McVAY DRILLING COMPANY
P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

HOBBS OCD

JUN 0 4 2015

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JAN 1 2 15

COG
ARTESIA WEST

Well Name and Num: Merlin State #2H
Location: Sec 32, T21S, R34E
Operator: COG
Drilling Contractor: McVay Drilling Company

The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

Degrees @	Depth	Degrees @	Depth	Degrees @	Depth
0.80	296	1.20	7372	89.80	12719
0.40	722	0.90	7767	89.10	13286
0.30	1100	0.60	8148	90.30	13760
0.10	1509	0.30	8530	90.30	14232
0.40	1907	0.30	8911	85.07	14609
1.40	2226	0.80	9326	87.70	14799
2.40	2637	1.60	9742	92.10	15188
3.90	3017	0.60	10220		
2.90	3585	7.00	10395		
2.50	4056	15.20	10490		
2.20	4529	28.70	10651		
2.20	5096	37.50	10747		
1.80	5653	61.30	10971		
1.50	5856	77.80	11128		
1.10	6199	91.40	11381		
1.00	6578	90.60	11859		
1.40	6959	87.90	12337		

By: Mark A Beam Sr.

Subscribed and sworn to before me this 6th day of January, 2015

Tina Flemens
Notary Public, Lea County, New Mexico

OFFICIAL SEAL
TINA FLEMENS
Notary Public
State of New Mexico
My Comm. Expires 8-16-17

JUN 0 8 2015

HOBBS OCD

JUN 0 4 2015

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VES SURVEY INTERNATIONAL

January 15, 2015

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

Attn: Kanicia Castillo

RE: **Merlin State Com No 002H**

Please find enclosed a copy of the survey from 0.00' to 10272.00' 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 15 day of January A.D., 2015, 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, TX 78426
T (361) 767-0602 F (361) 767-0612
www.vessurvey.com

Company: COG OPERATING
Lease/Well: MERLIN STATE COM/No 002H

Rig Name: MCVAY #7
State/County: NEW MEXICO/LEA
Latitude: 32.44, Longitude: -103.50
GRID North is 0.45 Degrees East of True North
VS-Azi: 0.00 Degrees

VES SURVEY INTERNATIONAL

Depth Reference : RKB: 17 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS
Filename: gyro suvery.ut
Minimum Curvature Method
Report Date/Time: 1/15/2015 / 10:50

VES Survey International
West Texas
(432) 563-5444
Surveyor: Jordan Shelleby
Merlin State Com No 002H / API 30-025-41938

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JUN 04 2015
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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	0.54	122.86	100.00	-0.26	0.40	-0.26	0.47	122.86	0.54
200.00	0.76	72.04	199.99	-0.31	1.42	-0.31	1.46	102.19	0.59
300.00	0.43	9.28	299.99	0.27	2.12	0.27	2.13	82.73	0.68
400.00	0.22	134.19	399.99	0.51	2.32	0.51	2.37	77.66	0.59
500.00	0.14	84.32	499.99	0.38	2.58	0.38	2.61	81.57	0.17
600.00	0.48	84.26	599.99	0.44	3.13	0.44	3.16	82.04	0.34
700.00	0.40	99.94	699.98	0.42	3.89	0.42	3.91	83.83	0.15
800.00	0.41	41.61	799.98	0.63	4.47	0.63	4.51	81.97	0.40
900.00	0.39	118.99	899.98	0.74	5.00	0.74	5.06	81.64	0.50
1000.00	0.53	78.70	999.98	0.66	5.75	0.66	5.79	83.44	0.34
1100.00	0.40	29.67	1099.97	1.06	6.38	1.06	6.46	80.59	0.40
1200.00	0.33	74.19	1199.97	1.44	6.83	1.44	6.98	78.08	0.29
1300.00	0.21	347.37	1299.97	1.70	7.06	1.70	7.26	76.50	0.38
1400.00	0.07	159.81	1399.97	1.82	7.04	1.82	7.27	75.52	0.27
1500.00	0.35	288.59	1499.97	1.86	6.77	1.86	7.02	74.63	0.39
1600.00	0.39	296.63	1599.97	2.11	6.18	2.11	6.53	71.12	0.07
1700.00	0.77	269.87	1699.96	2.26	5.20	2.26	5.67	66.48	0.45
1800.00	0.41	217.28	1799.96	1.98	4.31	1.98	4.75	65.38	0.61

