



NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 28 2015

RECEIVED

November 17, 2014

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

Attn: Kanicia Castillo

RE: Brutus 12 Federal 1H

Please find enclosed a copy of the survey from 0.00' to 8000.00' ran on the above referenced well.

Sincerely,

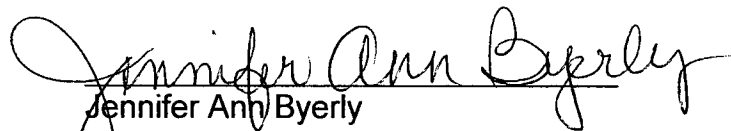

Keith Havelka
Operations

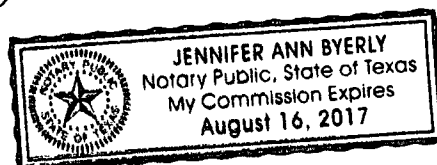
STATE OF TEXAS §

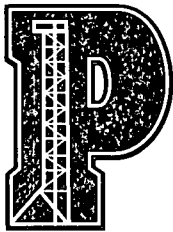
§

COUNTY OF NUECES §

This instrument was acknowledged before me on the 17 day of November
A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





PATRIOT DRILLING, LLC

OPERATOR: COG Operating, LLC
WELL/LEASE: Brutus 12 Federal #1H
COUNTY: Eddy Co., New Mexico
Sec. 12, T 26S, R 28E

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 28 2015

RECEIVED

30015 42609

STATE OF NEW MEXICO
DEVIATION REPORT

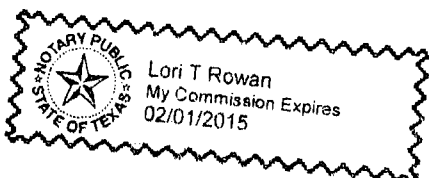
<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
547	1 3/4	2,592	1
606	1 1/2	2,654	1 1/2
700	1 1/2	2,845	2 1/4
789	1 1/2	3,283	2 1/2
883	2	3,714	2
979	1 1/4	4,185	2
1,074	1	4,627	2
1,168	1 1/4	5,100	1 1/4
1,263	1 1/4	5,570	1
1,454	1 1/2	6,047	3/4
1,548	1 3/4	6,525	3/4
1,643	2	7,061	1/4
1,739	3/4	7,508	3/4
1,833	3/4	7,985	1/2
1,928	1	8,428	1/2
2,127	1 1/4	8,871	1 1/2
2,212	3/4	9,411	1 1/4
2,307	1	9,810	1 1/4
2,402	1 3/4	7,800	1 3/4
2,497	1/2	7,732	5

Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 24th day of November, 2014 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 02/01/2015



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



Company: Concho Oil & Gas

Lease/Well: Brutus 12 Federal/1H

Location: S:12 T:26S R:28E

Rig Name: Patriot 2

State/County: New Mexico/Eddy

Latitude: 32.05, Longitude: -104.03

GRID North is 0.16 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: 11/17/2014 / 13:59

