

**McVAY DRILLING COMPANY**

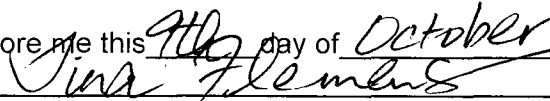
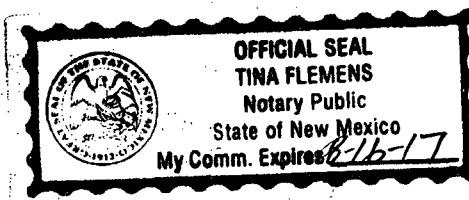
P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

HOBBSOCD**JAN 20 2015****RECEIVED**

Well Name and Num: Tusk Federal #5H
Location: Sec 25, T19S, 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:

<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
0.40	323	0.10	7718	90.50	14429
0.60	715	0.40	8114	89.80	14980
0.30	1166	0.40	8497	92.70	15307
0.10	1567	0.30	8880		
0.50	1820	0.80	9288		
0.70	2151	0.70	9677		
1.90	2875	1.60	10089		
1.10	3253	3.60	10412		
1.30	3726	33.50	10697		
2.50	4035	46.30	10824		
2.20	4444	71.10	11143		
0.90	5013	91.70	11648		
0.90	5706	90.90	12071		
0.60	6166	91.00	12407		
0.40	6574	91.20	12911		
0.60	6909	89.50	13479		
0.10	7320	93.10	13953		

By: Subscribed and sworn to before me this 9th day of October, 2014
Notary Public, Lea County, New Mexico**JAN 29 2015** 



HOBBSD

JAN 20 2015

RECEIVED

October 2, 2014

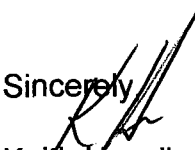
Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

Attn: Kanicia Castillo

RE: Tusk Federal No. 005H

Please find enclosed a copy of the survey from 0.00' to 10,250.00' ran on the above referenced well.

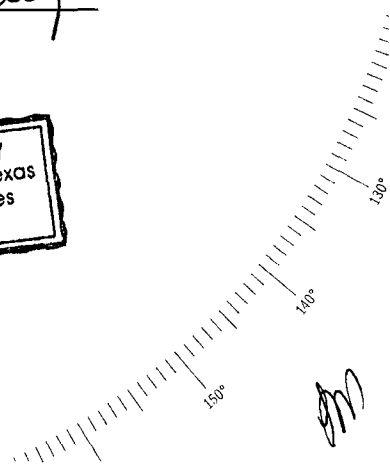
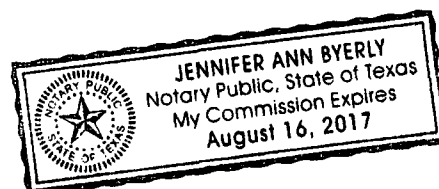
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 2 day of October, A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: COG Operating, LLC (Concho)
Lease/Well: Tusk Federal /No. 005H
Location: Sec 25 T19S R34E
Rig Name: McVay 7
State/County: New Mexico/Lea
Latitude: 32.62, Longitude: -103.51
GRID North is 0.45 Degrees East of True North
VS-Azi: 358.90 Degrees



Depth Reference : RKB = 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ...eral #5h gyro survey-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/2/2014 / 11:33