VES Survey Date: 12/23/2014

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	0.55	234.53	1899.95	1.41	3.71	1.41	3.96	69.14	0.20
2000.00	0.08	306.90	1999.95	1.18	3.26	1.18	3.46	70.14	0.53
2100.00	0.24	334.76	2099.95	1.41	3.11	1.41	3.41	65.68	0.17
2200.00	1.10	30.40	2199.94	2.42	3.51	2.42	4.26	55.40	0.98
2300.00	1.32	66.69	2299.92	3.70	5.05	3.70	6.26	53.76	0.78
2400.00	1.85	83.78	2399.89	4.33	7.72	4.33	8.85	60.67	0.70
2500.00	1.63	66.04	2499.84	5.09	10.62	5.09	11.77	64.40	0.58
2600.00	1.98	58.88	2599.79	6.56	13.39	6.56	14.91	63.92	0.42
2700.00	2.30	79.58	2699.72	7.81	16.85	7.81	18.57	65.12	0.83
2800.00	2.68	73.04	2799.63	8.86	21.06	8.86	22.85	67.19	0.48
2900.00	3.45	64.80	2899.48	10.82	26.02	10.82	28.18	67.42	0.88
3000.00	3.30	67.86	2999.31	13.18	31.41	13.18	34.06	67.23	0.23
3100.00	2.92	55.89	3099.16	15.70	36.18	15.70	39.44	66.55	0.75
3200.00	2.82	64.43	3199.04	18.18	40.50	18.18	44.40	65.82	0.44
3300.00	2.77	57.14	3298.92	20.56	44.75	20.56	49.25	65.33	0.36
3400.00	3.00	61.96	3398.79	23.10	49.09	23.10	54.25	64.80	0.33
3500.00	2.63	75.87	3498.67	24.89	53.62	24.89	59.12	65.10	0.77
3600.00	2.55	94.96	3598.57	25.25	58.06	25.25	63.32	66.49	0.86
3700.00	2.65	88.34	3698.47	25.13	62.59	25.13	67.44	68.12	0.32
3800.00	1.92	74.10	3798.39	25.66	66.51	25.66	71.29	68.91	0.92
3900.00	1.62	87.10	3898.35	26.19	69.53	26.19	74.30	69.36	0.50
4000.00	1.89	107.86	3998.30	25.75	72.52	25.75	76.95	70.45	0.69
4100.00	1.80	113.82	4098.25	24.61	75.52	24.61	79.43	71.95	0.21
4200.00	2.16	91.51	4198.19	23.93	78.84	23.93	82.39	73.12	0.84
4300.00	2.26	120.80	4298.12	22.87	82.41	22.87	85.52	74.49	1.12
4400.00	1.95	111.83	4398.05	21.23	85.68	21.23	88.27	76.08	0.45
4500.00	1.75	110.68	4498.00	20.06	88.68	20.06	90.92	77.25	0.20
4600.00	1.71	101.54	4597.95	19.22	91.57	19.22	93.57	78.14	0.28
4700.00	1.79	123.58	4697.91	18.06	94.33	18.06	96.04	79.16	0.67
4800.00	1.82	121.92	4797.86	16.36	96.97	16.36	98.34	80.42	0.07
4900.00	1.60	105.40	4897.81	15.15	99.67	15.15	100.81	81.36	0.54
5000.00	1.99	114.42	4997.77	14.06	102.59	14.06	103.55	82.20	0.48
5100.00	1.89	115.29	5097.71	12.64	105.66	12.64	106.42	83.18	0.10
5200.00	1.82	109.62	5197.66	11.40	108.65	11.40	109.25	84.01	0.20
5300.00	1.81	85.07	5297.61	11.00	111.72	11.00	112.26	84.38	0.77
5400.00	1.60	92.01	5397.56	11.09	114.68	11.09	115.22	84.48	0.29
5500.00	1.52	96.72	5497.53	10.88	117.40	10.88	117.90	84.70	0.15
5600.00	1.35	94.68	5597.49	10.63	119.89	10.63	120.36	84.93	0.18
5700.00	1.24	62.10	5697.47	11.04	122.02	11.04	122.52	84.83	0.73

