

PATRIOT DRILLING, LLC

OPERATOR: COG Operating, LLC
WELL/LEASE: CTA State Com # 4H
COUNTY: Lea Co., New Mexico
Sec. 32, T 18S, R30E

NM OIL CONSERVATION
ARTESIA DISTRICT
DEC 04 2014

RECEIVED

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
373	1	3,568	1 1/4
508	2 1/2	4,482	2 1/2
908	2 1/2	4,933	2 1/2
1,288	2 1/2	5,377	2 1/2
1,574	2 1/4	5,810	2 1/2
1,904	3	6,778	2 3/4
2,150	2 1/2	7,254	2
2,649	1 1/4	7,661	1 1/2
3,148	1 1/2		

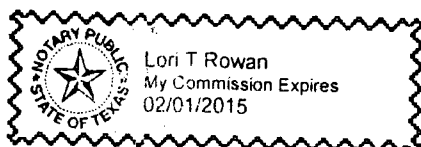
15-42495

Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 18th day of September, 2014 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling,

My Commission Expires: 02/01/2015



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



September 25, 2014

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

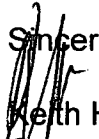
NM OIL CONSERVATION
ARTESIA DISTRICT
DEC 04 2014

Attn: Kanicia Castillo

RECEIVED

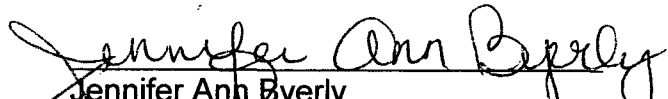
RE: CTA State Com No. 004H

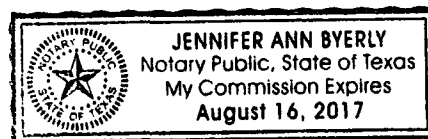
Please find enclosed a copy of the survey from 0.00' to 7376.00' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 25 day of September A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas



Company: COG OPERATING, LLC (CONCHO)

Lease/Well: CTA STATE COM/No. 004H



Rig Name: PATRIOT #6

State/County: NEW MEXICO/EDDY

Latitude: 32.71, Longitude: -104.00

GRID North is 0.18 Degrees East of True North

VS-Azi: 0.00 Degrees



Depth Reference : RKB: 17 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 9/25/2014 / 15:58