VES Surey International

West Texas

(432) 563-5444

Surveyor: Chris Bankson

Tusk Federal No. 005H / API 30-025-41574

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JAN 20 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	0.20	211.64	100.00	-0.15	-0.09	-0.15	0.18	211.64	0.20
200.00	0.16	280.54	200.00	-0.27	-0.32	-0.27	0.42	229.44	0.21
300.00	0.15	308.98	300.00	-0.16	-0.56	-0.15	0.58	253.67	0.08
400.00	0.51	340.83	400.00	0.34	-0.81	0.36	0.88	292.93	0.39
500.00	0.58	350.51	499.99	1.26	-1.04	1.28	1.63	320.55	0.11
600.00	0.70	351.12	599.99	2.37	-1.22	2.39	2.66	332.79	0.12
700.00	0.80	353.04	699.98	3.66	-1.40	3.69	3.92	339.14	0.10
800.00	0.52	350.76	799.97	4.80	-1.55	4.83	5.05	342.08	0.28
900.00	0.18	349.46	899.97	5.41	-1.65	5.44	5.65	342.98	0.33
1000.00	0.25	350.40	999.97	5.78	-1.72	5.81	6.03	343.42	0.06
1100.00	0.06	342.20	1099.97	6.05	-1.77	6.08	6.30	343.65	0.19
1200.00	0.18	333.19	1199.97	6.24	-1.86	6.27	6.51	343.38	0.12
1300.00	0.16	334.47	1299.97	6.50	-1.99	6.54	6.80	342.97	0.02
1400.00	0.19	332.63	1399.97	6.78	-2.13	6.82	7.10	342.57	0.03
1500.00	0.18	334.53	1499.97	7.06	-2.27	7.10	7.42	342.18	0.01
1600.00	0.09	342.73	1599.97	7.28	-2.36	7.32	7.65	342.03	0.09
1700.00	0.24	344.29	1699.97	7.56	-2.44	7.60	7.94	342.10	0.15
1800.00	0.30	350.42	1799.96	8.02	-2.54	8.06	8.41	342.41	0.07