VES Survey Date: 12/23/2014

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	1.11	46.22	5797.45	12.22	123.67	12.22	124.27	84.36	0.35
5900.00	1.12	89.07	5897.43	12.90	125.35	12.90	126.01	84.12	0.81
6000.00	1.17	96.44	5997.41	12.80	127.34	12.80	127.99	84.26	0.16
6100.00	1.16	110.78	6097.39	12.33	129.31	12.33	129.89	84.55	0.29
6200.00	1.22	140.83	6197.37	11.14	130.93	11.14	131.40	85.14	0.62
6300.00	1.31	73.78	6297.35	10.64	132.69	10.64	133.12	85.42	1.40
6400.00	1.11	102.16	6397.33	10.75	134.74	10.75	135.16	85.44	0.62
6500.00	1.31	79.10	6497.31	10.76	136.81	10.76	137.23	85.50	0.52
6600.00	1.22	103.76	6597.29	10.72	138.97	10.72	139.38	85.59	0.55
6700.00	1.38	87.72	6697.26	10.52	141.21	10.52	141.60	85.74	0.39
6800.00	1.25	95.51	6797.23	10.46	143.49	10.46	143.87	85.83	0.22
6900.00	0.93	82.76	6897.22	10.46	145.38	10.46	145.76	85.88	0.39
7000.00	1.10	89.96	6997.20	10.56	147.15	10.56	147.53	85.89	0.21
7100.00	0.99	88.10	7097.18	10.59	148.98	10.59	149.36	85.93	0.11
7200.00	0.67	107.56	7197.17	10.44	150.41	10.44	150.77	86.03	0.42
7300.00	0.52	120.75	7297.17	10.04	151.36	10.04	151.69	86.21	0.21
7400.00	0.42	88.22	7397.16	9.82	152.11	9.82	152.43	86.31	0.28
7500.00	0.33	113.33	7497.16	9.71	152.74	9.71	153.05	86.36	0.18
7600.00	0.15	162.63	7597.16	9.48	153.04	9.48	153.33	86.46	0.26
7700.00	0.73	188.32	7697.16	8.73	152.98	8.73	153.23	86.73	0.60
7800.00	0.80	139.74	7797.15	7.57	153.34	7.57	153.53	87.17	0.63
7900.00	0.87	164.02	7897.14	6.31	154.00	6.31	154.13	87.65	0.36
8000.00	0.93	165.84	7997.13	4.80	154.41	4.80	154.48	88.22	0.06
8100.00	0.67	149.34	8097.12	3.51	154.90	3.51	154.94	88.70	0.34
8200.00	0.43	140.75	8197.11	2.71	155.44	2.71	155.46	89.00	0.26
8300.00	0.61	215.30	8297.11	1.99	155.37	1.99	155.38	89.27	0.64
8400.00	0.31	158.60	8397.11	1.31	155.16	1.31	155.16	89.52	0.51
8500.00	0.51	172.11	8497.10	0.61	155.32	0.61	155.32	89.78	0.22
8600.00	0.35	157.03	8597.10	-0.11	155.50	-0.11	155.50	90.04	0.20
8700.00	0.13	123.77	8697.10	-0.45	155.71	-0.45	155.71	90.17	0.25
8800.00	0.22	188.11	8797.10	-0.71	155.78	-0.71	155.78	90.26	0.20
8900.00	0.22	232.27	8897.10	-1.02	155.60	-1.02	155.61	90.37	0.16
9000.00	0.11	117.88	8997.10	-1.18	155.54	-1.18	155.54	90.43	0.28
9100.00	0.18	171.78	9097.10	-1.38	155.65	-1.38	155.65	90.51	0.14
9200.00	0.16	257.48	9197.10	-1.56	155.53	-1.56	155.54	90.57	0.23
9300.00	0.30	349.18	9297.10	-1.33	155.34	-1.33	155.35	90.49	0.35
9400.00	0.82	275.41	9397.09	-1.00	154.58	-1.00	154.58	90.37	0.79
9500.00	1.16	264.75	9497.08	-1.03	152.87	-1.03	152.87	90.38	0.38
9600.00	1.29	245.29	9597.06	-1.59	150.84	-1.59	150.85	90.60	0.43

VES Survey Date: 12/23/2014

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
9700.00	1.85	249.28	9697.02	-2.63	148.31	-2.63	148.33	91.02	0.58
9800.00	1.94	261.10	9796.96	-3.47	145.12	-3.47	145.16	91.37	0.40
9900.00	2.04	277.61	9896.90	-3.49	141.68	-3.49	141.72	91.41	0.58
10000.00	2.03	263.71	9996.84	-3.45	138.16	-3.45	138.20	91.43	0.49
10100.00	1.85	283.91	10096.79	-3.26	134.83	-3.26	134.87	91.38	0.70
10200.00	1.72	284.11	10196.74	-2.50	131.81	-2.50	131.83	91.09	0.13
10272.00	1.13	276.41	10268.72	-2.16	130.06	-2.16	130.07	90.95	0.86