VES Survey International

West Texas

(432) 563-5444

Surveyor: Jordan Shelleby

CTA State Com No. 004H / API 30-015-42495

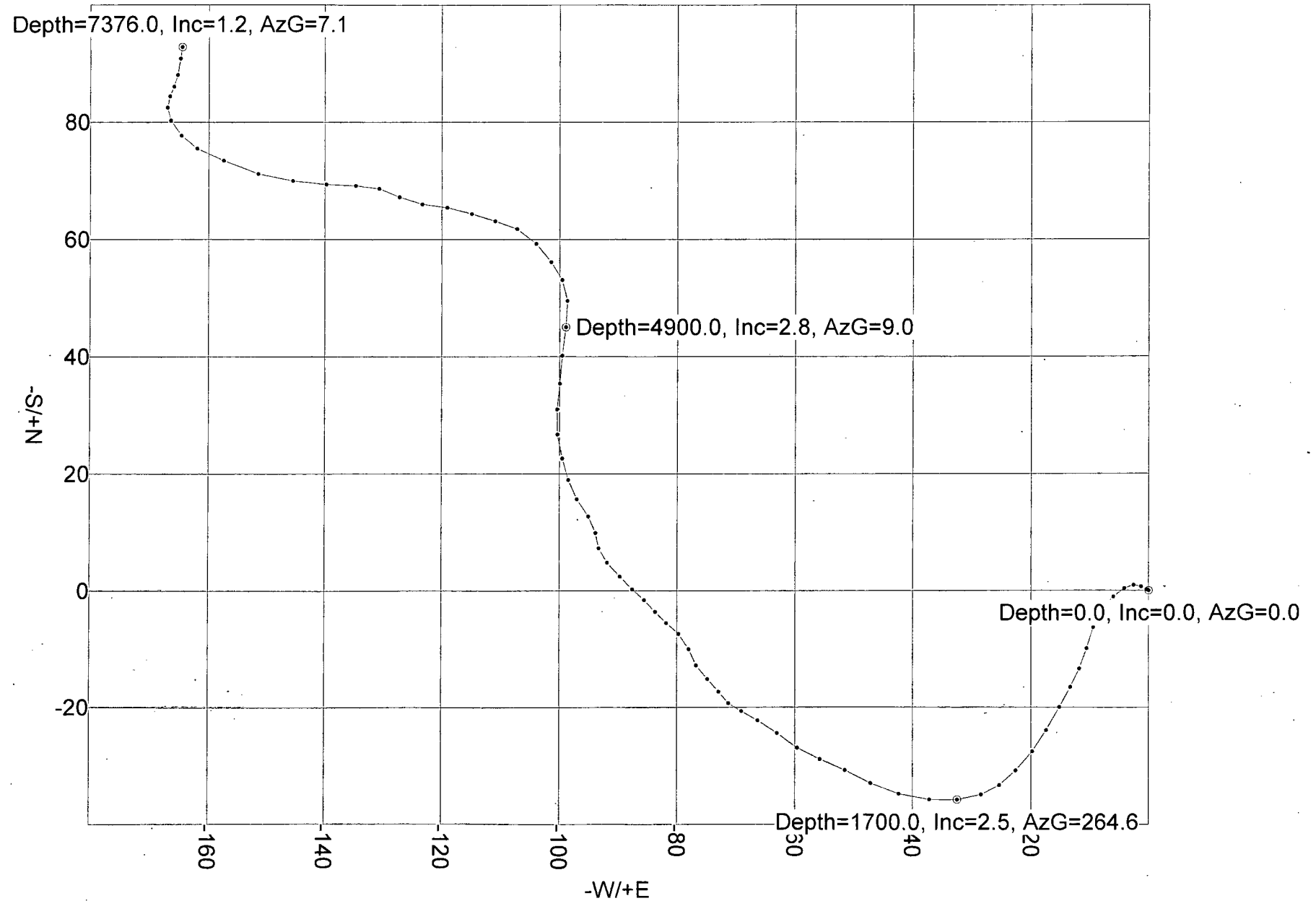
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.45	294.72	100.00	0.17	-0.36	0.17	0.40	294.72	0.45
200.00	0.77	301.82	199.99	0.69	-1.29	0.69	1.46	297.98	0.33
300.00	0.80	260.64	299.98	0.93	-2.56	0.93	2.72	289.93	0.56
400.00	1.16	243.26	399.97	0.36	-4.16	0.36	4.17	274.90	0.46
500.00	1.52	223.94	499.94	-1.06	-5.98	-1.06	6.07	259.99	0.57
600.00	1.84	219.71	599.90	-3.24	-7.93	-3.24	8.56	247.74	0.34
700.00	2.12	196.17	699.84	-6.26	-9.47	-6.26	11.35	236.53	0.86
800.00	2.24	197.84	799.77	-9.90	-10.58	-9.90	14.49	226.90	0.14
900.00	1.99	202.03	899.70	-13.38	-11.84	-13.38	17.86	221.50	0.30
1000.00	2.02	209.34	999.64	-16.53	-13.35	-16.53	21.25	218.93	0.26
1100.00	2.46	207.67	1099.56	-19.97	-15.21	-19.97	25.10	217.31	0.44
1200.00	2.72	211.05	1199.46	-23.90	-17.43	-23.90	29.58	216.11	0.30
1300.00	2.28	215.22	1299.37	-27.55	-19.80	-27.55	33.93	215.70	0.47
1400.00	2.63	225.62	1399.27	-30.78	-22.59	-30.78	38.18	216.27	0.56
1500.00	1.67	231.72	1499.20	-33.29	-25.37	-33.29	41.86	217.31	0.98
1600.00	2.32	250.07	1599.14	-34.89	-28.42	-34.89	45.00	219.17	0.90
1700.00	2.45	264.62	1699.06	-35.78	-32.46	-35.78	48.31	222.22	0.62
1800.00	2.97	275.00	1798.94	-35.75	-37.18	-35.75	51.58	226.12	0.71