VES Survey International

West Texas

Surveyor: Neil Bates

(432) 563-5444

Brutus 12 Federal 1H / API 30-015-42609

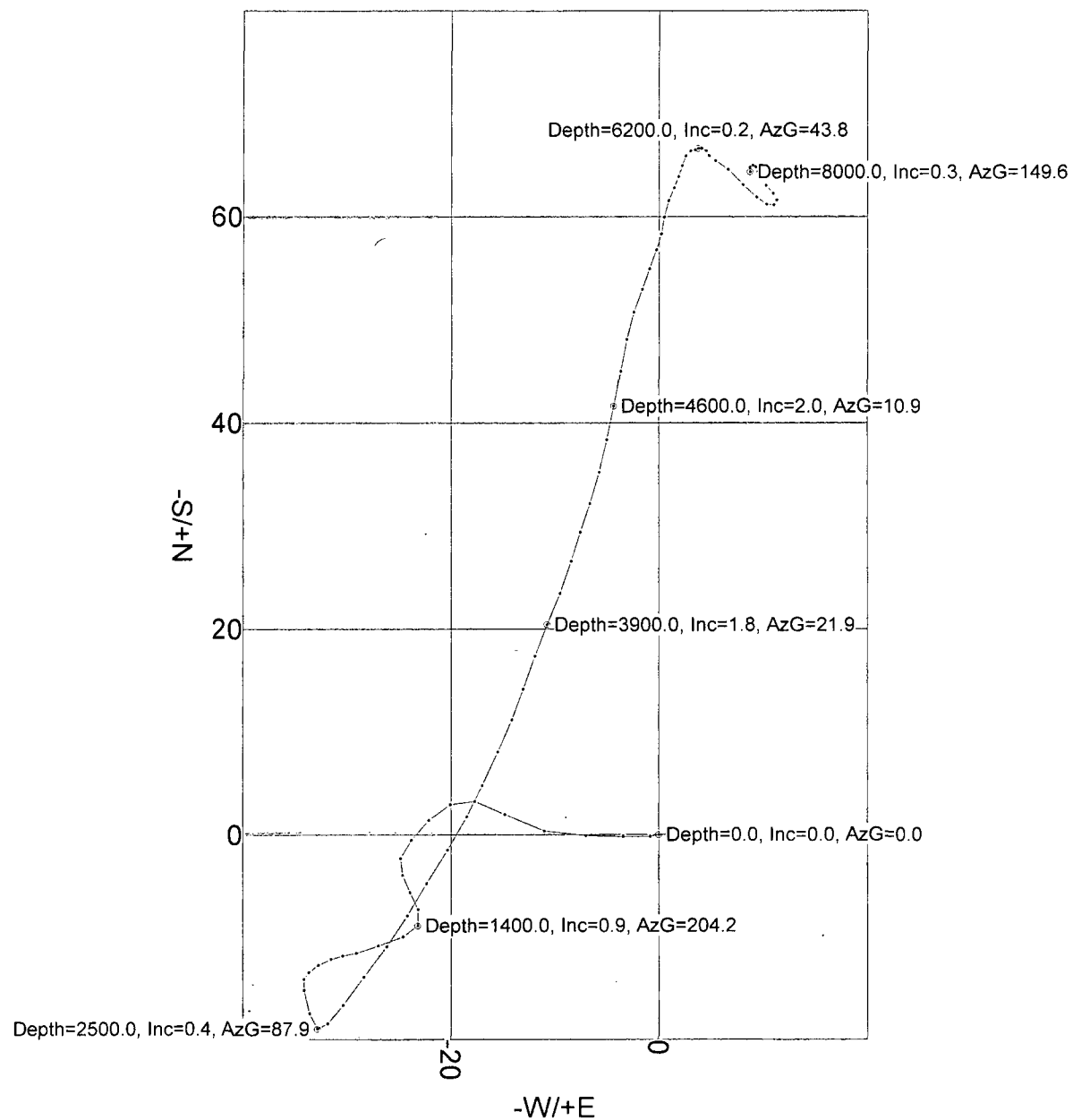
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.98	257.54	100.00	-0.18	-0.84	-0.18	0.86	257.54	0.98
200.00	2.02	276.08	199.96	-0.18	-3.43	-0.18	3.43	266.94	1.13
300.00	2.17	267.26	299.89	-0.09	-7.07	-0.09	7.07	269.30	0.35
400.00	2.45	285.23	399.81	0.38	-11.02	0.38	11.02	272.00	0.77
500.00	2.32	301.36	499.73	2.00	-14.81	2.00	14.95	277.69	0.68
600.00	1.37	280.49	599.68	3.27	-17.72	3.27	18.02	280.47	1.15
700.00	1.50	245.67	699.65	2.95	-20.09	2.95	20.31	278.36	0.87
800.00	1.48	220.64	799.61	1.43	-22.13	1.43	22.18	273.70	0.65
900.00	1.49	221.61	899.58	-0.52	-23.83	-0.52	23.84	268.74	0.03
1000.00	0.92	189.01	999.56	-2.29	-24.82	-2.29	24.93	264.73	0.87
1100.00	1.03	161.66	1099.54	-3.94	-24.66	-3.94	24.98	260.92	0.47
1200.00	1.06	151.22	1199.53	-5.61	-23.94	-5.61	24.58	256.81	0.19
1300.00	1.05	159.91	1299.51	-7.28	-23.18	-7.28	24.29	252.57	0.16
1400.00	0.91	204.20	1399.50	-8.86	-23.19	-8.86	24.82	249.08	0.75
1500.00	1.30	251.75	1499.48	-9.94	-24.59	-9.94	26.52	247.99	0.96
1600.00	1.58	247.75	1599.45	-10.82	-26.95	-10.82	29.04	248.12	0.30
1700.00	0.98	256.59	1699.42	-11.54	-29.05	-11.54	31.26	248.34	0.63
1800.00	0.57	260.93	1799.41	-11.81	-30.37	-11.81	32.59	248.74	0.41