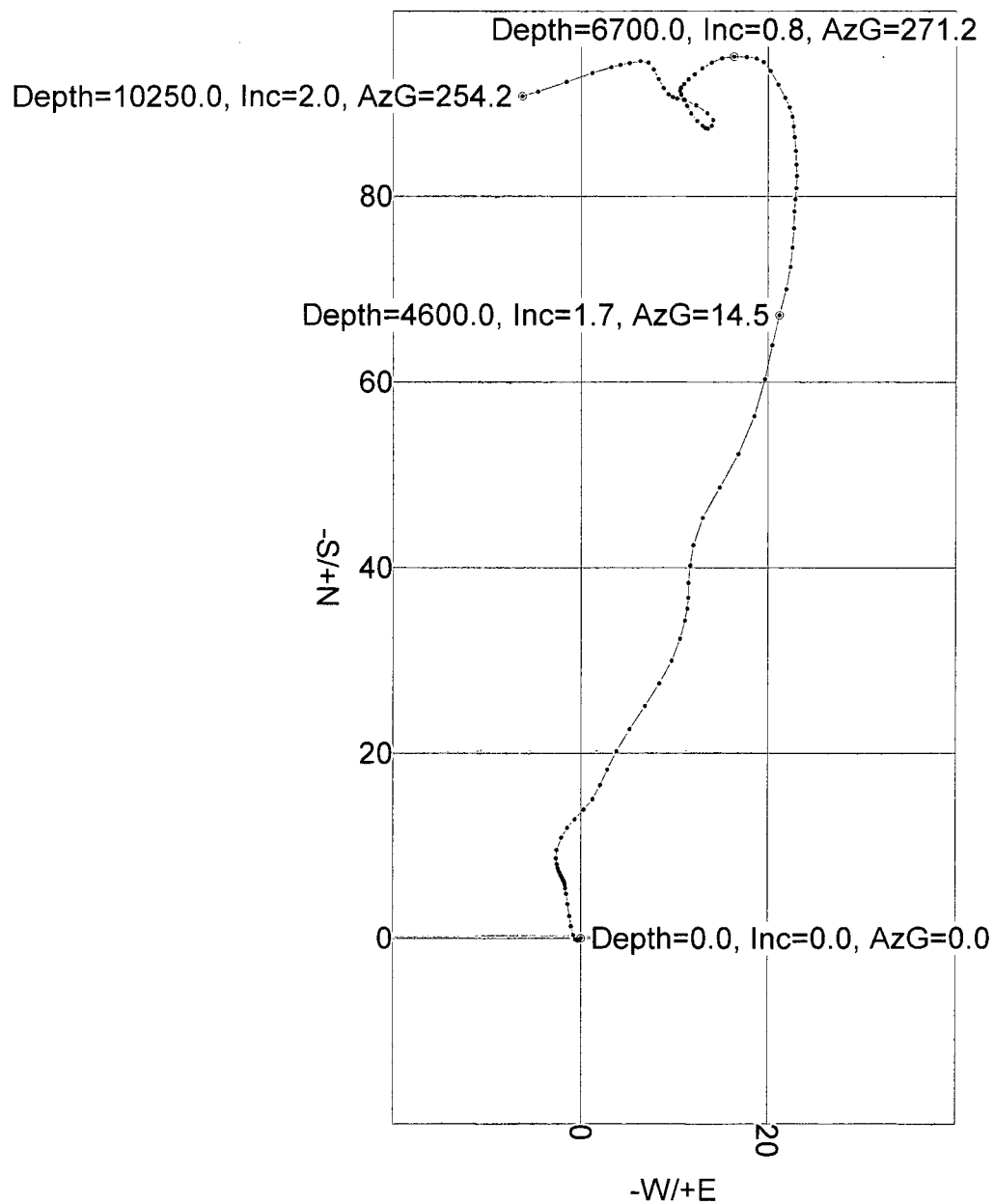
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.58	358.64	5798.86	87.57	22.72	87.11	90.47	14.55	0.19
5900.00	0.62	346.89	5898.85	88.60	22.59	88.15	91.44	14.30	0.13
6000.00	0.61	339.74	5998.85	89.63	22.28	89.19	92.36	13.96	0.08
6100.00	0.71	331.54	6098.84	90.68	21.80	90.24	93.26	13.52	0.13
6200.00	1.11	333.51	6198.83	92.09	21.07	91.67	94.47	12.89	0.41
6300.00	0.85	326.47	6298.81	93.58	20.23	93.17	95.74	12.20	0.29
6400.00	0.51	312.84	6398.81	94.50	19.49	94.11	96.49	11.66	0.37
6500.00	0.50	286.21	6498.80	94.92	18.75	94.55	96.76	11.17	0.23
6600.00	0.72	271.63	6598.80	95.06	17.69	94.71	96.70	10.54	0.27
6700.00	0.83	271.25	6698.79	95.10	16.34	94.77	96.49	9.75	0.10
6800.00	0.66	251.78	6798.78	94.93	15.08	94.63	96.12	9.02	0.30
6900.00	0.74	241.66	6898.77	94.45	13.96	94.16	95.47	8.41	0.15
7000.00	0.65	235.76	6998.77	93.82	12.92	93.56	94.71	7.84	0.11
7100.00	0.52	229.57	7098.76	93.21	12.11	92.96	93.99	7.40	0.15
7200.00	0.43	225.92	7198.76	92.65	11.50	92.42	93.36	7.07	0.09
7300.00	0.40	223.94	7298.75	92.14	10.98	91.91	92.79	6.80	0.03
7400.00	0.21	208.32	7398.75	91.73	10.66	91.51	92.35	6.63	0.21
7500.00	0.18	184.88	7498.75	91.41	10.55	91.19	92.02	6.59	0.08
7600.00	0.36	153.98	7598.75	90.97	10.68	90.75	91.60	6.69	0.22
7700.00	0.36	150.95	7698.75	90.42	10.97	90.19	91.08	6.92	0.02
7800.00	0.46	152.71	7798.75	89.79	11.30	89.55	90.50	7.18	0.11
7900.00	0.58	148.24	7898.74	89.00	11.75	88.76	89.77	7.52	0.12
8000.00	0.64	135.37	7998.74	88.18	12.41	87.92	89.05	8.01	0.15
8100.00	0.24	130.14	8098.73	87.64	12.97	87.38	88.60	8.41	0.40
8200.00	0.19	125.97	8198.73	87.41	13.26	87.14	88.41	8.63	0.05
8300.00	0.16	85.67	8298.73	87.32	13.54	87.04	88.36	8.82	0.13
8400.00	0.48	42.34	8398.73	87.64	13.97	87.35	88.75	9.05	0.38
8500.00	0.39	341.20	8498.73	88.27	14.14	87.98	89.40	9.10	0.45
8600.00	0.77	307.56	8598.72	89.00	13.50	88.73	90.02	8.62	0.49
8700.00	0.93	303.43	8698.71	89.86	12.29	89.61	90.70	7.79	0.17
8800.00	0.63	281.43	8798.70	90.42	11.07	90.19	91.09	6.98	0.42
8900.00	0.32	279.69	8898.70	90.58	10.24	90.36	91.15	6.45	0.31
9000.00	0.26	296.38	8998.70	90.72	9.76	90.52	91.25	6.14	0.10
9100.00	0.34	309.50	9098.70	91.02	9.32	90.82	91.49	5.85	0.11
9200.00	0.65	328.64	9198.69	91.69	8.80	91.50	92.11	5.48	0.34
9300.00	0.65	333.86	9298.69	92.68	8.26	92.51	93.05	5.09	0.06
9400.00	0.68	331.51	9398.68	93.71	7.72	93.54	94.03	4.71	0.04
9500.00	0.45	307.59	9498.68	94.47	7.13	94.31	94.74	4.32	0.32
9600.00	0.63	259.64	9598.67	94.61	6.28	94.47	94.82	3.80	0.47

