



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

HOBBSOCD

MAR 02 2015

Well Name and Num: Boone 16 State 1H
Location: Sec 16, T21S, R33E
Operator: COG
Drilling Contractor: McVay Drilling Company

RECEIVED

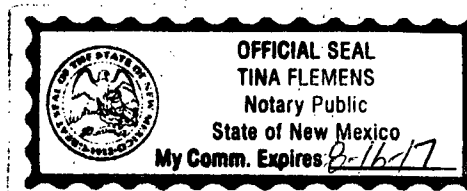
The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
0.60	293	1.10	7053	93.70	12213
0.80	685	0.40	7306	91.90	12687
0.80	1095	1.60	7767	90.70	13162
0.10	1693	1.40	7984	93.90	13478
1.20	1961	1.60	8272	91.30	13856
0.90	2208	1.20	8591	90.50	14235
0.40	2617	1.80	9005	92.60	14612
0.60	3027	3.90	9374	90.20	14991
0.70	3402	3.10	9554	92.60	15276
0.50	4167	3.10	9840	90.50	15561
0.50	4571	1.50	10127	91.00	16034
0.80	4981	0.60	10508	91.80	16201
0.20	5260	1.10	10984		
0.90	5565	11.50	11204		
0.60	5818	36.00	11424		
0.30	6229	52.00	11612		
0.40	6641	62.50	11770		

By: *Harold Comer*

Subscribed and sworn to before me this 6th day of November, 2014

Tina Flemens
Notary Public, Lea County, New Mexico



MAR 04 2015



October 31, 2014

HOBBSOCD

MAR 02 2015

RECEIVED

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

Attn: Kanicia Castillo

RE: Boone 16 State Com No. 001

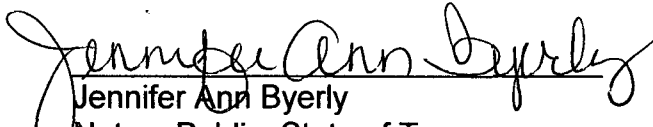
Please find enclosed a copy of the survey from 0.00' to 9438.00' ran on the above referenced well.

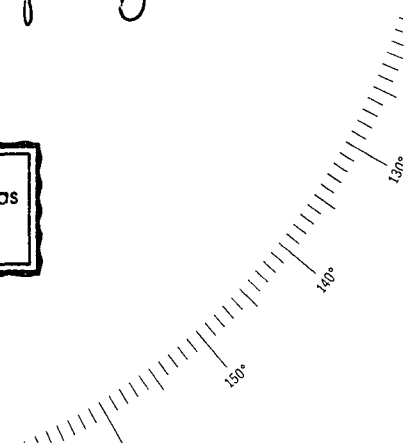
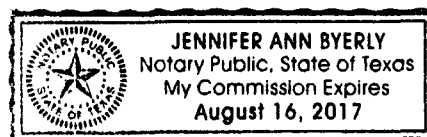
Sincerely,

Deb Salge
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 31 day of October A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas



Company: COG Operating, LLC (Concho)
Lease/Well: Boone 16 State Com/No. 001H



Rig Name: McVay 7
State/County: New Mexico/Lea
Latitude: 32.47, Longitude: -103.57
GRID North is 0.41 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB: 17'