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	3.08	286.62	1898.81	-34.76	-42.33	-34.76	54.77	230.61	0.62
2000.00	2.84	294.42	1998.67	-32.97	-47.16	-32.97	57.54	235.04	0.47
2100.00	2.78	299.99	2098.55	-30.73	-51.51	-30.73	59.98	239.18	0.28
2200.00	2.56	286.59	2198.45	-28.88	-55.75	-28.88	62.79	242.61	0.66
2300.00	2.52	307.20	2298.35	-26.92	-59.64	-26.92	65.43	245.71	0.91
2400.00	2.33	304.32	2398.26	-24.44	-63.08	-24.44	67.64	248.82	0.22
2500.00	2.17	302.82	2498.18	-22.26	-66.35	-22.26	69.98	251.45	0.18
2600.00	1.50	295.31	2598.13	-20.68	-69.11	-20.68	72.14	253.34	0.71
2700.00	1.49	309.53	2698.10	-19.30	-71.30	-19.30	73.86	254.86	0.37
2800.00	1.52	329.97	2798.06	-17.32	-72.96	-17.32	74.99	256.65	0.54
2900.00	1.83	309.88	2898.02	-15.15	-74.85	-15.15	76.37	258.56	0.66
3000.00	1.69	332.04	2997.98	-12.82	-76.76	-12.82	77.83	260.52	0.69
3100.00	1.83	339.48	3097.93	-10.03	-78.01	-10.03	78.66	262.67	0.27
3200.00	1.85	314.94	3197.88	-7.39	-79.72	-7.39	80.06	264.70	0.78
3300.00	1.36	308.03	3297.84	-5.52	-81.80	-5.52	81.99	266.14	0.52
3400.00	1.72	322.46	3397.80	-3.60	-83.65	-3.60	83.73	267.54	0.52
3500.00	1.45	311.35	3497.76	-1.57	-85.51	-1.57	85.53	268.95	0.41
3600.00	1.70	313.29	3597.73	0.28	-87.54	0.28	87.54	270.18	0.25
3700.00	1.78	316.29	3697.68	2.42	-89.69	2.42	89.73	271.54	0.13
3800.00	1.91	319.26	3797.63	4.80	-91.85	4.80	91.98	272.99	0.16
3900.00	1.44	344.59	3897.59	7.27	-93.27	7.27	93.56	274.46	0.87
4000.00	1.65	350.72	3997.55	9.90	-93.84	9.90	94.36	276.02	0.27
4100.00	1.99	324.16	4097.50	12.72	-95.09	12.72	95.93	277.62	0.90
4200.00	2.07	328.43	4197.44	15.67	-97.05	15.67	98.30	279.17	0.17
4300.00	2.10	344.17	4297.38	18.97	-98.49	18.97	100.30	280.90	0.57
4400.00	2.27	344.61	4397.30	22.64	-99.52	22.64	102.06	282.81	0.16
4500.00	2.54	351.35	4497.21	26.73	-100.37	26.73	103.87	284.91	0.39
4600.00	2.40	7.84	4597.12	31.00	-100.42	31.00	105.10	287.15	0.72
4700.00	2.71	4.04	4697.02	35.43	-99.97	35.43	106.06	289.51	0.35
4800.00	2.79	5.83	4796.91	40.21	-99.55	40.21	107.37	291.99	0.12
4900.00	2.80	9.04	4896.79	45.03	-98.92	45.03	108.69	294.48	0.16
5000.00	2.36	356.26	4996.69	49.50	-98.67	49.50	110.39	296.64	0.72
5100.00	1.94	334.25	5096.62	53.07	-99.55	53.07	112.81	298.07	0.92
5200.00	2.21	323.46	5196.55	56.15	-101.43	56.15	115.94	298.97	0.47
5300.00	2.44	318.57	5296.47	59.30	-103.99	59.30	119.71	299.69	0.30
5400.00	2.37	296.21	5396.39	61.81	-107.25	61.81	123.79	299.96	0.93
5500.00	2.21	282.38	5496.31	63.13	-110.98	63.13	127.68	299.63	0.57
5600.00	2.53	291.73	5596.22	64.37	-114.92	64.37	131.72	299.25	0.50
5700.00	2.47	276.54	5696.13	65.43	-119.11	65.43	135.90	298.78	0.66