VES Survey Date: 12/23/2014

VES Survey International
West Texas
(432) 563-5444
Surveyor: Jordan Shelleby
Merlin State Com No 002H / API 30-025-41938

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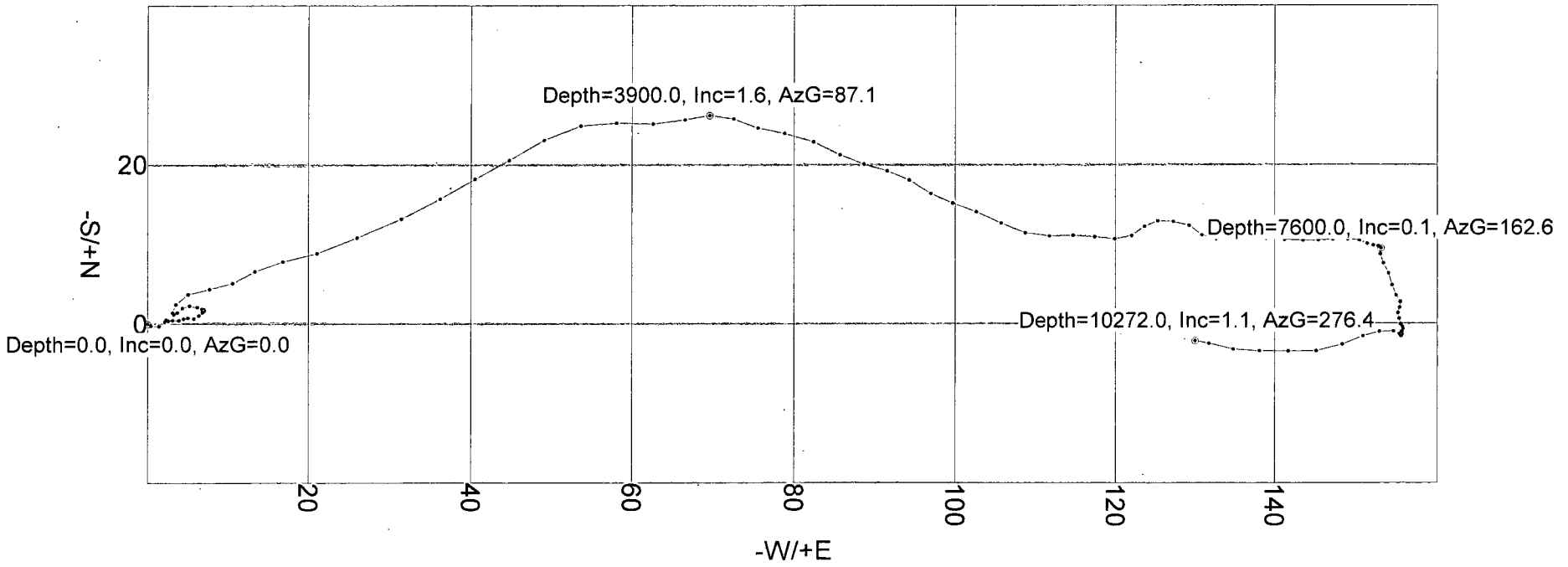

VES Survey Date: 12/23/2014

CONCHO

COG Operating LLC

Lea County, NM
Merlin State Com
#2H

OH

Survey: MWD #1

Survey Report - Geographic

05 January, 2015

CONCHO

Wellplanning

Survey Report - Geographic

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Lea County, NM	**TVD Reference:**	WELL @ 3744.7usft (Original Well Elev)
Site:	Merlin State Com	**MD Reference:**	WELL @ 3744.7usft (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	Lea 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	Merlin State Com				
Site Position:		**Northing:**	525,232.30 usft	**Latitude:**	32° 26' 28.340 N
From:	Map	**Easting:**	757,727.40 usft	**Longitude:**	103° 29' 52.541 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.45 °