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 10/31/2014 / 10:40

VES Survey International
Midland, TX
(432)-563-5444

Surveyor: Tim Dillon
Boone 16 State Com No. 001 / API 30-025-41200

RECEIVED
MAR 02 2015
HOBSOCD

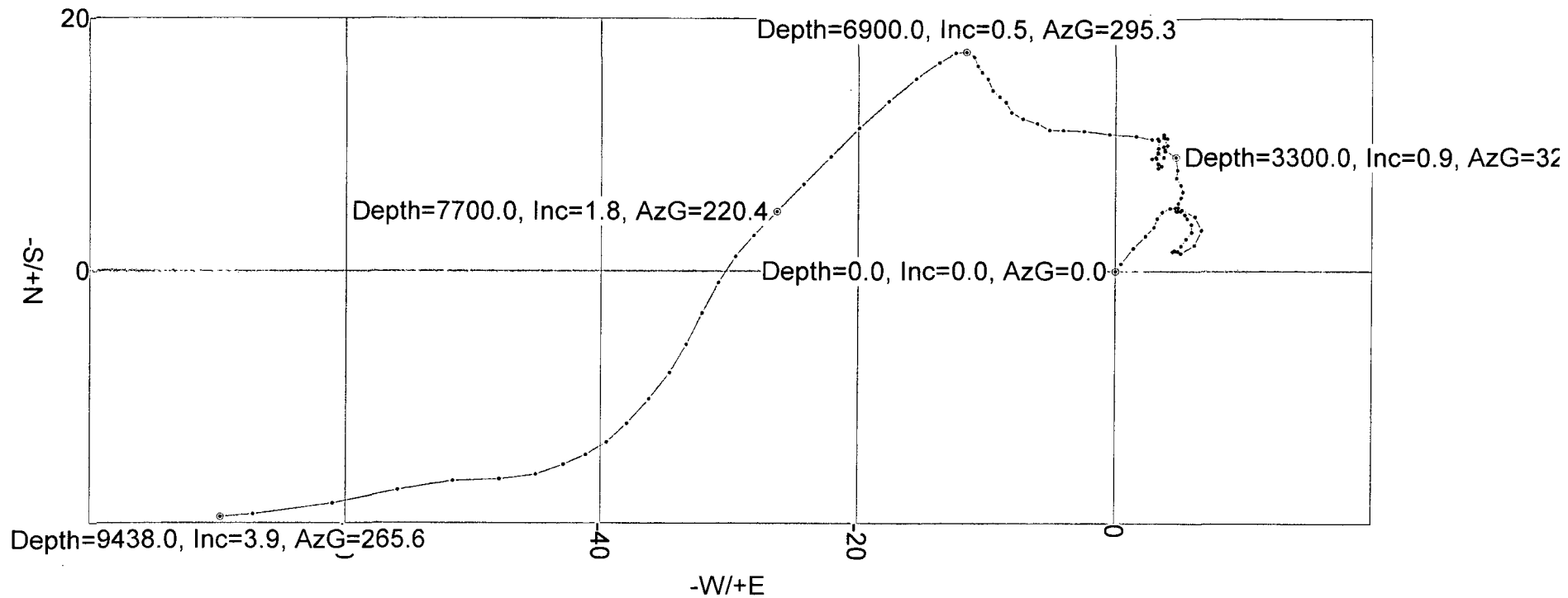
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.83	36.09	100.00	0.59	0.43	0.59	0.73	36.09	0.83
200.00	0.93	38.88	199.98	1.81	1.37	1.81	2.27	37.09	0.10
300.00	0.65	52.94	299.98	2.78	2.33	2.78	3.63	39.94	0.34
400.00	0.50	27.90	399.97	3.51	2.98	3.51	4.60	40.40	0.29
500.00	0.34	7.01	499.97	4.18	3.22	4.18	5.28	37.62	0.22
600.00	0.49	59.16	599.97	4.69	3.62	4.69	5.93	37.68	0.39
700.00	0.28	68.74	699.96	5.00	4.21	5.00	6.53	40.14	0.22
800.00	0.22	113.95	799.96	5.01	4.61	5.01	6.81	42.66	0.20
900.00	0.33	123.80	899.96	4.77	5.03	4.77	6.93	46.53	0.12
1000.00	0.19	141.32	999.96	4.48	5.37	4.48	6.99	50.17	0.17
1100.00	0.23	156.26	1099.96	4.17	5.55	4.17	6.94	53.08	0.07
1200.00	0.43	137.08	1199.96	3.72	5.88	3.72	6.96	57.72	0.22
1300.00	0.48	214.76	1299.96	3.10	5.90	3.10	6.67	62.26	0.57
1400.00	0.31	226.38	1399.95	2.57	5.47	2.57	6.04	64.79	0.18
1500.00	0.49	208.01	1499.95	2.01	5.07	2.01	5.46	68.35	0.21
1600.00	0.11	229.77	1599.95	1.58	4.80	1.58	5.05	71.81	0.39
1700.00	0.25	310.25	1699.95	1.65	4.56	1.65	4.85	70.05	0.25
1800.00	0.28	177.59	1799.95	1.55	4.41	1.55	4.67	70.61	0.48

