PATRIOT DRILLING, LLC

OPERATOR: COG Operating, LLC
WELL/LEASE: Cottonmouth 23 Fed Com 2H
COUNTY: Eddy Co., New Mexico
Sec. 22, T 26S, R 28E

30 015 43015

STATE OF NEW MEXICO
DEVIATION REPORT

Depth	Deviation	Depth	Deviation
581	1 1/2	3,989	1/2
1,054	1/2	4,589	2 1/4
1,435	1 1/2	4,967	5
2,189	1	5,566	8
2,502	3/4	6,039	8
3,041	1/2	6,511	7 3/4
3,420	1/2	7,016	8

NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 23 2016
RECEIVED

Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 19th day of January 2016 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 02/01/2019

Lori T. Rowan
Notary Public for Ector Co., Texas

LORI TERESA ROWAN
Notary Public, State of Texas
My Commission Expires
February 01, 2019

VES SURVEY INTERNATIONAL

January 13, 2016

NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 23 2016
RECEIVED

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

Attn: Kanicia Castillo

RE: **Cottonmouth 23 Federal Com No 002H**

Please find enclosed a copy of the survey from 0' to 7400' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
§
COUNTY OF NUECES §

This instrument was acknowledged before me on the 13 day of January A.D., 2016, by Keith Havelka.

Jennifer Ann Byerly
Notary Public, State of Texas

JENNIFER ANN BYERLY
Notary Public, State of Texas
My Commission Expires
August 16, 2017

VES Survey International
P.O. Box 261021, Corpus Christi, Texas 78426
T (361) 767-0602 F (361) 767-0612
www.vessurvey.com

Company: Concho
Lease/Well: Cottonmouth 23 Federal Com No/002H

Rig Name: Patriot 6
State/County: New Mexico/Eddy
VS-Azi: 0.00 Degrees
Latitude: 32.03452, Longitude: -104.06737
Grid North = True North -0.14 degs (NAD 27)
Grid Correction Applied = -0.14 degs

Depth Reference : RKB = 17 feet

DRILLOG HA GYRO SURVEY CALCULATIONS
Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 1/13/2016 / 12:49

VES Survey International
Midland, Texas
432-563-5444
Surveyor: Adam Askew
Cottonmouth 23 Federal Com No 002H / API 30-015-43015

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	0.55	230.84	100.00	-0.30	-0.37	-0.30	0.48	230.84	0.55
200.00	1.20	234.49	199.99	-1.22	-1.60	-1.22	2.01	232.74	0.65
300.00	1.74	210.84	299.95	-3.13	-3.23	-3.13	4.50	225.90	0.81
400.00	1.77	214.05	399.91	-5.72	-4.88	-5.72	7.51	220.46	0.10
500.00	0.64	129.42	499.89	-7.35	-5.31	-7.35	9.07	215.84	1.83
600.00	1.05	88.51	599.88	-7.68	-3.97	-7.68	8.65	207.31	0.70
700.00	0.89	111.45	699.86	-7.95	-2.33	-7.95	8.28	196.32	0.41
800.00	0.82	94.59	799.85	-8.29	-0.89	-8.29	8.34	186.10	0.26
900.00	0.59	94.49	899.85	-8.39	0.34	-8.39	8.39	177.66	0.23
1000.00	0.67	64.88	999.84	-8.18	1.39	-8.18	8.29	170.35	0.33
1100.00	0.59	359.04	1099.83	-7.41	1.91	-7.41	7.66	165.52	0.69
1200.00	0.96	320.39	1199.83	-6.25	1.37	-6.25	6.40	167.63	0.62
1300.00	1.11	307.96	1299.81	-5.01	0.08	-5.01	5.01	179.13	0.27
1400.00	1.31	291.38	1399.79	-4.00	-1.75	-4.00	4.37	203.64	0.41
1500.00	1.00	293.11	1499.77	-3.24	-3.62	-3.24	4.86	228.19	0.31
1600.00	0.31	272.38	1599.76	-2.89	-4.69	-2.89	5.51	238.41	0.72

