-34.74	2,070.88	2,070.95	0.47	0.21	0.42
6,842.00	90.80	90.00	4,925.63	-34.74	2,165.87	2,165.94	0.11	0.11	0.00
6,938.00	90.90	90.50	4,924.21	-35.16	2,261.86	2,261.93	0.53	0.10	0.52
7,033.00	91.20	90.90	4,922.47	-36.32	2,356.84	2,356.91	0.53	0.32	0.42
7,128.00	91.30	90.00	4,920.40	-37.07	2,451.81	2,451.88	0.95	0.11	-0.95
7,223.00	91.60	89.60	4,917.99	-36.74	2,546.78	2,546.85	0.53	0.32	-0.42
7,319.00	90.20	89.40	4,916.49	-35.90	2,642.76	2,642.83	1.47	-1.46	-0.21
7,414.00	90.40	89.20	4,915.99	-34.74	2,737.75	2,737.82	0.30	0.21	-0.21
7,509.00	90.90	89.30	4,914.91	-33.50	2,832.74	2,832.80	0.54	0.53	0.11
7,604.00	91.30	89.50	4,913.09	-32.50	2,927.72	2,927.78	0.47	0.42	0.21
7,699.00	91.60	89.80	4,910.68	-31.92	3,022.68	3,022.74	0.45	0.32	0.32
7,794.00	90.10	89.40	4,909.27	-31.26	3,117.67	3,117.72	1.63	-1.58	-0.42
7,890.00	90.20	89.40	4,909.02	-30.25	3,213.66	3,213.72	0.10	0.10	0.00
7,985.00	90.20	89.50	4,908.69	-29.34	3,308.66	3,308.71	0.11	0.00	0.11
8,080.00	90.20	89.30	4,908.36	-28.35	3,403.65	3,403.70	0.21	0.00	-0.21
8,175.00	91.10	89.80	4,907.28	-27.60	3,498.64	3,498.69	1.08	0.95	0.53
8,270.00	91.20	89.80	4,905.37	-27.27	3,593.62	3,593.67	0.11	0.11	0.00
8,365.00	91.20	89.70	4,903.38	-26.85	3,688.60	3,688.65	0.11	0.00	-0.11

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Burch Keely Unit #936H
Project:	Eddy County(NM27E)	TVD Reference:	WELL @ 3628.00usft
Site:	Sec 13-T17S-R29E	MD Reference:	WELL @ 3628.00usft
Well:	Burch Keely Unit #936H	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)
8,461.00	91.30	89.80	4,901.29	-26.44	3,784.58	3,784.62	0.15	0.10	0.10
8,556.00	91.40	90.00	4,899.05	-26.27	3,879.55	3,879.59	0.24	0.11	0.21
8,651.00	91.60	90.20	4,896.57	-26.44	3,974.52	3,974.56	0.30	0.21	0.21
8,746.00	91.90	90.40	4,893.66	-26.93	4,069.47	4,069.52	0.38	0.32	0.21
8,841.00	90.50	90.20	4,891.67	-27.43	4,164.45	4,164.49	1.49	-1.47	-0.21
Last Archer Survey									
8,936.00	90.50	90.20	4,890.85	-27.76	4,259.44	4,259.49	0.00	0.00	0.00
PTB									
9,004.00	90.50	90.20	4,890.25	-28.00	4,327.44	4,327.49	0.00	0.00	0.00
PTTD									
9,275.77	90.50	90.20	4,887.88	-28.95	4,599.20	4,599.25	0.00	0.00	0.00

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,280.00	4,279.57	33.31	36.14	Tie-In / Ves Gyro
4,370.00	4,369.56	33.28	36.86	First Archer Survey
8,936.00	4,890.85	-27.76	4,259.44	Last Archer Survey
9,004.00	4,890.25	-28.00	4,327.44	PTB
9,275.77	4,887.88	-28.95	4,599.20	PTTD

Checked By: _____ Approved By: _____ Date: _____