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	0.73	79.54	1899.95	1.42	5.04	1.42	5.24	74.26	0.82
2000.00	0.79	40.13	1999.94	2.06	6.11	2.06	6.45	71.34	0.51
2100.00	0.77	8.84	2099.93	3.25	6.65	3.25	7.41	63.95	0.42
2200.00	0.83	305.25	2199.92	4.33	6.17	4.33	7.54	54.91	0.84
2300.00	0.51	284.70	2299.91	4.86	5.15	4.86	7.08	46.65	0.40
2400.00	0.21	192.98	2399.91	4.79	4.68	4.79	6.70	44.33	0.56
2500.00	0.21	40.38	2499.91	4.75	4.76	4.75	6.72	45.05	0.41
2600.00	0.19	337.03	2599.91	5.05	4.81	5.05	6.97	43.65	0.21
2700.00	0.24	27.54	2699.91	5.38	4.84	5.38	7.24	41.99	0.19
2800.00	0.33	27.01	2799.91	5.82	5.07	5.82	7.72	41.05	0.10
2900.00	0.23	1.97	2899.91	6.28	5.21	6.28	8.16	39.66	0.16
3000.00	0.43	334.57	2999.91	6.83	5.05	6.83	8.49	36.51	0.25
3100.00	0.34	318.79	3099.90	7.39	4.70	7.39	8.76	32.44	0.14
3200.00	0.57	35.32	3199.90	8.02	4.79	8.02	9.34	30.86	0.59
3300.00	0.86	325.86	3299.90	9.05	4.66	9.05	10.18	27.23	0.85
3400.00	0.51	262.29	3399.89	9.61	3.79	9.61	10.33	21.54	0.78
3500.00	0.74	197.30	3499.88	8.94	3.16	8.94	9.48	19.48	0.70
3600.00	0.42	117.53	3599.88	8.16	3.29	8.16	8.80	21.98	0.78
3700.00	0.41	347.60	3699.88	8.34	3.54	8.34	9.06	22.98	0.75
3800.00	0.54	312.43	3799.88	9.01	3.11	9.01	9.54	19.05	0.31
3900.00	0.49	174.63	3899.87	8.91	2.80	8.91	9.34	17.47	0.96
4000.00	0.53	89.80	3999.87	8.49	3.31	8.49	9.11	21.28	0.69
4100.00	0.63	355.14	4099.87	9.04	3.72	9.04	9.78	22.36	0.86
4200.00	0.50	247.39	4199.87	9.43	3.27	9.43	9.98	19.15	0.92
4300.00	0.44	78.42	4299.86	9.34	3.25	9.34	9.89	19.20	0.94
4400.00	0.24	60.96	4399.86	9.52	3.81	9.52	10.25	21.84	0.23
4500.00	0.41	1.80	4499.86	9.98	4.00	9.98	10.75	21.87	0.36
4600.00	0.46	311.62	4599.86	10.60	3.72	10.60	11.24	19.31	0.37
4700.00	0.61	188.50	4699.86	10.35	3.34	10.35	10.87	17.88	0.94
4800.00	0.11	145.73	4799.85	9.74	3.32	9.74	10.29	18.79	0.53
4900.00	0.45	57.74	4899.85	9.87	3.71	9.87	10.55	20.58	0.46
5000.00	0.51	352.98	4999.85	10.53	3.99	10.53	11.26	20.75	0.52
5100.00	0.29	239.80	5099.85	10.84	3.72	10.84	11.46	18.93	0.68
5200.00	0.36	231.34	5199.85	10.52	3.26	10.52	11.02	17.21	0.08
5300.00	0.29	299.71	5299.85	10.45	2.80	10.45	10.82	15.00	0.37
5400.00	1.17	276.78	5399.84	10.70	1.57	10.70	10.81	8.33	0.92
5500.00	1.19	271.32	5499.82	10.84	-0.49	10.84	10.85	357.42	0.11
5600.00	1.12	283.35	5599.80	11.09	-2.48	11.09	11.36	347.41	0.25
5700.00	0.80	257.04	5699.78	11.16	-4.11	11.16	11.89	339.79	0.54