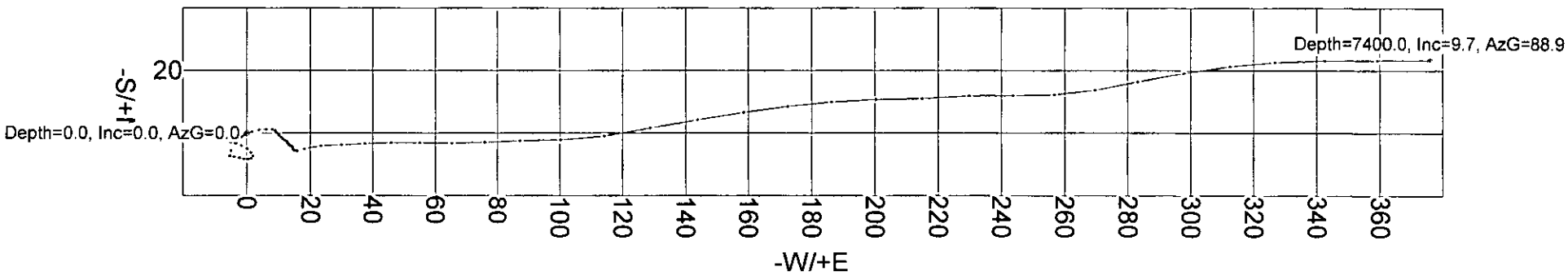
VES Survey Date: 1/6/2016

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
1700.00	0.27	279.72	1699.76	-2.84	-5.19	-2.84	5.91	241.35	0.05
1800.00	0.59	43.45	1799.76	-2.42	-5.06	-2.42	5.61	244.45	0.78
1900.00	1.46	74.12	1899.74	-1.70	-3.48	-1.70	3.87	244.05	0.99
2000.00	1.74	65.22	1999.70	-0.71	-0.88	-0.71	1.13	231.13	0.38
2100.00	1.39	68.13	2099.66	0.38	1.63	0.38	1.67	76.87	0.36
2200.00	1.24	81.96	2199.64	0.98	3.82	0.98	3.94	75.58	0.35
2300.00	1.45	86.80	2299.61	1.20	6.15	1.20	6.27	78.92	0.24
2400.00	0.67	101.57	2399.59	1.16	7.98	1.16	8.07	81.76	0.82
2500.00	0.58	128.83	2499.59	0.72	8.95	0.72	8.98	85.40	0.31
2600.00	0.52	150.92	2599.58	0.01	9.57	0.01	9.57	89.97	0.22
2700.00	0.54	133.06	2699.58	-0.71	10.14	-0.71	10.16	94.03	0.17
2800.00	0.47	141.18	2799.57	-1.35	10.74	-1.35	10.82	97.19	0.10
2900.00	0.33	123.21	2899.57	-1.83	11.23	-1.83	11.38	99.26	0.19
3000.00	0.45	132.24	2999.57	-2.25	11.76	-2.25	11.98	100.84	0.14
3100.00	0.36	112.50	3099.57	-2.64	12.35	-2.64	12.63	102.06	0.16
3200.00	0.19	154.08	3199.57	-2.91	12.71	-2.91	13.04	102.88	0.26
3300.00	0.08	133.51	3299.57	-3.10	12.83	-3.10	13.20	103.57	0.12
3400.00	0.15	199.33	3399.57	-3.27	12.84	-3.27	13.25	104.27	0.14
3500.00	0.35	119.60	3499.57	-3.54	13.06	-3.54	13.54	105.16	0.36
3600.00	0.13	197.84	3599.56	-3.80	13.30	-3.80	13.83	105.93	0.35
3700.00	0.14	319.98	3699.56	-3.80	13.18	-3.80	13.72	106.09	0.24
3800.00	0.32	125.40	3799.56	-3.87	13.33	-3.87	13.88	106.19	0.46
3900.00	0.26	105.12	3899.56	-4.10	13.79	-4.10	14.38	106.55	0.12
4000.00	0.36	141.19	3999.56	-4.40	14.20	-4.40	14.87	107.22	0.22
4100.00	0.21	174.38	4099.56	-4.84	14.42	-4.84	15.21	108.54	0.22
4200.00	0.24	158.19	4199.56	-5.22	14.52	-5.22	15.43	109.77	0.07
4300.00	0.11	136.92	4299.56	-5.49	14.66	-5.49	15.66	110.51	0.15
4400.00	0.34	110.93	4399.56	-5.66	15.01	-5.66	16.04	110.67	0.25
4500.00	0.43	91.43	4499.56	-5.78	15.66	-5.78	16.70	110.26	0.15
4600.00	2.38	69.84	4599.52	-5.07	17.99	-5.07	18.69	105.75	1.99
4700.00	3.75	85.80	4699.38	-4.12	23.20	-4.12	23.56	100.06	1.60
4800.00	4.00	88.70	4799.15	-3.80	29.95	-3.80	30.19	97.23	0.32
4900.00	4.71	85.66	4898.86	-3.41	37.53	-3.41	37.68	95.19	0.75
5000.00	4.90	90.44	4998.51	-3.13	45.89	-3.13	45.99	93.90	0.44
5100.00	5.72	89.31	5098.08	-3.11	55.14	-3.11	55.23	93.22	0.83
5200.00	6.09	92.65	5197.55	-3.29	65.42	-3.29	65.50	92.88	0.50
5300.00	6.00	84.33	5296.99	-3.02	75.92	-3.02	75.98	92.28	0.88
5400.00	7.19	89.91	5396.33	-2.49	87.38	-2.49	87.41	91.63	1.35
5500.00	7.73	87.59	5495.48	-2.20	100.36	-2.20	100.39	91.26	0.62