Well	#2H					
Well Position	**+N/-S**	0.0 usft	**Northing:**	525,232.30 usft	**Latitude:**	32° 26' 28.340 N
	+E/-W	0.0 usft	**Easting:**	757,727.40 usft	**Longitude:**	103° 29' 52.541 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,727.7 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	11/24/2014	7.14	60.31	48,408

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	179.47	

Survey Program **Date** 1/5/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	10,272.0	GYRO (OH)	NS-GYRO-SS	NS Gyro single shots
10,301.0	15,188.0	MWD #1 (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
10,272.0	1.13	276.41	10,268.7	-2.2	130.1	525,230.11	757,857.48	32° 26' 28.309 N	103° 29' 51.023 W
10,301.0	1.10	268.80	10,297.7	-2.2	129.5	525,230.14	757,856.92	32° 26' 28.309 N	103° 29' 51.030 W
10,333.0	1.80	268.30	10,329.7	-2.2	128.7	525,230.11	757,856.11	32° 26' 28.309 N	103° 29' 51.039 W
10,365.0	3.70	223.70	10,361.7	-2.9	127.5	525,229.35	757,854.90	32° 26' 28.301 N	103° 29' 51.053 W
10,395.0	7.00	213.90	10,391.5	-5.2	125.8	525,227.14	757,853.21	32° 26' 28.280 N	103° 29' 51.073 W
10,426.0	10.80	205.10	10,422.2	-9.4	123.5	525,222.94	757,850.92	32° 26' 28.238 N	103° 29' 51.100 W
10,458.0	13.20	204.70	10,453.4	-15.4	120.7	525,216.90	757,848.12	32° 26' 28.179 N	103° 29' 51.134 W
10,490.0	15.20	203.40	10,484.5	-22.6	117.5	525,209.73	757,844.93	32° 26' 28.108 N	103° 29' 51.172 W
10,522.0	17.90	205.70	10,515.1	-30.9	113.7	525,201.45	757,841.13	32° 26' 28.026 N	103° 29' 51.217 W
10,556.0	21.20	203.90	10,547.2	-41.2	109.0	525,191.12	757,836.37	32° 26' 27.924 N	103° 29' 51.273 W
10,588.0	23.50	199.80	10,576.8	-52.5	104.5	525,179.82	757,831.87	32° 26' 27.813 N	103° 29' 51.327 W