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	0.48	294.96	5799.78	11.18	-5.17	11.18	12.31	335.19	0.52
5900.00	0.78	300.21	5899.77	11.69	-6.13	11.69	13.20	332.34	0.31
6000.00	0.61	273.27	5999.76	12.07	-7.25	12.07	14.08	328.99	0.36
6100.00	0.69	322.66	6099.76	12.58	-8.15	12.58	14.99	327.05	0.55
6200.00	0.37	348.15	6199.75	13.37	-8.58	13.37	15.89	327.31	0.39
6300.00	0.49	284.78	6299.75	13.80	-9.06	13.80	16.51	326.70	0.47
6400.00	0.47	341.18	6399.75	14.29	-9.61	14.29	17.22	326.08	0.46
6500.00	0.66	334.55	6499.74	15.20	-9.99	15.20	18.19	326.68	0.20
6600.00	0.25	271.08	6599.74	15.72	-10.45	15.72	18.88	326.38	0.59
6700.00	0.59	348.67	6699.74	16.23	-10.77	16.23	19.48	326.42	0.59
6800.00	0.32	317.90	6799.73	16.94	-11.06	16.94	20.23	326.86	0.35
6900.00	0.47	295.26	6899.73	17.32	-11.62	17.32	20.85	326.15	0.21
7000.00	0.60	242.22	6999.73	17.25	-12.45	17.25	21.27	324.19	0.49
7100.00	1.13	238.19	7099.72	16.49	-13.75	16.49	21.47	320.19	0.54
7200.00	1.42	232.56	7199.69	15.22	-15.56	15.22	21.77	314.36	0.31
7300.00	1.73	227.19	7299.65	13.44	-17.65	13.44	22.19	307.29	0.35
7400.00	1.84	226.76	7399.61	11.31	-19.93	11.31	22.92	299.58	0.11
7500.00	1.77	221.44	7499.56	9.05	-22.13	9.05	23.91	292.25	0.18
7600.00	1.69	226.95	7599.51	6.89	-24.23	6.89	25.19	285.86	0.18
7700.00	1.75	220.41	7699.47	4.71	-26.30	4.71	26.72	280.16	0.21
7800.00	1.23	228.20	7799.43	2.83	-28.10	2.83	28.24	275.75	0.56
7900.00	1.33	214.42	7899.41	1.15	-29.56	1.15	29.58	272.24	0.32
8000.00	1.48	210.82	7999.38	-0.91	-30.87	-0.91	30.89	268.31	0.17
8100.00	1.66	204.56	8099.34	-3.34	-32.14	-3.34	32.31	264.07	0.25
8200.00	1.50	208.37	8199.30	-5.81	-33.36	-5.81	33.86	260.12	0.19
8300.00	1.45	212.45	8299.27	-8.03	-34.67	-8.03	35.59	256.95	0.12
8400.00	1.59	222.08	8399.23	-10.13	-36.27	-10.13	37.66	254.39	0.29
8500.00	1.37	219.85	8499.20	-12.08	-37.97	-12.08	39.84	252.35	0.22
8600.00	1.14	234.54	8599.17	-13.57	-39.54	-13.57	41.81	251.06	0.40
8700.00	1.05	242.58	8699.16	-14.57	-41.16	-14.57	43.67	250.51	0.17
8800.00	1.10	249.21	8799.14	-15.33	-42.88	-15.33	45.54	250.32	0.13
8900.00	1.52	250.26	8899.11	-16.12	-45.02	-16.12	47.82	250.30	0.42
9000.00	1.80	272.32	8999.07	-16.51	-47.84	-16.51	50.61	250.96	0.69
9100.00	2.37	264.54	9099.01	-16.64	-51.47	-16.64	54.09	252.08	0.64
9200.00	2.72	257.56	9198.91	-17.35	-55.85	-17.35	58.48	252.74	0.47
9300.00	3.33	258.99	9298.77	-18.41	-61.02	-18.41	63.73	253.21	0.61
9400.00	3.90	264.60	9398.57	-19.29	-67.25	-19.29	69.96	254.00	0.67
9438.00	3.88	265.65	9436.48	-19.51	-69.82	-19.51	72.49	254.39	0.19



VES Survey International
Midland, TX
(432)-563-5444
Surveyor: Tim Dillon
Boone 16 State Com No. 001 / API 30-025-41200