VES Survey Date: 1/6/2016

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
5600.00	8.20	82.18	5594.52	-0.95	114.15	-0.95	114.15	90.47	0.88
5700.00	8.82	78.46	5693.42	1.56	128.73	1.56	128.74	89.31	0.83
5800.00	8.76	81.72	5792.25	4.19	143.78	4.19	143.84	88.33	0.50
5900.00	8.33	79.54	5891.13	6.60	158.44	6.60	158.58	87.61	0.54
6000.00	7.87	84.82	5990.14	8.54	172.39	8.54	172.60	87.16	0.87
6100.00	8.19	83.58	6089.16	9.95	186.28	9.95	186.55	86.94	0.36
6200.00	8.09	90.44	6188.15	10.69	200.40	10.69	200.68	86.95	0.98
6300.00	8.68	86.75	6287.08	11.07	214.97	11.07	215.26	87.05	0.80
6400.00	8.35	86.83	6385.98	11.90	229.75	11.90	230.06	87.04	0.34
6500.00	7.68	92.10	6485.01	12.05	243.68	12.05	243.98	87.17	0.99
6600.00	7.42	85.90	6584.14	12.27	256.80	12.27	257.09	87.26	0.85
6700.00	7.47	80.90	6683.30	13.76	269.66	13.76	270.01	87.08	0.65
6800.00	8.28	76.96	6782.35	16.41	283.09	16.41	283.57	86.68	0.97
6900.00	8.97	81.70	6881.22	19.17	297.82	19.17	298.44	86.32	0.99
7000.00	8.04	81.43	6980.12	21.33	312.45	21.33	313.18	86.09	0.94
7100.00	8.39	87.92	7079.10	22.64	326.66	22.64	327.44	86.04	0.99
7200.00	9.79	88.30	7177.84	23.16	342.44	23.16	343.22	86.13	1.40
7300.00	9.54	90.85	7276.42	23.29	359.22	23.29	359.97	86.29	0.49
7400.00	9.72	88.86	7375.01	23.33	375.95	23.33	376.67	86.45	0.38

VES Survey International
Midland, Texas
432-563-5444
Surveyor: Adam Askew
Cottonmouth 23 Federal Com No 002H / API 30-015-43015