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	0.81	248.74	1899.41	-12.15	-31.52	-12.15	33.78	248.92	0.28
2000.00	0.74	239.13	1999.40	-12.74	-32.73	-12.74	35.12	248.74	0.15
2100.00	0.60	225.13	2099.39	-13.44	-33.65	-13.44	36.24	248.24	0.21
2200.00	0.36	201.88	2199.39	-14.10	-34.14	-14.10	36.94	247.56	0.30
2300.00	0.92	169.78	2299.38	-15.18	-34.12	-15.18	37.34	246.02	0.64
2400.00	1.78	165.21	2399.35	-17.47	-33.58	-17.47	37.85	242.52	0.87
2500.00	0.41	87.88	2499.33	-18.96	-32.82	-18.96	37.90	239.99	1.74
2600.00	0.93	51.66	2599.33	-18.44	-31.83	-18.44	36.78	239.92	0.65
2700.00	1.78	34.16	2699.30	-16.65	-30.31	-16.65	34.58	241.23	0.93
2800.00	2.14	36.84	2799.24	-13.87	-28.32	-13.87	31.54	243.91	0.37
2900.00	2.06	36.21	2899.17	-10.92	-26.14	-10.92	28.33	247.32	0.08
3000.00	2.06	29.31	2999.11	-7.90	-24.20	-7.90	25.46	251.91	0.25
3100.00	2.13	31.07	3099.04	-4.75	-22.36	-4.75	22.86	258.02	0.09
3200.00	2.27	31.99	3198.97	-1.48	-20.35	-1.48	20.41	265.85	0.14
3300.00	2.04	27.73	3298.90	1.77	-18.48	1.77	18.57	275.47	0.28
3400.00	1.85	24.33	3398.84	4.82	-16.99	4.82	17.66	285.83	0.22
3500.00	2.27	25.19	3498.78	8.08	-15.48	8.08	17.46	297.57	0.42
3600.00	1.64	20.95	3598.72	11.21	-14.13	11.21	18.03	308.43	0.65
3700.00	1.96	19.19	3698.67	14.16	-13.05	14.16	19.26	317.34	0.33
3800.00	1.95	19.49	3798.61	17.38	-11.92	17.38	21.08	325.55	0.02
3900.00	1.81	21.92	3898.56	20.44	-10.77	20.44	23.11	332.23	0.16
4000.00	1.94	22.40	3998.50	23.47	-9.53	23.47	25.33	337.89	0.13
4100.00	1.86	15.45	4098.45	26.60	-8.46	26.60	27.91	342.36	0.24
4200.00	1.54	18.73	4198.40	29.43	-7.60	29.43	30.39	345.53	0.34
4300.00	1.83	19.32	4298.36	32.20	-6.64	32.20	32.88	348.35	0.29
4400.00	1.80	13.23	4398.31	35.23	-5.75	35.23	35.70	350.73	0.19
4500.00	1.88	12.99	4498.26	38.36	-5.02	38.36	38.69	352.54	0.08
4600.00	1.98	10.86	4598.20	41.65	-4.33	41.65	41.88	354.06	0.12
4700.00	1.96	10.84	4698.14	45.02	-3.68	45.02	45.17	355.32	0.02
4800.00	1.65	10.29	4798.09	48.11	-3.11	48.11	48.21	356.31	0.31
4900.00	1.49	18.83	4898.06	50.76	-2.43	50.76	50.82	357.26	0.28
5000.00	1.20	21.69	4998.03	52.96	-1.62	52.96	52.99	358.24	0.30
5100.00	1.23	17.43	5098.01	54.95	-0.92	54.95	54.96	359.04	0.09
5200.00	1.01	22.19	5197.99	56.79	-0.26	56.79	56.79	359.73	0.24
5300.00	0.85	11.86	5297.97	58.33	0.22	58.33	58.33	0.22	0.23
5400.00	1.03	7.28	5397.96	59.95	0.49	59.95	59.96	0.47	0.20
5500.00	0.87	23.31	5497.95	61.54	0.90	61.54	61.55	0.84	0.31
5600.00	0.68	23.29	5597.94	62.78	1.43	62.78	62.80	1.31	0.19
5700.00	0.66	18.07	5697.93	63.87	1.85	63.87	63.89	1.66	0.06