COG Operating LLC

Lea County, NM

Boone 16 State

#1H

OH

Survey: MWD #1

Survey Report - Geographic

05 November, 2014



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM	TVD Reference:	WELL @ 3773.2usft (Original Well Elev)
Site:	Boone 16 State	MD Reference:	WELL @ 3773.2usft (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	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	Boone 16 State				
Site Position:		Northing:	536,271.00 usft	Latitude:	32° 28' 19.213 N
From:	Map	Easting:	735,545.60 usft	Longitude:	103° 34' 10.441 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.41 °

Well	#1H					
Well Position	+N/-S	0.0 usft	Northing:	536,271.00 usft	Latitude:	32° 28' 19.213 N
	+E/-W	0.0 usft	Easting:	735,545.60 usft	Longitude:	103° 34' 10.441 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,756.2 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/3/2014	7.20	60.33	48,433

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	358.96	

Survey Program	Date	11/5/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	9,438.0	GYRO (OH)	MWD	MWD - Standard
9,554.0	16,201.0	MWD #1 (OH)	MWD	MWD - Standard

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,438.0	3.88	265.65	9,436.5	-19.5	-69.8	536,251.47	735,475.77	32° 28' 19.024 N	103° 34' 11.258 W
9,554.0	3.10	256.90	9,552.3	-20.5	-76.8	536,250.46	735,468.80	32° 28' 19.015 N	103° 34' 11.339 W
9,650.0	2.60	260.90	9,648.1	-21.5	-81.5	536,249.53	735,464.13	32° 28' 19.006 N	103° 34' 11.394 W
9,745.0	1.90	258.70	9,743.1	-22.1	-85.1	536,248.88	735,460.45	32° 28' 19.000 N	103° 34' 11.437 W
9,840.0	3.10	267.40	9,838.0	-22.5	-89.3	536,248.45	735,456.34	32° 28' 18.996 N	103° 34' 11.485 W
9,967.0	2.60	266.00	9,964.8	-22.9	-95.6	536,248.10	735,450.04	32° 28' 18.993 N	103° 34' 11.559 W
10,031.0	1.80	259.50	10,028.8	-23.2	-98.0	536,247.81	735,447.60	32° 28' 18.990 N	103° 34' 11.587 W
10,127.0	1.50	259.20	10,124.7	-23.7	-100.7	536,247.30	735,444.89	32° 28' 18.985 N	103° 34' 11.619 W
10,221.0	1.80	259.40	10,218.7	-24.2	-103.4	536,246.80	735,442.23	32° 28' 18.981 N	103° 34' 11.650 W
10,316.0	1.50	258.70	10,313.7	-24.7	-106.1	536,246.28	735,439.54	32° 28' 18.976 N	103° 34' 11.681 W
10,412.0	0.50	251.40	10,409.6	-25.1	-107.7	536,245.90	735,437.91	32° 28' 18.972 N	103° 34' 11.700 W