VES Survey Date: 1/6/2016

VES SURVEY INTERNATIONAL

I Adam Askew certify that I am employed by VES Survey International. That I did on the day(s) of 01/06/16 through 01/06/16 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 7,400.00 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Vaughn Energy Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of Concho for the Cottonmouth 23 Fed Com Well # 2H API # 30-015-43015 in Eddy County / Parish New Mexico ; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Vaughn Energy Services

Adam Askew
Service Technician
Vaughn Energy Services

CONCHO

COG Operating LLC

Eddy County, NM (NAD27 NME)
Cottonmouth 23 Federal Com
#2H

OH

Survey: MWD #2

Survey Report - Geographic

15 January, 2016

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	WELL @ 2997.8usft (Original Well Elev)
Site:	Cottonmouth 23 Federal Com	**MD Reference:**	WELL @ 2997.8usft (Original Well Elev)
Well:	#2H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	EDM 5000.1 Single User Db

Project Eddy County, NM (NAD27 NME)

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 Cottonmouth 23 Federal Com

Site Position:		**Northing:**	376,384.20 usft	**Latitude:**	32° 2' 4.257 N
From:	Map	**Easting:**	582,417.40 usft	**Longitude:**	104° 4' 2.521 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.14 °

Well #2H

Well Position	**+N/-S**	0.0 usft	**Northing:**	376,384.20 usft	**Latitude:**	32° 2' 4.257 N
	+E/-W	0.0 usft	**Easting:**	582,417.40 usft	**Longitude:**	104° 4' 2.521 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	2,979.8 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/13/2015	7.33	59.82	47,930

Design OH

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	164.84

Survey Program **Date** 1/15/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
408.0	7,400.0	MWD #1 (OH)	MWD	MWD - Standard
7,520.0	12,910.0	MWD #2 (OH)	MWD	MWD - Standard

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,400.0	9.72	88.86	7,375.0	23.3	375.9	376,407.54	582,793.31	32° 2' 4.479 N	104° 3' 58.153 W
7,520.0	9.40	90.60	7,493.3	23.4	395.8	376,407.63	582,813.24	32° 2' 4.479 N	104° 3' 57.922 W
7,645.0	7.60	88.40	7,617.0	23.6	414.3	376,407.76	582,831.71	32° 2' 4.480 N	104° 3' 57.707 W
7,677.0	8.40	91.90	7,648.7	23.5	418.8	376,407.74	582,836.16	32° 2' 4.480 N	104° 3' 57.655 W
7,699.5	10.62	98.63	7,670.8	23.2	422.4	376,407.37	582,839.85	32° 2' 4.476 N	104° 3' 57.613 W
KOP(C23FC#2H)									
7,709.0	11.60	100.70	7,680.2	22.9	424.3	376,407.06	582,841.66	32° 2' 4.473 N	104° 3' 57.592 W
7,740.0	14.60	102.60	7,710.4	21.4	431.1	376,405.63	582,848.54	32° 2' 4.458 N	104° 3' 57.512 W
7,771.0	17.10	103.20	7,740.2	19.5	439.4	376,403.74	582,856.79	32° 2' 4.439 N	104° 3' 57.416 W
7,803.0	20.40	104.00	7,770.5	17.1	449.4	376,401.32	582,866.78	32° 2' 4.415 N	104° 3' 57.300 W
7,834.0	22.10	109.60	7,799.4	13.9	460.1	376,398.05	582,877.52	32° 2' 4.383 N	104° 3' 57.175 W