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	2.43	279.41	5796.04	66.02	-123.34	66.02	139.90	298.16	0.13
5900.00	2.21	296.22	5895.96	67.22	-127.17	67.22	143.84	297.86	0.71
6000.00	2.09	288.84	5995.89	68.66	-130.62	68.66	147.57	297.73	0.30
6100.00	2.59	267.79	6095.80	69.16	-134.61	69.16	151.34	297.19	0.99
6200.00	3.27	276.88	6195.67	69.42	-139.69	69.42	155.99	296.42	0.82
6300.00	3.42	273.97	6295.50	69.96	-145.50	69.96	161.44	295.68	0.23
6400.00	3.63	288.76	6395.32	71.19	-151.47	71.19	167.36	295.17	0.93
6500.00	3.69	292.80	6495.11	73.45	-157.43	73.45	173.72	295.01	0.26
6600.00	2.04	296.07	6594.98	75.48	-161.99	75.48	178.71	294.98	1.66
6700.00	2.11	323.02	6694.92	77.73	-164.69	77.73	182.11	295.27	0.97
6800.00	1.49	328.69	6794.87	80.31	-166.48	80.31	184.84	295.75	0.64
6900.00	1.24	6.44	6894.85	82.50	-167.03	82.50	186.29	296.28	0.92
7000.00	1.04	18.23	6994.83	84.43	-166.63	84.43	186.80	296.87	0.31
7100.00	1.01	27.18	7094.81	86.07	-165.94	86.07	186.94	297.41	0.16
7200.00	1.43	9.88	7194.79	88.07	-165.33	88.07	187.33	298.05	0.55
7300.00	1.81	9.39	7294.75	90.86	-164.86	90.86	188.24	298.86	0.38
7376.00	1.17	7.13	7370.72	92.81	-164.57	92.81	188.93	299.42	0.84



VES Survey International
West Texas
(432) 563-5444
Surveyor: Jordan Shelleby
CTA State Com No. 004H / API 30-015-42495



V.E.S. Survey Date: 09/09/2014



COG Operating LLC

Eddy County, NM (NAD27 NME)

CTA State Com

#4H

OH

Survey: MWD #1

Survey Report - Geographic

16 September, 2014

NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 04 2014

RECEIVED



Wellplanning

Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	WELL @ 3444.4usft (Original Well Elev)
Site:	CTA State Com	MD Reference:	WELL @ 3444.4usft (Original Well Elev)
Well:	#4H	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	CTA State Com		
Site Position:		Northing:	622,145.40 usft
From:	Map	Easting:	602,330.60 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 42' 35.761 N
		Longitude:	104° 0' 3.978 W
		Grid Convergence:	0.18 °

Well	#4H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 42' 17.173 N
		Longitude:	104° 0' 3.978 W
		Ground Level:	3,426.4 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	8/21/2014	7.43
			Dip Angle
			(°)
			60.48
			Field Strength
			(nT)
			48,540

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			85.86

Survey Program	Date 9/16/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	7,376.0	GYRO (OH)	MWD
7,534.0	12,768.0	MWD #1 (OH)	MWD
			Description
			MWD - Standard
			MWD - Standard