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Lea County, NM	**TVD Reference:**	WELL @ 3744.7usft (Original Well Elev)
Site:	Merlin State Com	**MD Reference:**	WELL @ 3744.7usft (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
10,620.0	25.60	197.00	10,605.9	-65.1	100.3	525,167.21	757,827.68	32° 26' 27.689 N	103° 29' 51.377 W
10,651.0	28.70	195.00	10,633.5	-78.7	96.4	525,153.61	757,823.80	32° 26' 27.554 N	103° 29' 51.423 W
10,683.0	32.60	192.30	10,661.0	-94.5	92.6	525,137.76	757,819.97	32° 26' 27.398 N	103° 29' 51.469 W
10,715.0	36.20	189.50	10,687.4	-112.3	89.2	525,120.01	757,816.57	32° 26' 27.222 N	103° 29' 51.511 W
10,747.0	37.50	186.80	10,713.0	-131.3	86.5	525,101.01	757,813.86	32° 26' 27.035 N	103° 29' 51.544 W
10,779.0	37.70	183.10	10,738.4	-150.7	84.8	525,081.57	757,812.18	32° 26' 26.842 N	103° 29' 51.565 W
10,811.0	39.90	180.30	10,763.3	-170.8	84.2	525,061.53	757,811.59	32° 26' 26.644 N	103° 29' 51.574 W
10,843.0	43.90	179.10	10,787.1	-192.1	84.3	525,040.17	757,811.71	32° 26' 26.433 N	103° 29' 51.575 W
10,875.0	48.10	179.70	10,809.3	-215.1	84.6	525,017.15	757,811.95	32° 26' 26.205 N	103° 29' 51.574 W
10,907.0	52.40	179.90	10,829.8	-239.7	84.6	524,992.56	757,812.04	32° 26' 25.962 N	103° 29' 51.575 W
10,939.0	57.00	180.60	10,848.3	-265.9	84.5	524,966.45	757,811.92	32° 26' 25.703 N	103° 29' 51.579 W
10,971.0	61.30	181.40	10,864.7	-293.3	84.0	524,938.99	757,811.43	32° 26' 25.432 N	103° 29' 51.587 W
11,002.0	64.10	180.10	10,878.9	-320.9	83.7	524,911.45	757,811.08	32° 26' 25.159 N	103° 29' 51.594 W
11,034.0	66.70	179.10	10,892.2	-349.9	83.9	524,882.35	757,811.28	32° 26' 24.871 N	103° 29' 51.594 W
11,066.0	69.90	179.20	10,904.0	-379.7	84.3	524,852.63	757,811.72	32° 26' 24.577 N	103° 29' 51.592 W
11,096.0	74.20	178.60	10,913.3	-408.2	84.9	524,824.10	757,812.27	32° 26' 24.295 N	103° 29' 51.588 W
11,128.0	77.80	177.90	10,921.0	-439.2	85.8	524,793.07	757,813.22	32° 26' 23.988 N	103° 29' 51.580 W
11,160.0	81.30	178.00	10,926.8	-470.7	87.0	524,761.63	757,814.35	32° 26' 23.676 N	103° 29' 51.569 W
11,192.0	83.30	178.60	10,931.1	-502.4	87.9	524,729.93	757,815.29	32° 26' 23.363 N	103° 29' 51.561 W
11,224.0	87.60	178.00	10,933.7	-534.2	88.8	524,698.05	757,816.23	32° 26' 23.047 N	103° 29' 51.553 W
11,285.0	90.50	178.20	10,934.7	-595.2	90.9	524,637.10	757,818.26	32° 26' 22.444 N	103° 29' 51.535 W
11,381.0	91.40	176.90	10,933.1	-691.1	95.0	524,541.21	757,822.36	32° 26' 21.495 N	103° 29' 51.496 W
11,476.0	92.20	175.90	10,930.1	-785.9	100.9	524,446.44	757,828.32	32° 26' 20.557 N	103° 29' 51.435 W
11,572.0	92.50	175.30	10,926.2	-881.5	108.3	524,350.81	757,835.68	32° 26' 19.610 N	103° 29' 51.358 W
11,668.0	92.10	176.90	10,922.3	-977.2	114.8	524,255.11	757,842.20	32° 26' 18.662 N	103° 29' 51.290 W
11,764.0	91.50	178.20	10,919.3	-1,073.1	118.9	524,159.25	757,846.31	32° 26' 17.713 N	103° 29' 51.251 W
11,859.0	90.90	177.30	10,917.3	-1,168.0	122.6	524,064.34	757,850.03	32° 26' 16.774 N	103° 29' 51.217 W
11,955.0	90.10	175.90	10,916.5	-1,263.8	128.3	523,968.52	757,855.73	32° 26' 15.825 N	103° 29' 51.159 W
12,050.0	88.80	177.10	10,917.4	-1,358.6	134.1	523,873.70	757,861.53	32° 26' 14.887 N	103° 29' 51.100 W
12,146.0	88.60	178.60	10,919.6	-1,454.5	137.7	523,777.80	757,865.13	32° 26' 13.937 N	103° 29' 51.067 W
12,242.0	87.60	179.50	10,922.7	-1,550.4	139.3	523,681.87	757,866.72	32° 26' 12.988 N	103° 29' 51.057 W
12,337.0	87.90	181.80	10,926.5	-1,645.3	138.2	523,586.95	757,865.64	32° 26' 12.049 N	103° 29' 51.078 W
12,433.0	89.30	181.80	10,928.8	-1,741.3	135.2	523,491.03	757,862.63	32° 26' 11.100 N	103° 29' 51.122 W
12,529.0	90.90	181.30	10,928.6	-1,837.2	132.6	523,395.07	757,860.03	32° 26' 10.151 N	103° 29' 51.161 W
12,624.0	90.90	182.70	10,927.2	-1,932.2	129.3	523,300.14	757,856.71	32° 26' 9.212 N	103° 29' 51.208 W
12,719.0	89.80	183.80	10,926.6	-2,027.0	123.9	523,205.30	757,851.33	32° 26' 8.274 N	103° 29' 51.280 W
12,814.0	90.40	183.70	10,926.4	-2,121.8	117.7	523,110.50	757,845.12	32° 26' 7.336 N	103° 29' 51.361 W
12,909.0	90.90	183.10	10,925.3	-2,216.6	112.1	523,015.68	757,839.48	32° 26' 6.398 N	103° 29' 51.435 W
13,003.0	89.80	182.00	10,924.8	-2,310.5	107.9	522,921.77	757,835.30	32° 26' 5.469 N	103° 29' 51.493 W
13,098.0	88.80	182.10	10,925.9	-2,405.5	104.5	522,826.84	757,831.90	32° 26' 4.530 N	103° 29' 51.541 W
13,193.0	90.00	181.60	10,926.9	-2,500.4	101.4	522,731.90	757,828.84	32° 26' 3.591 N	103° 29' 51.585 W
13,286.0	89.10	181.90	10,927.6	-2,593.4	98.6	522,638.95	757,826.00	32° 26' 2.672 N	103° 29' 51.627 W
13,381.0	89.50	182.40	10,928.8	-2,688.3	95.0	522,544.02	757,822.43	32° 26' 1.733 N	103° 29' 51.677 W
13,475.0	90.50	182.30	10,928.8	-2,782.2	91.2	522,450.10	757,818.58	32° 26' 0.804 N	103° 29' 51.731 W
13,570.0	89.20	182.60	10,929.0	-2,877.1	87.1	522,355.19	757,814.52	32° 25' 59.865 N	103° 29' 51.787 W
13,665.0	90.40	182.60	10,929.4	-2,972.0	82.8	522,260.29	757,810.21	32° 25' 58.926 N	103° 29' 51.846 W
13,760.0	91.30	183.00	10,928.0	-3,066.9	78.2	522,165.42	757,805.57	32° 25' 57.988 N	103° 29' 51.909 W
13,853.0	89.90	182.70	10,927.0	-3,159.8	73.5	522,072.54	757,800.94	32° 25' 57.069 N	103° 29' 51.971 W
13,947.0	88.20	182.90	10,928.6	-3,253.6	69.0	521,978.67	757,796.35	32° 25' 56.140 N	103° 29' 52.033 W
14,042.0	88.50	182.70	10,931.3	-3,348.5	64.3	521,883.82	757,791.71	32° 25' 55.202 N	103° 29' 52.096 W
14,138.0	90.20	182.90	10,932.4	-3,444.4	59.6	521,787.95	757,787.02	32° 25' 54.254 N	103° 29' 52.159 W
14,232.0	91.30	182.80	10,931.1	-3,538.2	55.0	521,694.07	757,782.35	32° 25' 53.325 N	103° 29' 52.223 W
14,327.0	90.70	181.70	10,929.5	-3,633.1	51.2	521,599.16	757,778.62	32° 25' 52.387 N	103° 29' 52.275 W
14,421.0	89.00	180.50	10,929.7	-3,727.1	49.4	521,505.18	757,776.82	32° 25' 51.457 N	103° 29' 52.304 W
14,515.0	86.60	180.60	10,933.3	-3,821.0	48.5	521,411.26	757,775.92	32° 25' 50.528 N	103° 29' 52.323 W