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	WELL @ 2997.8usft (Original Well Elev)
Site:	Cottonmouth 23 Federal Com	**MD Reference:**	WELL @ 2997.8usft (Original Well Elev)
Well:	#2H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,866.0	23.30	116.80	7,828.9	9.0	471.4	376,393.18	582,888.84	32° 2' 4.334 N	104° 3' 57.044 W
7,897.0	25.80	121.50	7,857.1	2.7	482.7	376,386.89	582,900.07	32° 2' 4.272 N	104° 3' 56.914 W
7,929.0	29.10	124.90	7,885.5	-5.4	495.0	376,378.79	582,912.39	32° 2' 4.191 N	104° 3' 56.771 W
7,960.0	32.10	128.60	7,912.2	-14.9	507.6	376,369.34	582,925.02	32° 2' 4.097 N	104° 3' 56.624 W
7,992.0	35.50	130.90	7,938.8	-26.3	521.3	376,357.95	582,938.69	32° 2' 3.984 N	104° 3' 56.466 W
8,023.0	38.40	130.90	7,963.5	-38.5	535.4	376,345.75	582,952.77	32° 2' 3.863 N	104° 3' 56.302 W
8,055.0	42.00	131.30	7,988.0	-52.0	550.9	376,332.17	582,968.33	32° 2' 3.728 N	104° 3' 56.122 W
8,087.0	44.70	129.40	8,011.2	-66.2	567.7	376,317.96	582,985.08	32° 2' 3.587 N	104° 3' 55.928 W
8,118.0	48.10	129.70	8,032.6	-80.5	585.0	376,303.66	583,002.38	32° 2' 3.445 N	104° 3' 55.727 W
8,150.0	51.50	130.50	8,053.3	-96.3	603.7	376,287.92	583,021.07	32° 2' 3.289 N	104° 3' 55.511 W
8,181.0	54.00	131.40	8,072.0	-112.5	622.3	376,271.75	583,039.71	32° 2' 3.129 N	104° 3' 55.295 W
8,212.0	57.10	133.50	8,089.6	-129.7	641.2	376,254.49	583,058.56	32° 2' 2.957 N	104° 3' 55.076 W
8,244.0	60.90	137.30	8,106.0	-149.2	660.4	376,234.96	583,077.80	32° 2' 2.764 N	104° 3' 54.853 W
8,275.0	65.20	140.20	8,120.1	-170.0	678.6	376,214.18	583,096.00	32° 2' 2.558 N	104° 3' 54.642 W
8,307.0	69.70	143.20	8,132.4	-193.2	696.9	376,190.99	583,114.30	32° 2' 2.328 N	104° 3' 54.430 W
8,339.0	75.10	145.60	8,142.0	-218.0	714.6	376,166.19	583,132.04	32° 2' 2.082 N	104° 3' 54.225 W
8,370.0	79.80	149.00	8,148.8	-243.5	731.0	376,140.74	583,148.37	32° 2' 1.829 N	104° 3' 54.036 W
8,401.0	83.60	153.10	8,153.3	-270.3	745.8	376,113.90	583,163.21	32° 2' 1.563 N	104° 3' 53.864 W
8,432.0	86.20	155.70	8,156.0	-298.1	759.1	376,086.06	583,176.55	32° 2' 1.288 N	104° 3' 53.710 W
8,464.0	88.00	157.10	8,157.6	-327.4	771.9	376,056.78	583,189.34	32° 2' 0.997 N	104° 3' 53.563 W
8,527.0	89.40	159.80	8,159.1	-386.0	795.1	375,998.20	583,212.47	32° 2' 0.417 N	104° 3' 53.296 W
8,590.0	91.00	160.80	8,158.8	-445.3	816.3	375,938.89	583,233.71	32° 1' 59.830 N	104° 3' 53.051 W
8,653.0	91.20	162.00	8,157.6	-505.0	836.4	375,879.19	583,253.80	32° 1' 59.238 N	104° 3' 52.819 W
8,717.0	91.30	163.60	8,156.2	-566.1	855.3	375,818.07	583,272.72	32° 1' 58.633 N	104° 3' 52.601 W
8,780.0	90.50	164.50	8,155.2	-626.7	872.6	375,757.51	583,290.03	32° 1' 58.033 N	104° 3' 52.401 W
8,843.0	90.70	165.80	8,154.6	-687.6	888.8	375,696.62	583,306.17	32° 1' 57.430 N	104° 3' 52.216 W
8,906.0	90.00	166.40	8,154.2	-748.7	903.9	375,635.46	583,321.31	32° 1' 56.825 N	104° 3' 52.042 W