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	0.41	350.36	1899.96	8.63	-2.65	8.68	9.03	342.96	0.11
2000.00	0.67	12.87	1999.96	9.56	-2.58	9.61	9.90	344.92	0.33
2100.00	0.95	26.18	2099.95	10.87	-2.08	10.91	11.07	349.16	0.33
2200.00	0.49	37.91	2199.94	11.95	-1.45	11.97	12.04	353.06	0.48
2300.00	0.88	42.11	2299.93	12.85	-0.68	12.87	12.87	356.99	0.40
2400.00	0.77	43.65	2399.92	13.91	0.30	13.90	13.91	1.25	0.12
2500.00	0.93	36.08	2499.91	15.05	1.24	15.02	15.10	4.72	0.20
2600.00	1.05	20.95	2599.90	16.56	2.05	16.52	16.69	7.05	0.29
2700.00	1.09	26.82	2699.88	18.27	2.81	18.21	18.49	8.73	0.12
2800.00	1.41	25.34	2799.86	20.24	3.76	20.16	20.58	10.54	0.32
2900.00	1.78	34.99	2899.82	22.62	5.18	22.51	23.20	12.90	0.45
3000.00	1.66	31.45	2999.77	25.12	6.82	24.99	26.03	15.19	0.16
3100.00	1.64	33.02	3099.73	27.55	8.36	27.39	28.79	16.87	0.05
3200.00	1.53	24.90	3199.69	29.96	9.70	29.77	31.49	17.93	0.25
3300.00	1.40	14.49	3299.66	32.36	10.57	32.15	34.04	18.08	0.30
3400.00	0.91	16.75	3399.64	34.30	11.10	34.08	36.05	17.93	0.49
3500.00	0.63	7.07	3499.63	35.61	11.40	35.38	37.39	17.75	0.31
3600.00	0.73	1.29	3599.62	36.80	11.48	36.57	38.55	17.33	0.12
3700.00	1.07	1.26	3699.61	38.37	11.51	38.14	40.06	16.70	0.34
3800.00	1.10	9.35	3799.59	40.25	11.69	40.02	41.91	16.20	0.15
3900.00	1.46	9.20	3899.57	42.45	12.05	42.21	44.13	15.85	0.37
4000.00	2.09	25.48	3999.52	45.36	13.04	45.10	47.20	16.04	0.80
4100.00	2.23	32.35	4099.45	48.65	14.86	48.35	50.87	16.99	0.29
4200.00	2.50	25.54	4199.36	52.25	16.84	51.92	54.90	17.86	0.39
4300.00	2.59	19.42	4299.27	56.35	18.53	55.98	59.32	18.20	0.29
4400.00	2.20	11.59	4399.18	60.36	19.67	59.97	63.48	18.05	0.51
4500.00	2.08	12.16	4499.11	64.01	20.44	63.61	67.20	17.70	0.12
4600.00	1.71	14.51	4599.05	67.23	21.19	66.81	70.49	17.49	0.38
4700.00	1.61	14.78	4699.01	70.04	21.92	69.60	73.39	17.38	0.10
4800.00	1.18	5.30	4798.98	72.42	22.38	71.98	75.80	17.17	0.49
4900.00	1.22	6.07	4898.96	74.50	22.59	74.06	77.85	16.86	0.04
5000.00	1.18	1.96	4998.94	76.59	22.73	76.14	79.89	16.53	0.09
5100.00	0.88	1.19	5098.92	78.39	22.78	77.93	81.63	16.21	0.29
5200.00	0.63	8.89	5198.91	79.70	22.88	79.24	82.92	16.02	0.28
5300.00	0.76	3.44	5298.91	80.90	23.01	80.44	84.11	15.88	0.15
5400.00	0.73	359.12	5398.90	82.19	23.04	81.73	85.36	15.66	0.06
5500.00	0.72	357.44	5498.89	83.45	23.00	83.00	86.57	15.41	0.02
5600.00	0.96	357.55	5598.88	84.92	22.94	84.47	87.96	15.11	0.24
5700.00	0.75	352.76	5698.87	86.41	22.82	85.96	89.37	14.79	0.22