Wellplanning
Survey Report - Geographic

Company: COG Operating LLC
Project: Lea County, NM
Site: Boone 16 State
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3773.2usft (Original Well Elev)
MD Reference: WELL @ 3773.2usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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
10,508.0	0.60	149.10	10,505.6	-25.7	-107.8	536,245.34	735,437.77	32° 28' 18.966 N	103° 34' 11.702 W
10,603.0	0.70	157.90	10,600.6	-26.6	-107.3	536,244.37	735,438.25	32° 28' 18.957 N	103° 34' 11.697 W
10,696.0	0.70	157.90	10,693.6	-27.7	-106.9	536,243.32	735,438.67	32° 28' 18.946 N	103° 34' 11.692 W
10,888.0	1.10	154.60	10,885.6	-30.4	-105.7	536,240.57	735,439.91	32° 28' 18.919 N	103° 34' 11.678 W
10,984.0	1.10	151.70	10,981.6	-32.1	-104.9	536,238.92	735,440.74	32° 28' 18.903 N	103° 34' 11.668 W
11,045.0	1.20	143.30	11,042.6	-33.1	-104.2	536,237.90	735,441.40	32° 28' 18.893 N	103° 34' 11.660 W
11,079.0	1.10	123.10	11,076.6	-33.6	-103.7	536,237.43	735,441.88	32° 28' 18.888 N	103° 34' 11.655 W
11,109.0	0.90	120.80	11,106.6	-33.8	-103.3	536,237.15	735,442.33	32° 28' 18.885 N	103° 34' 11.650 W
11,141.0	2.00	41.20	11,138.6	-33.6	-102.7	536,237.45	735,442.91	32° 28' 18.888 N	103° 34' 11.643 W
11,173.0	6.50	21.80	11,170.5	-31.5	-101.6	536,239.55	735,443.95	32° 28' 18.909 N	103° 34' 11.630 W
11,204.0	11.50	13.50	11,201.1	-26.8	-100.3	536,244.19	735,445.33	32° 28' 18.955 N	103° 34' 11.614 W
11,234.0	16.30	5.60	11,230.2	-19.7	-99.2	536,251.29	735,446.44	32° 28' 19.025 N	103° 34' 11.600 W
11,265.0	21.20	2.20	11,259.5	-9.8	-98.5	536,261.23	735,447.08	32° 28' 19.123 N	103° 34' 11.592 W
11,297.0	24.70	2.50	11,289.0	2.7	-98.0	536,273.69	735,447.59	32° 28' 19.246 N	103° 34' 11.585 W
11,329.0	27.30	1.30	11,317.8	16.7	-97.5	536,287.71	735,448.05	32° 28' 19.385 N	103° 34' 11.579 W
11,360.0	30.30	0.30	11,344.9	31.6	-97.3	536,302.64	735,448.25	32° 28' 19.533 N	103° 34' 11.575 W
11,392.0	34.30	0.10	11,372.0	48.7	-97.3	536,319.74	735,448.31	32° 28' 19.702 N	103° 34' 11.573 W
11,424.0	36.00	1.30	11,398.1	67.2	-97.1	536,338.16	735,448.54	32° 28' 19.884 N	103° 34' 11.569 W
11,455.0	37.20	3.50	11,423.0	85.6	-96.3	536,356.62	735,449.32	32° 28' 20.067 N	103° 34' 11.558 W
11,487.0	41.30	6.60	11,447.8	105.8	-94.5	536,376.78	735,451.12	32° 28' 20.266 N	103° 34' 11.535 W
11,518.0	45.70	8.30	11,470.3	126.9	-91.7	536,397.93	735,453.90	32° 28' 20.475 N	103° 34' 11.501 W
11,550.0	48.50	7.00	11,492.0	150.2	-88.6	536,421.16	735,457.01	32° 28' 20.705 N	103° 34' 11.463 W
11,582.0	49.90	4.90	11,513.0	174.2	-86.1	536,445.25	735,459.52	32° 28' 20.943 N	103° 34' 11.431 W
11,612.0	52.00	3.20	11,531.9	197.5	-84.4	536,468.48	735,461.16	32° 28' 21.173 N	103° 34' 11.410 W
11,644.0	55.30	2.90	11,550.8	223.2	-83.1	536,494.22	735,462.53	32° 28' 21.427 N	103° 34' 11.392 W
11,675.0	57.60	2.80	11,568.0	249.0	-81.8	536,520.02	735,463.81	32° 28' 21.683 N	103° 34' 11.375 W