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 Dëg/100
5800.00	0.64	17.95	5797.93	64.94	2.19	64.94	64.98	1.94	0.02
5900.00	0.52	23.97	5897.92	65.89	2.55	65.89	65.94	2.22	0.13
6000.00	0.30	72.96	5997.92	66.38	2.99	66.38	66.45	2.58	0.40
6100.00	0.20	88.32	6097.92	66.46	3.42	66.46	66.55	2.94	0.12
6200.00	0.22	43.85	6197.92	66.61	3.72	66.61	66.71	3.20	0.16
6300.00	0.27	123.36	6297.92	66.62	4.06	66.62	66.74	3.48	0.32
6400.00	0.27	111.63	6397.91	66.40	4.47	66.40	66.55	3.85	0.06
6500.00	0.47	171.92	6497.91	65.91	4.75	65.91	66.08	4.12	0.41
6600.00	0.64	98.10	6597.91	65.42	5.36	65.42	65.64	4.69	0.68
6700.00	1.14	138.95	6697.90	64.59	6.57	64.59	64.92	5.81	0.78
6800.00	1.24	132.81	6797.88	63.10	8.02	63.10	63.61	7.24	0.16
6900.00	0.81	133.84	6897.86	61.88	9.32	61.88	62.58	8.57	0.43
7000.00	0.57	112.25	6997.85	61.20	10.29	61.20	62.06	9.55	0.35
7100.00	0.30	62.42	7097.85	61.13	10.99	61.13	62.11	10.19	0.44
7200.00	0.40	8.71	7197.85	61.60	11.28	61.60	62.62	10.37	0.33
7300.00	0.58	307.62	7297.84	62.25	10.93	62.25	63.20	9.96	0.52
7400.00	0.61	328.02	7397.84	63.01	10.24	63.01	63.84	9.23	0.21
7500.00	0.41	334.13	7497.84	63.79	9.80	63.79	64.54	8.74	0.21
7600.00	0.35	326.67	7597.83	64.37	9.48	64.37	65.06	8.38	0.08
7700.00	0.24	341.07	7697.83	64.82	9.24	64.82	65.48	8.12	0.13
7800.00	0.22	258.17	7797.83	64.98	8.99	64.98	65.60	7.87	0.31
7900.00	0.24	214.66	7897.83	64.77	8.68	64.77	65.35	7.63	0.17
8000.00	0.35	149.57	7997.83	64.34	8.71	64.34	64.92	7.71	0.33



VES Survey International
West Texas
Surveyor: Neil Bates
(432) 563-5444
Brutus 12 Federal 1H / API 30-015-42609



V.E.S. Survey Date: 11/4/2014



NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 28 2015

RECEIVED

COG Operating LLC

Eddy County, NM
Brutus 12 Federal
#1H

OH

Survey: MWD #1

Survey Report - Geographic

13 November, 2014



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 2953.4usft (Original Well Elev)
Site:	Brutus 12 Federal	MD Reference:	WELL @ 2953.4usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Eddy County, NM		
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	Brutus 12 Federal		
Site Position:		Northing:	382,260.60 usft
From:	Map	Easting:	592,969.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 3' 2.139 N
		Longitude:	104° 1' 59.750 W
		Grid Convergence:	0.16 °

Well	#1H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 3' 2.139 N
		Longitude:	104° 1' 59.750 W
		Ground Level:	2,936.4 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	10/21/2014	7.37
			Dip Angle
			(°)
			59.86
			Field Strength
			(nT)
			48,131

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
			Direction
			(°)
			357.82