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	0.73	259.99	9698.66	94.40	5.12	94.28	94.54	3.11	0.10
9800.00	0.39	259.46	9798.66	94.23	4.17	94.13	94.32	2.53	0.34
9900.00	0.81	253.36	9898.65	93.96	3.16	93.89	94.02	1.93	0.42
10000.00	1.59	252.49	9998.63	93.34	1.16	93.30	93.35	0.71	0.79
10100.00	1.74	248.48	10098.59	92.37	-1.58	92.38	92.38	359.02	0.19
10200.00	1.93	253.08	10198.54	91.32	-4.61	91.39	91.44	357.11	0.24
10250.00	2.01	254.18	10248.51	90.84	-6.26	90.94	91.05	356.06	0.18



VES Surey International
West Texas
(432) 563-5444
Surveyor: Chris Bankson
Tusk Federal No. 005H / API 30-025-41574



VES Survey Date: 09/23/2014



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JAN 20 2015

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COG Operating LLC

Lea County, NM (NAD27 NME)

Tusk Federal

#5H

OH

Survey: MWD #1

Survey Report - Geographic

06 October, 2014

PM



Wellplanning

Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3751.9usft (Original Well Elev)
Site:	Tusk Federal	MD Reference:	WELL @ 3751.9usft (Original Well Elev)
Well:	#5H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Lea 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		Tusk Federal			
Site Position:		Northing:	0.00 usft	Latitude:	30° 59' 24.512 N
From:	Map	Easting:	0.00 usft	Longitude:	105° 55' 44.137 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.82 °

Well	#5H					
Well Position	+N/-S	0.0 usft	Northing:	591,887.60 usft	Latitude:	32° 37' 28.111 N
	+E/-W	0.0 usft	Easting:	754,796.60 usft	Longitude:	103° 30' 20.696 W
Position Uncertainty		3.0 usft	Wellhead Elevation:	usft	Ground Level:	3,734.9 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/23/2014	7.18	60.48	48,534