Survey									
Measured			Vertical			Map	Map		
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
7,376.0	1.17	7.13	7,370.7	92.9	-164.6	620,359.41	602,029.15	32° 42' 18.097 N	104° 0' 5.901 W
7,534.0	0.60	203.80	7,528.7	93.7	-164.7	620,360.25	602,029.01	32° 42' 18.106 N	104° 0' 5.902 W
7,597.0	1.10	202.50	7,591.7	92.9	-165.1	620,359.39	602,028.65	32° 42' 18.097 N	104° 0' 5.907 W
7,629.0	1.50	204.10	7,623.7	92.2	-165.3	620,358.72	602,028.36	32° 42' 18.091 N	104° 0' 5.910 W
7,661.0	1.50	180.80	7,655.7	91.4	-165.5	620,357.92	602,028.18	32° 42' 18.083 N	104° 0' 5.912 W
7,693.0	2.80	119.40	7,687.7	90.6	-164.8	620,357.12	602,028.86	32° 42' 18.075 N	104° 0' 5.904 W
7,724.0	5.30	97.40	7,718.6	90.1	-162.8	620,356.56	602,030.94	32° 42' 18.069 N	104° 0' 5.880 W
7,756.0	7.20	92.00	7,750.4	89.8	-159.3	620,356.30	602,034.41	32° 42' 18.066 N	104° 0' 5.839 W
7,788.0	9.50	88.80	7,782.1	89.8	-154.7	620,356.29	602,039.05	32° 42' 18.066 N	104° 0' 5.785 W
7,820.0	13.10	84.10	7,813.4	90.2	-148.4	620,356.72	602,045.30	32° 42' 18.070 N	104° 0' 5.712 W
7,851.0	17.30	82.00	7,843.3	91.2	-140.3	620,357.72	602,053.37	32° 42' 18.080 N	104° 0' 5.618 W