Survey Program	Date 11/13/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	7,800.0	GYRO (OH)	NS-GYRO-SS
7,832.0	12,718.0	MWD #1 (OH)	MWD
			Description
			NS Gyro single shots
			MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map			
Depth	(°)	(°)	Depth	(usft)	(usft)	Northing	Easting	Latitude	Longitude	
(usft)			(usft)			(usft)	(usft)			
7,800.0	0.22	258.17	7,797.8	65.0	9.0	382,325.65	592,978.00	32° 3' 2.783 N	104° 1' 59.643 W	
7,832.0	4.80	355.01	7,829.8	66.4	8.8	382,326.97	592,977.82	32° 3' 2.796 N	104° 1' 59.645 W	
7,864.0	8.80	358.21	7,861.6	70.2	8.6	382,330.75	592,977.63	32° 3' 2.833 N	104° 1' 59.648 W	
7,895.0	11.80	0.31	7,892.1	75.7	8.6	382,336.29	592,977.57	32° 3' 2.888 N	104° 1' 59.648 W	
7,927.0	15.00	359.91	7,923.2	83.1	8.6	382,343.71	592,977.58	32° 3' 2.961 N	104° 1' 59.648 W	
7,958.0	17.80	0.31	7,952.9	91.9	8.6	382,352.46	592,977.60	32° 3' 3.048 N	104° 1' 59.647 W	
7,990.0	21.10	358.91	7,983.1	102.5	8.5	382,363.11	592,977.52	32° 3' 3.153 N	104° 1' 59.648 W	
8,022.0	23.90	359.61	8,012.6	114.8	8.4	382,375.35	592,977.37	32° 3' 3.275 N	104° 1' 59.649 W	
8,053.0	25.70	358.91	8,040.8	127.8	8.2	382,388.36	592,977.20	32° 3' 3.403 N	104° 1' 59.651 W	
8,085.0	29.40	359.21	8,069.2	142.6	8.0	382,403.15	592,976.96	32° 3' 3.550 N	104° 1' 59.653 W	
8,117.0	32.70	359.91	8,096.6	159.1	7.8	382,419.65	592,976.83	32° 3' 3.713 N	104° 1' 59.654 W	