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Lea County, NM	**TVD Reference:**	WELL @ 3744.7usft (Original Well Elev)
Site:	Merlin State Com	**MD Reference:**	WELL @ 3744.7usft (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
14,609.0	85.70	180.80	10,939.7	-3,914.8	47.4	521,317.48	757,774.77	32° 25' 49.600 N	103° 29' 52.345 W
14,704.0	87.90	179.80	10,945.0	-4,009.7	46.9	521,222.64	757,774.27	32° 25' 48.661 N	103° 29' 52.360 W
14,799.0	87.70	179.80	10,948.6	-4,104.6	47.2	521,127.71	757,774.61	32° 25' 47.722 N	103° 29' 52.365 W
14,893.0	90.10	179.90	10,950.4	-4,198.6	47.5	521,033.74	757,774.85	32° 25' 46.792 N	103° 29' 52.370 W
14,988.0	90.90	179.00	10,949.6	-4,293.6	48.4	520,938.75	757,775.76	32° 25' 45.852 N	103° 29' 52.368 W
15,081.0	91.80	179.40	10,947.4	-4,386.5	49.7	520,845.78	757,777.06	32° 25' 44.932 N	103° 29' 52.362 W
15,142.0	92.10	178.80	10,945.3	-4,447.5	50.6	520,784.82	757,778.02	32° 25' 44.329 N	103° 29' 52.356 W
15,188.0	92.10	178.80	10,943.6	-4,493.4	51.6	520,738.87	757,778.98	32° 25' 43.874 N	103° 29' 52.349 W
PBHL(MS#3)									

Checked By: _____ Approved By: _____ Date: _____