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	WELL @ 3444.4usft (Original Well Elev)
Site:	CTA State Com	MD Reference:	WELL @ 3444.4usft (Original Well Elev)
Well:	#4H	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
7,883.0	22.20	81.30	7,873.4	92.8	-129.6	620,359.30	602,064.06	32° 42' 18.095 N	104° 0' 5.492 W
7,915.0	26.60	82.30	7,902.6	94.7	-116.6	620,361.17	602,077.14	32° 42' 18.113 N	104° 0' 5.339 W
7,947.0	29.80	83.50	7,930.8	96.5	-101.6	620,363.03	602,092.15	32° 42' 18.131 N	104° 0' 5.163 W
7,978.0	32.30	84.20	7,957.3	98.2	-85.7	620,364.74	602,108.04	32° 42' 18.148 N	104° 0' 4.977 W
8,010.0	35.00	85.50	7,984.0	99.8	-68.0	620,366.33	602,125.70	32° 42' 18.163 N	104° 0' 4.771 W
8,042.0	37.50	85.80	8,009.8	101.3	-49.1	620,367.76	602,144.57	32° 42' 18.176 N	104° 0' 4.550 W
8,073.0	40.70	86.70	8,033.8	102.5	-29.6	620,369.03	602,164.07	32° 42' 18.188 N	104° 0' 4.321 W
8,105.0	44.40	86.90	8,057.4	103.7	-8.0	620,370.24	602,185.67	32° 42' 18.200 N	104° 0' 4.069 W
8,137.0	47.70	86.50	8,079.6	105.1	15.0	620,371.57	602,208.67	32° 42' 18.212 N	104° 0' 3.799 W
8,169.0	50.50	86.00	8,100.6	106.6	39.1	620,373.15	602,232.80	32° 42' 18.227 N	104° 0' 3.517 W
8,200.0	53.20	86.20	8,119.7	108.3	63.4	620,374.81	602,257.12	32° 42' 18.243 N	104° 0' 3.232 W
8,232.0	55.70	86.70	8,138.3	109.9	89.4	620,376.42	602,283.11	32° 42' 18.258 N	104° 0' 2.928 W
8,264.0	58.50	87.60	8,155.7	111.2	116.2	620,377.75	602,309.94	32° 42' 18.270 N	104° 0' 2.614 W
8,295.0	61.80	87.90	8,171.1	112.3	143.1	620,378.81	602,336.80	32° 42' 18.280 N	104° 0' 2.300 W
8,327.0	64.90	87.40	8,185.5	113.5	171.7	620,379.98	602,365.37	32° 42' 18.290 N	104° 0' 1.965 W
8,359.0	68.00	86.90	8,198.3	114.9	201.0	620,381.44	602,394.67	32° 42' 18.304 N	104° 0' 1.622 W
8,390.0	70.40	86.50	8,209.3	116.6	229.9	620,383.11	602,423.60	32° 42' 18.320 N	104° 0' 1.284 W
8,420.0	73.80	86.40	8,218.5	118.4	258.4	620,384.88	602,452.09	32° 42' 18.336 N	104° 0' 0.950 W
8,452.0	76.90	86.50	8,226.6	120.3	289.3	620,386.79	602,482.98	32° 42' 18.354 N	104° 0' 0.589 W
8,484.0	80.10	87.10	8,232.9	122.0	320.6	620,388.54	602,514.29	32° 42' 18.371 N	104° 0' 0.222 W
8,515.0	83.20	87.60	8,237.5	123.5	351.2	620,389.96	602,544.92	32° 42' 18.384 N	103° 59' 59.863 W
8,547.0	85.90	87.80	8,240.5	124.7	383.0	620,391.24	602,576.75	32° 42' 18.395 N	103° 59' 59.491 W
8,579.0	86.20	87.40	8,242.7	126.1	414.9	620,392.57	602,608.65	32° 42' 18.408 N	103° 59' 59.118 W
8,610.0	86.00	87.10	8,244.8	127.6	445.8	620,394.06	602,639.54	32° 42' 18.421 N	103° 59' 58.756 W
8,673.0	87.80	86.70	8,248.2	131.0	508.6	620,397.46	602,702.35	32° 42' 18.453 N	103° 59' 58.021 W
8,768.0	88.50	87.20	8,251.3	136.0	603.5	620,402.51	602,797.17	32° 42' 18.500 N	103° 59' 56.911 W
8,863.0	88.00	86.70	8,254.2	141.1	698.3	620,407.56	602,891.99	32° 42' 18.547 N	103° 59' 55.801 W
8,958.0	89.10	87.20	8,256.6	146.1	793.1	620,412.62	602,986.82	32° 42' 18.594 N	103° 59' 54.691 W
9,053.0	88.80	86.90	8,258.3	151.0	888.0	620,417.51	603,081.68	32° 42' 18.639 N	103° 59' 53.581 W
9,149.0	89.90	86.90	8,259.4	156.2	983.8	620,422.70	603,177.53	32° 42' 18.688 N	103° 59' 52.459 W
9,276.0	89.80	86.70	8,259.7	163.3	1,110.6	620,429.79	603,304.33	32° 42' 18.754 N	103° 59' 50.974 W