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 2953.4usft (Original Well Elev)
Site:	Brutus 12 Federal	MD Reference:	WELL @ 2953.4usft (Original Well Elev)
Well:	#1H	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
8,149.0	35.40	1.01	8,123.1	177.0	8.0	382,437.57	592,976.98	32° 3' 3.890 N	104° 1' 59.652 W
8,180.0	37.10	0.61	8,148.1	195.3	8.2	382,455.90	592,977.24	32° 3' 4.072 N	104° 1' 59.648 W
8,212.0	38.70	359.91	8,173.3	215.0	8.3	382,475.55	592,977.33	32° 3' 4.266 N	104° 1' 59.646 W
8,244.0	40.60	358.91	8,198.0	235.4	8.1	382,495.97	592,977.11	32° 3' 4.468 N	104° 1' 59.648 W
8,276.0	43.30	357.81	8,221.8	256.7	7.5	382,517.35	592,976.50	32° 3' 4.680 N	104° 1' 59.655 W
8,308.0	47.00	357.51	8,244.3	279.4	6.6	382,540.01	592,975.57	32° 3' 4.904 N	104° 1' 59.665 W
8,339.0	49.80	357.51	8,264.9	302.6	5.6	382,563.17	592,974.56	32° 3' 5.133 N	104° 1' 59.676 W
8,371.0	51.40	357.81	8,285.2	327.3	4.6	382,587.88	592,973.55	32° 3' 5.378 N	104° 1' 59.687 W
8,403.0	54.40	357.81	8,304.5	352.8	3.6	382,613.38	592,972.58	32° 3' 5.630 N	104° 1' 59.697 W
8,434.0	57.90	357.51	8,321.8	378.5	2.5	382,639.10	592,971.53	32° 3' 5.885 N	104° 1' 59.709 W
8,466.0	61.60	357.51	8,337.9	406.1	1.3	382,666.71	592,970.33	32° 3' 6.158 N	104° 1' 59.722 W
8,498.0	64.60	357.51	8,352.4	434.6	0.1	382,695.22	592,969.09	32° 3' 6.440 N	104° 1' 59.735 W
8,529.0	68.30	357.11	8,364.8	463.0	-1.3	382,723.60	592,967.75	32° 3' 6.721 N	104° 1' 59.750 W
8,561.0	72.30	357.11	8,375.5	493.1	-2.8	382,753.68	592,966.23	32° 3' 7.019 N	104° 1' 59.766 W
8,591.0	74.80	357.81	8,384.0	521.8	-4.0	382,782.42	592,964.96	32° 3' 7.304 N	104° 1' 59.780 W
8,623.0	76.00	358.20	8,392.1	552.8	-5.1	382,813.37	592,963.88	32° 3' 7.610 N	104° 1' 59.792 W
8,655.0	77.60	359.30	8,399.4	583.9	-5.8	382,844.51	592,963.20	32° 3' 7.918 N	104° 1' 59.799 W
8,686.0	80.10	359.60	8,405.4	614.3	-6.1	382,874.93	592,962.91	32° 3' 8.219 N	104° 1' 59.801 W
8,718.0	82.90	0.70	8,410.1	646.0	-6.0	382,906.57	592,962.99	32° 3' 8.532 N	104° 1' 59.799 W
8,750.0	86.00	1.40	8,413.2	677.8	-5.4	382,938.41	592,963.58	32° 3' 8.847 N	104° 1' 59.791 W
8,782.0	89.40	1.00	8,414.5	709.8	-4.8	382,970.37	592,964.25	32° 3' 9.164 N	104° 1' 59.782 W
8,813.0	90.40	1.40	8,414.6	740.8	-4.1	383,001.37	592,964.90	32° 3' 9.470 N	104° 1' 59.774 W
8,909.0	92.20	1.70	8,412.4	836.7	-1.5	383,097.30	592,967.49	32° 3' 10.420 N	104° 1' 59.741 W
9,004.0	91.50	1.00	8,409.3	931.6	0.7	383,192.22	592,969.73	32° 3' 11.359 N	104° 1' 59.712 W
9,099.0	89.70	359.60	8,408.3	1,026.6	1.2	383,287.21	592,970.23	32° 3' 12.299 N	104° 1' 59.703 W
9,193.0	88.90	357.20	8,409.5	1,120.6	-1.4	383,381.16	592,967.60	32° 3' 13.229 N	104° 1' 59.730 W
9,288.0	89.70	356.80	8,410.6	1,215.4	-6.4	383,476.02	592,962.63	32° 3' 14.168 N	104° 1' 59.785 W
9,384.0	91.30	357.50	8,409.8	1,311.3	-11.1	383,571.90	592,957.86	32° 3' 15.117 N	104° 1' 59.837 W
9,479.0	90.10	356.80	8,408.6	1,406.2	-15.9	383,666.77	592,953.14	32° 3' 16.056 N	104° 1' 59.889 W
9,574.0	88.20	356.80	8,410.1	1,501.0	-21.2	383,761.61	592,947.83	32° 3' 16.995 N	104° 1' 59.948 W
9,669.0	88.50	356.50	8,412.8	1,595.8	-26.7	383,856.40	592,942.28	32° 3' 17.933 N	104° 2' 0.009 W
9,764.0	89.20	356.50	8,414.7	1,690.6	-32.5	383,951.21	592,936.49	32° 3' 18.871 N	104° 2' 0.073 W
9,860.0	90.40	356.80	8,415.0	1,786.4	-38.1	384,047.04	592,930.88	32° 3' 19.820 N	104° 2' 0.135 W
9,955.0	91.50	357.20	8,413.5	1,881.3	-43.1	384,141.90	592,925.90	32° 3' 20.759 N	104° 2' 0.190 W
10,050.0	90.30	356.80	8,412.0	1,976.2	-48.1	384,236.75	592,920.93	32° 3' 21.698 N	104° 2' 0.245 W
10,145.0	88.00	357.50	8,413.4	2,071.0	-52.8	384,331.62	592,916.21	32° 3' 22.637 N	104° 2' 0.297 W
10,240.0	88.20	357.20	8,416.5	2,165.9	-57.2	384,426.46	592,911.82	32° 3' 23.575 N	104° 2' 0.345 W
10,336.0	89.60	357.50	8,418.4	2,261.7	-61.6	384,522.34	592,907.38	32° 3' 24.524 N	104° 2' 0.393 W
10,431.0	90.10	357.50	8,418.6	2,356.7	-65.8	384,617.25	592,903.24	32° 3' 25.464 N	104° 2' 0.438 W
10,526.0	90.40	357.50	8,418.2	2,451.6	-69.9	384,712.16	592,899.10	32° 3' 26.403 N	104° 2' 0.483 W
10,621.0	92.40	357.90	8,415.9	2,546.4	-73.7	384,807.05	592,895.28	32° 3' 27.342 N	104° 2' 0.524 W
10,717.0	91.00	358.20	8,413.0	2,642.3	-77.0	384,902.95	592,892.02	32° 3' 28.291 N	104° 2' 0.559 W
10,812.0	89.60	358.20	8,412.5	2,737.3	-80.0	384,997.90	592,889.04	32° 3' 29.231 N	104° 2' 0.591 W
10,907.0	88.90	357.50	8,413.8	2,832.2	-83.5	385,092.82	592,885.47	32° 3' 30.171 N	104° 2' 0.629 W
11,002.0	89.90	357.90	8,414.8	2,927.1	-87.3	385,187.74	592,881.66	32° 3' 31.110 N	104° 2' 0.670 W
11,097.0	87.40	357.90	8,417.0	3,022.0	-90.8	385,282.64	592,878.18	32° 3' 32.049 N	104° 2' 0.708 W
11,192.0	88.00	357.90	8,420.8	3,116.9	-94.3	385,377.50	592,874.70	32° 3' 32.988 N	104° 2' 0.745 W
11,287.0	89.20	357.90	8,423.1	3,211.8	-97.8	385,472.41	592,871.22	32° 3' 33.928 N	104° 2' 0.783 W
11,382.0	90.40	357.50	8,423.5	3,306.7	-101.6	385,567.33	592,867.41	32° 3' 34.867 N	104° 2' 0.824 W
11,477.0	91.70	357.20	8,421.7	3,401.6	-106.0	385,662.21	592,863.02	32° 3' 35.806 N	104° 2' 0.872 W
11,573.0	89.70	356.50	8,420.6	3,497.5	-111.3	385,758.05	592,857.74	32° 3' 36.755 N	104° 2' 0.930 W
11,668.0	91.00	356.50	8,420.0	3,592.3	-117.1	385,852.87	592,851.94	32° 3' 37.693 N	104° 2' 0.994 W
11,763.0	90.30	355.80	8,418.9	3,687.0	-123.4	385,947.65	592,845.56	32° 3' 38.631 N	104° 2' 1.065 W
11,858.0	91.30	355.80	8,417.6	3,781.8	-130.4	386,042.38	592,838.61	32° 3' 39.569 N	104° 2' 1.143 W
11,953.0	89.70	355.80	8,416.7	3,876.5	-137.4	386,137.12	592,831.65	32° 3' 40.507 N	104° 2' 1.221 W