8,969.0	89.90	167.20	8,154.3	-810.1	918.3	375,574.13	583,335.69	32° 1' 56.217 N	104° 3' 51.876 W
9,032.0	89.90	168.40	8,154.4	-871.6	931.6	375,512.55	583,349.01	32° 1' 55.608 N	104° 3' 51.723 W
9,096.0	90.90	169.50	8,153.9	-934.5	943.9	375,449.74	583,361.27	32° 1' 54.986 N	104° 3' 51.583 W
9,158.0	91.00	171.00	8,152.9	-995.6	954.4	375,388.65	583,371.77	32° 1' 54.381 N	104° 3' 51.463 W
9,253.0	92.30	172.40	8,150.2	-1,089.5	968.1	375,294.69	583,385.48	32° 1' 53.451 N	104° 3' 51.306 W
9,316.0	91.70	172.80	8,148.0	-1,151.9	976.2	375,232.25	583,393.59	32° 1' 52.832 N	104° 3' 51.214 W
9,412.0	90.00	175.00	8,146.5	-1,247.4	986.4	375,136.81	583,403.79	32° 1' 51.888 N	104° 3' 51.098 W
9,507.0	90.00	174.30	8,146.5	-1,342.0	995.2	375,042.23	583,412.64	32° 1' 50.951 N	104° 3' 50.998 W
9,601.0	89.80	172.20	8,146.7	-1,435.3	1,006.3	374,948.88	583,423.69	32° 1' 50.027 N	104° 3' 50.872 W
9,696.0	90.70	174.80	8,146.3	-1,529.7	1,017.0	374,854.50	583,434.45	32° 1' 49.093 N	104° 3' 50.750 W
9,791.0	89.60	175.60	8,146.0	-1,624.4	1,025.0	374,759.84	583,442.39	32° 1' 48.156 N	104° 3' 50.660 W
9,885.0	90.20	175.00	8,146.2	-1,718.0	1,032.7	374,666.16	583,450.10	32° 1' 47.229 N	104° 3' 50.574 W
9,980.0	91.30	175.40	8,145.0	-1,812.7	1,040.6	374,571.50	583,458.05	32° 1' 46.292 N	104° 3' 50.484 W
10,073.0	89.70	175.60	8,144.1	-1,905.4	1,047.9	374,478.79	583,465.34	32° 1' 45.374 N	104° 3' 50.402 W
10,165.0	91.20	175.90	8,143.4	-1,997.1	1,054.8	374,387.05	583,472.16	32° 1' 44.466 N	104° 3' 50.325 W
10,260.0	90.20	176.00	8,142.3	-2,091.9	1,061.5	374,292.30	583,478.87	32° 1' 43.528 N	104° 3' 50.250 W
10,355.0	89.20	175.70	8,142.8	-2,186.6	1,068.3	374,197.55	583,485.74	32° 1' 42.590 N	104° 3' 50.173 W
10,449.0	91.40	176.90	8,142.3	-2,280.4	1,074.4	374,103.75	583,491.81	32° 1' 41.662 N	104° 3' 50.105 W
10,544.0	92.70	176.60	8,138.9	-2,375.2	1,079.8	374,008.97	583,497.19	32° 1' 40.724 N	104° 3' 50.046 W
10,639.0	91.30	176.00	8,135.5	-2,470.0	1,085.9	373,914.23	583,503.32	32° 1' 39.786 N	104° 3' 49.977 W
10,733.0	89.50	175.50	8,134.9	-2,563.7	1,092.9	373,820.49	583,510.28	32° 1' 38.858 N	104° 3' 49.899 W
10,833.0	90.30	174.80	8,135.1	-2,663.3	1,101.3	373,720.85	583,518.74	32° 1' 37.872 N	104° 3' 49.804 W
10,928.0	89.30	175.50	8,135.4	-2,758.0	1,109.4	373,626.19	583,526.77	32° 1' 36.935 N	104° 3' 49.713 W
11,023.0	91.90	174.80	8,134.4	-2,852.6	1,117.4	373,531.55	583,534.80	32° 1' 35.998 N	104° 3' 49.622 W
11,117.0	90.90	175.40	8,132.1	-2,946.3	1,125.4	373,437.92	583,542.83	32° 1' 35.071 N	104° 3' 49.532 W
11,211.0	89.10	175.90	8,132.1	-3,040.0	1,132.6	373,344.20	583,549.96	32° 1' 34.143 N	104° 3' 49.452 W
11,306.0	89.80	174.80	8,133.0	-3,134.7	1,140.3	373,249.52	583,557.66	32° 1' 33.206 N	104° 3' 49.365 W
11,401.0	90.30	173.00	8,132.9	-3,229.1	1,150.3	373,155.06	583,567.75	32° 1' 32.271 N	104° 3' 49.251 W