9,403.0	89.30	86.70	8,260.7	170.6	1,237.4	620,437.10	603,431.12	32° 42' 18.822 N	103° 59' 49.490 W
9,530.0	88.30	86.90	8,263.4	177.7	1,364.2	620,444.18	603,557.89	32° 42' 18.889 N	103° 59' 48.006 W
9,657.0	89.10	88.30	8,266.3	183.0	1,491.0	620,449.50	603,684.74	32° 42' 18.937 N	103° 59' 46.522 W
9,784.0	91.00	88.10	8,266.2	187.0	1,618.0	620,453.49	603,811.67	32° 42' 18.973 N	103° 59' 45.036 W
9,911.0	88.50	88.30	8,266.7	191.0	1,744.9	620,457.48	603,938.60	32° 42' 19.008 N	103° 59' 43.550 W
10,038.0	88.80	88.60	8,269.7	194.4	1,871.8	620,460.91	604,065.52	32° 42' 19.038 N	103° 59' 42.065 W
10,164.0	87.70	88.60	8,273.6	197.5	1,997.7	620,463.99	604,191.42	32° 42' 19.065 N	103° 59' 40.591 W
10,259.0	88.40	87.90	8,276.8	200.4	2,092.6	620,466.89	604,286.32	32° 42' 19.090 N	103° 59' 39.480 W
10,354.0	89.90	88.60	8,278.2	203.3	2,187.6	620,469.79	604,381.26	32° 42' 19.116 N	103° 59' 38.369 W
10,449.0	89.30	89.50	8,278.9	204.9	2,282.5	620,471.37	604,476.24	32° 42' 19.129 N	103° 59' 37.258 W
10,544.0	89.90	88.30	8,279.5	206.7	2,377.5	620,473.19	604,571.22	32° 42' 19.144 N	103° 59' 36.146 W
10,639.0	90.00	87.10	8,279.6	210.5	2,472.4	620,477.00	604,666.14	32° 42' 19.178 N	103° 59' 35.035 W
10,734.0	89.70	87.20	8,279.9	215.2	2,567.3	620,481.73	604,761.02	32° 42' 19.222 N	103° 59' 33.924 W
10,829.0	89.10	87.10	8,280.9	219.9	2,662.2	620,486.45	604,855.90	32° 42' 19.266 N	103° 59' 32.814 W
10,924.0	88.30	86.90	8,283.0	224.9	2,757.0	620,491.42	604,950.75	32° 42' 19.312 N	103° 59' 31.704 W
11,019.0	89.60	87.40	8,284.8	229.6	2,851.9	620,496.14	605,045.61	32° 42' 19.356 N	103° 59' 30.593 W
11,114.0	89.40	87.80	8,285.6	233.6	2,946.8	620,500.12	605,140.52	32° 42' 19.392 N	103° 59' 29.482 W
11,209.0	90.00	86.70	8,286.1	238.2	3,041.7	620,504.68	605,235.41	32° 42' 19.434 N	103° 59' 28.371 W
11,304.0	89.20	86.90	8,286.7	243.5	3,136.6	620,509.98	605,330.26	32° 42' 19.483 N	103° 59' 27.261 W
11,431.0	90.90	86.70	8,286.6	250.6	3,263.4	620,517.07	605,457.06	32° 42' 19.550 N	103° 59' 25.777 W
11,557.0	90.60	87.10	8,285.0	257.4	3,389.2	620,523.88	605,582.86	32° 42' 19.613 N	103° 59' 24.304 W
11,811.0	88.80	88.30	8,286.3	267.6	3,642.9	620,534.08	605,836.64	32° 42' 19.706 N	103° 59' 21.334 W
11,937.0	88.60	87.80	8,289.2	271.9	3,768.8	620,538.36	605,962.53	32° 42' 19.744 N	103° 59' 19.860 W
12,064.0	89.00	86.70	8,291.8	277.9	3,895.7	620,544.45	606,089.36	32° 42' 19.800 N	103° 59' 18.376 W



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	WELL @ 3444.4usft (Original Well Elev)
Site:	CTA State Com	MD Reference:	WELL @ 3444.4usft (Original Well Elev)
Well:	#4H	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
12,191.0	90.60	87.90	8,292.3	283.9	4,022.5	620,550.44	606,216.21	32° 42' 19.855 N	103° 59' 16.891 W
12,317.0	89.10	89.00	8,292.6	287.3	4,148.5	620,553.84	606,342.15	32° 42' 19.885 N	103° 59' 15.417 W
12,444.0	89.90	87.10	8,293.7	291.7	4,275.4	620,558.16	606,469.07	32° 42' 19.924 N	103° 59' 13.931 W
12,570.0	89.50	88.30	8,294.4	296.7	4,401.3	620,563.22	606,594.96	32° 42' 19.970 N	103° 59' 12.458 W
12,768.0	89.50	88.30	8,296.1	302.6	4,599.2	620,569.10	606,792.87	32° 42' 20.021 N	103° 59' 10.141 W
PBHL(CTA#4H)									

Checked By: _____ Approved By: _____ Date: _____