11,707.0	59.10	2.30	11,584.7	276.2	-80.6	536,547.23	735,465.03	32° 28' 21.952 N	103° 34' 11.359 W
11,738.0	60.70	0.40	11,600.3	303.0	-79.9	536,574.04	735,465.65	32° 28' 22.217 N	103° 34' 11.349 W
11,770.0	62.50	358.90	11,615.5	331.2	-80.1	536,602.19	735,465.48	32° 28' 22.496 N	103° 34' 11.349 W
11,803.0	64.50	358.80	11,630.2	360.7	-80.7	536,631.71	735,464.89	32° 28' 22.788 N	103° 34' 11.353 W
11,834.0	66.40	359.60	11,643.1	388.9	-81.1	536,659.91	735,464.49	32° 28' 23.067 N	103° 34' 11.355 W
11,866.0	68.00	0.80	11,655.5	418.4	-81.0	536,689.40	735,464.60	32° 28' 23.359 N	103° 34' 11.352 W
11,898.0	70.50	0.80	11,666.9	448.3	-80.6	536,719.32	735,465.02	32° 28' 23.655 N	103° 34' 11.344 W
11,929.0	72.50	1.80	11,676.7	477.7	-79.9	536,748.71	735,465.68	32° 28' 23.945 N	103° 34' 11.334 W
11,960.0	74.90	2.30	11,685.4	507.4	-78.8	536,778.44	735,466.75	32° 28' 24.240 N	103° 34' 11.319 W
11,991.0	77.70	1.50	11,692.7	537.5	-77.8	536,808.54	735,467.75	32° 28' 24.537 N	103° 34' 11.305 W
12,023.0	80.60	1.00	11,698.8	569.0	-77.2	536,839.96	735,468.43	32° 28' 24.848 N	103° 34' 11.294 W
12,055.0	83.10	0.50	11,703.3	600.6	-76.8	536,871.63	735,468.85	32° 28' 25.162 N	103° 34' 11.287 W
12,087.0	86.40	359.70	11,706.2	632.5	-76.7	536,903.49	735,468.90	32° 28' 25.477 N	103° 34' 11.284 W
12,118.0	90.50	359.20	11,707.1	663.5	-77.0	536,934.47	735,468.60	32° 28' 25.783 N	103° 34' 11.285 W
12,213.0	93.70	358.80	11,703.6	758.4	-78.6	537,029.38	735,466.95	32° 28' 26.723 N	103° 34' 11.296 W
12,307.0	92.40	358.80	11,698.6	852.2	-80.6	537,123.23	735,464.98	32° 28' 27.651 N	103° 34' 11.311 W
12,402.0	90.30	357.00	11,696.3	947.1	-84.1	537,218.13	735,461.50	32° 28' 28.591 N	103° 34' 11.344 W
12,497.0	91.90	356.60	11,694.5	1,042.0	-89.4	537,312.96	735,456.20	32° 28' 29.529 N	103° 34' 11.398 W
12,592.0	91.80	354.70	11,691.4	1,136.6	-96.6	537,407.63	735,449.00	32° 28' 30.467 N	103° 34' 11.474 W
12,687.0	91.90	354.50	11,688.4	1,231.2	-105.5	537,502.16	735,440.06	32° 28' 31.403 N	103° 34' 11.570 W
12,782.0	89.60	355.00	11,687.1	1,325.7	-114.2	537,596.75	735,431.37	32° 28' 32.339 N	103° 34' 11.664 W
12,877.0	90.10	357.70	11,687.4	1,420.5	-120.3	537,691.54	735,425.32	32° 28' 33.278 N	103° 34' 11.727 W
12,972.0	90.10	358.70	11,687.2	1,515.5	-123.3	537,786.50	735,422.34	32° 28' 34.217 N	103° 34' 11.753 W
13,067.0	91.30	358.40	11,686.1	1,610.5	-125.7	537,881.46	735,419.94	32° 28' 35.157 N	103° 34' 11.774 W
13,162.0	90.70	359.60	11,684.4	1,705.4	-127.3	537,976.43	735,418.28	32° 28' 36.097 N	103° 34' 11.785 W
13,289.0	90.10	1.30	11,683.5	1,832.4	-126.3	538,103.41	735,419.28	32° 28' 37.354 N	103° 34' 11.763 W
13,383.0	92.40	1.10	11,681.5	1,926.4	-124.4	538,197.36	735,421.24	32° 28' 38.283 N	103° 34' 11.732 W
13,478.0	93.90	0.30	11,676.2	2,021.2	-123.2	538,292.21	735,422.40	32° 28' 39.222 N	103° 34' 11.710 W
13,573.0	92.80	0.40	11,670.7	2,116.0	-122.6	538,387.04	735,422.98	32° 28' 40.160 N	103° 34' 11.696 W