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	WELL @ 2997.8usft (Original Well Elev)
Site:	Cottonmouth 23 Federal Com	**MD Reference:**	WELL @ 2997.8usft (Original Well Elev)
Well:	#2H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,527.0	90.60	174.20	8,131.7	-3,354.3	1,164.4	373,029.85	583,581.80	32° 1' 31.032 N	104° 3' 49.091 W
11,654.0	90.70	176.50	8,130.1	-3,480.9	1,174.7	372,903.29	583,592.09	32° 1' 29.779 N	104° 3' 48.975 W
11,750.0	89.90	176.40	8,129.6	-3,576.7	1,180.6	372,807.48	583,598.03	32° 1' 28.830 N	104° 3' 48.909 W
11,845.0	90.20	176.40	8,129.5	-3,671.5	1,186.6	372,712.66	583,604.00	32° 1' 27.892 N	104° 3' 48.842 W
11,908.0	89.10	175.10	8,129.9	-3,734.4	1,191.3	372,649.84	583,608.67	32° 1' 27.270 N	104° 3' 48.790 W
11,971.0	88.30	176.00	8,131.3	-3,797.2	1,196.2	372,587.05	583,613.56	32° 1' 26.649 N	104° 3' 48.735 W
12,066.0	89.20	177.30	8,133.4	-3,892.0	1,201.7	372,492.23	583,619.11	32° 1' 25.710 N	104° 3' 48.673 W
12,160.0	90.80	178.60	8,133.4	-3,985.9	1,205.1	372,398.30	583,622.47	32° 1' 24.780 N	104° 3' 48.637 W
12,254.0	90.30	178.40	8,132.5	-4,079.9	1,207.5	372,304.34	583,624.93	32° 1' 23.850 N	104° 3' 48.611 W
12,349.0	91.30	177.90	8,131.1	-4,174.8	1,210.6	372,209.40	583,627.99	32° 1' 22.911 N	104° 3' 48.578 W
12,444.0	90.00	176.70	8,130.1	-4,269.7	1,215.1	372,114.51	583,632.47	32° 1' 21.972 N	104° 3' 48.529 W
12,539.0	91.40	176.20	8,128.9	-4,364.5	1,220.9	372,019.70	583,638.35	32° 1' 21.033 N	104° 3' 48.463 W
12,635.0	91.30	175.70	8,126.6	-4,460.2	1,227.7	371,923.97	583,645.13	32° 1' 20.086 N	104° 3' 48.388 W
12,729.0	90.50	174.10	8,125.2	-4,553.8	1,236.1	371,830.36	583,653.48	32° 1' 19.159 N	104° 3' 48.293 W
12,862.0	91.30	173.40	8,123.1	-4,686.0	1,250.6	371,698.17	583,667.96	32° 1' 17.850 N	104° 3' 48.129 W
12,910.0	91.30	173.40	8,122.0	-4,733.7	1,256.1	371,650.50	583,673.48	32° 1' 17.378 N	104° 3' 48.066 W
PBHL(C23FC#2H)									

Checked By: _____ Approved By: _____ Date: _____