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 2953.4usft (Original Well Elev)
Site:	Brutus 12 Federal	MD Reference:	WELL @ 2953.4usft (Original Well Elev)
Well:	#1H	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
12,048.0	90.40	355.80	8,416.7	3,971.3	-144.3	386,231.86	592,824.69	32° 3' 41.445 N	104° 2' 1.299 W
12,143.0	91.80	355.00	8,414.8	4,065.9	-151.9	386,326.54	592,817.08	32° 3' 42.382 N	104° 2' 1.384 W
12,239.0	91.00	354.40	8,412.5	4,161.5	-160.8	386,422.10	592,808.21	32° 3' 43.328 N	104° 2' 1.484 W
12,334.0	89.20	355.50	8,412.3	4,256.1	-169.2	386,516.72	592,799.85	32° 3' 44.265 N	104° 2' 1.578 W
12,429.0	88.30	357.10	8,414.4	4,350.9	-175.3	386,611.50	592,793.72	32° 3' 45.203 N	104° 2' 1.646 W
12,525.0	89.20	357.10	8,416.5	4,446.8	-180.1	386,707.35	592,788.86	32° 3' 46.151 N	104° 2' 1.700 W
12,619.0	91.40	357.20	8,416.0	4,540.6	-184.8	386,801.23	592,784.19	32° 3' 47.081 N	104° 2' 1.751 W
12,718.0	91.40	357.20	8,413.6	4,639.5	-189.6	386,900.08	592,779.36	32° 3' 48.059 N	104° 2' 1.804 W
PBHL(B12#1H)									

Checked By: _____ Approved By: _____ Date: _____