Wellplanning
Survey Report - Geographic

Company: COG Operating LLC
Project: Lea County, NM
Site: Boone 16 State
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3773.2usft (Original Well Elev)
MD Reference: WELL @ 3773.2usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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
13,668.0	91.10	1.50	11,667.5	2,211.0	-121.0	538,481.97	735,424.56	32° 28' 41.099 N	103° 34' 11.669 W
13,762.0	92.40	0.50	11,664.6	2,304.9	-119.4	538,575.91	735,426.20	32° 28' 42.029 N	103° 34' 11.642 W
13,856.0	91.30	0.50	11,661.6	2,398.9	-118.6	538,669.86	735,427.02	32° 28' 42.958 N	103° 34' 11.625 W
13,951.0	92.90	0.30	11,658.1	2,493.8	-117.9	538,764.79	735,427.68	32° 28' 43.897 N	103° 34' 11.609 W
14,046.0	91.90	359.90	11,654.1	2,588.7	-117.8	538,859.70	735,427.84	32° 28' 44.837 N	103° 34' 11.600 W
14,141.0	91.60	1.80	11,651.2	2,683.6	-116.3	538,954.64	735,429.25	32° 28' 45.776 N	103° 34' 11.575 W
14,235.0	90.50	1.80	11,649.5	2,777.6	-113.4	539,048.58	735,432.21	32° 28' 46.705 N	103° 34' 11.533 W
14,328.0	91.90	1.30	11,647.5	2,870.5	-110.9	539,141.52	735,434.72	32° 28' 47.625 N	103° 34' 11.496 W
14,423.0	89.50	1.30	11,646.4	2,965.5	-108.7	539,236.48	735,436.88	32° 28' 48.564 N	103° 34' 11.463 W
14,518.0	91.10	1.40	11,645.9	3,060.5	-106.5	539,331.45	735,439.11	32° 28' 49.504 N	103° 34' 11.429 W
14,612.0	92.60	1.20	11,642.8	3,154.4	-104.4	539,425.38	735,441.25	32° 28' 50.433 N	103° 34' 11.396 W
14,707.0	90.20	1.30	11,640.5	3,249.3	-102.3	539,520.32	735,443.32	32° 28' 51.372 N	103° 34' 11.364 W
14,802.0	90.90	0.50	11,639.6	3,344.3	-100.8	539,615.30	735,444.81	32° 28' 52.312 N	103° 34' 11.338 W
14,896.0	92.40	359.80	11,636.9	3,438.3	-100.5	539,709.26	735,445.06	32° 28' 53.242 N	103° 34' 11.328 W
14,991.0	90.20	1.30	11,634.7	3,533.2	-99.6	539,804.22	735,445.97	32° 28' 54.181 N	103° 34' 11.309 W
15,086.0	92.30	1.50	11,632.7	3,628.2	-97.3	539,899.16	735,448.29	32° 28' 55.121 N	103° 34' 11.274 W
15,181.0	90.40	1.60	11,630.4	3,723.1	-94.7	539,994.10	735,450.86	32° 28' 56.060 N	103° 34' 11.236 W
15,276.0	92.60	1.50	11,627.9	3,818.0	-92.2	540,089.03	735,453.43	32° 28' 56.999 N	103° 34' 11.198 W
15,371.0	92.00	0.40	11,624.1	3,912.9	-90.6	540,183.93	735,455.00	32° 28' 57.938 N	103° 34' 11.172 W
15,466.0	89.50	0.80	11,622.9	4,007.9	-89.6	540,278.91	735,455.99	32° 28' 58.878 N	103° 34' 11.152 W
15,561.0	90.50	1.00	11,622.9	4,102.9	-88.1	540,373.90	735,457.49	32° 28' 59.818 N	103° 34' 11.127 W
15,656.0	92.10	0.80	11,620.7	4,197.9	-86.6	540,468.86	735,458.98	32° 29' 0.757 N	103° 34' 11.102 W
15,752.0	93.80	0.50	11,615.8	4,293.7	-85.5	540,564.72	735,460.07	32° 29' 1.706 N	103° 34' 11.081 W
15,847.0	91.90	359.30	11,611.1	4,388.6	-85.7	540,659.60	735,459.90	32° 29' 2.644 N	103° 34' 11.075 W
15,939.0	92.90	358.20	11,607.2	4,480.5	-87.7	540,751.50	735,457.89	32° 29' 3.554 N	103° 34' 11.091 W
16,034.0	91.00	358.00	11,604.0	4,575.4	-90.9	540,846.38	735,454.75	32° 29' 4.493 N	103° 34' 11.120 W
16,156.0	91.80	356.61	11,601.0	4,697.2	-96.6	540,968.21	735,449.01	32° 29' 5.699 N	103° 34' 11.176 W
16,201.0	91.80	356.61	11,599.6	4,742.1	-99.2	541,013.11	735,446.35	32° 29' 6.143 N	103° 34' 11.204 W

PBHL(B16S#1H)

Checked By: _____ Approved By: _____ Date: _____