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	358.88	

Survey Program	Date	10/6/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	10,250.0	GYRO (OH)	MWD	MWD - Standard	
10,340.0	15,356.0	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	
10,250.0	2.01	254.18	10,248.5	90.8	-6.2	591,978.42	754,790.36	32° 37' 29.010 N	103° 30' 20.761 W	
10,340.0	2.00	256.10	10,338.5	90.0	-9.3	591,977.61	754,787.31	32° 37' 29.002 N	103° 30' 20.796 W	
10,380.0	2.00	260.90	10,378.4	89.7	-10.7	591,977.34	754,785.95	32° 37' 28.999 N	103° 30' 20.812 W	
10,412.0	3.60	326.40	10,410.4	90.5	-11.8	591,978.09	754,784.84	32° 37' 29.007 N	103° 30' 20.825 W	
10,441.0	7.10	345.70	10,439.3	93.0	-12.7	591,980.58	754,783.89	32° 37' 29.032 N	103° 30' 20.836 W	
10,473.0	10.30	346.10	10,470.9	97.7	-13.9	591,985.28	754,782.72	32° 37' 29.078 N	103° 30' 20.849 W	
10,505.0	14.10	348.00	10,502.2	104.3	-15.4	591,991.87	754,781.22	32° 37' 29.144 N	103° 30' 20.866 W	
10,537.0	17.80	351.20	10,532.9	112.9	-16.9	592,000.52	754,779.66	32° 37' 29.229 N	103° 30' 20.884 W	
10,569.0	21.20	353.60	10,563.1	123.5	-18.3	592,011.10	754,778.26	32° 37' 29.334 N	103° 30' 20.899 W	
10,601.0	24.60	355.10	10,592.6	135.9	-19.5	592,023.49	754,777.05	32° 37' 29.457 N	103° 30' 20.912 W	
10,633.0	27.80	355.50	10,621.3	150.0	-20.7	592,037.57	754,775.90	32° 37' 29.596 N	103° 30' 20.924 W	



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3751.9usft (Original Well Elev)
Site:	Tusk Federal	MD Reference:	WELL @ 3751.9usft (Original Well Elev)
Well:	#5H	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
10,665.0	31.00	355.30	10,649.1	165.6	-22.0	592,053.23	754,774.63	32° 37' 29.751 N	103° 30' 20.938 W
10,697.0	33.50	355.10	10,676.2	182.6	-23.4	592,070.24	754,773.20	32° 37' 29.920 N	103° 30' 20.953 W
10,729.0	37.00	355.90	10,702.3	201.0	-24.8	592,088.65	754,771.76	32° 37' 30.102 N	103° 30' 20.968 W
10,761.0	40.80	355.40	10,727.2	221.1	-26.4	592,108.69	754,770.23	32° 37' 30.300 N	103° 30' 20.984 W
10,793.0	44.20	356.50	10,750.8	242.6	-27.9	592,130.25	754,768.71	32° 37' 30.514 N	103° 30' 21.000 W
10,824.0	46.30	357.50	10,772.7	264.6	-29.0	592,152.23	754,767.57	32° 37' 30.731 N	103° 30' 21.011 W
10,857.0	48.40	356.80	10,795.0	288.9	-30.2	592,176.47	754,766.36	32° 37' 30.971 N	103° 30' 21.023 W
10,888.0	50.50	357.30	10,815.2	312.4	-31.5	592,199.99	754,765.15	32° 37' 31.204 N	103° 30' 21.035 W
10,920.0	53.20	356.60	10,834.9	337.5	-32.8	592,225.12	754,763.80	32° 37' 31.453 N	103° 30' 21.049 W
10,952.0	56.00	355.80	10,853.5	363.5	-34.5	592,251.14	754,762.07	32° 37' 31.711 N	103° 30' 21.066 W
10,984.0	59.10	355.20	10,870.6	390.5	-36.6	592,278.06	754,759.95	32° 37' 31.977 N	103° 30' 21.089 W
11,016.0	62.30	354.90	10,886.3	418.3	-39.1	592,305.86	754,757.54	32° 37' 32.252 N	103° 30' 21.114 W
11,048.0	65.50	354.50	10,900.4	446.9	-41.7	592,334.47	754,754.89	32° 37' 32.536 N	103° 30' 21.143 W
11,079.0	68.00	355.80	10,912.6	475.2	-44.1	592,362.85	754,752.48	32° 37' 32.817 N	103° 30' 21.168 W
11,111.0	69.30	356.30	10,924.2	505.0	-46.2	592,392.58	754,750.43	32° 37' 33.111 N	103° 30' 21.190 W
11,143.0	71.10	356.20	10,935.1	535.0	-48.1	592,422.62	754,748.46	32° 37' 33.408 N	103° 30' 21.210 W
11,175.0	73.70	356.40	10,944.8	565.5	-50.1	592,453.06	754,746.49	32° 37' 33.710 N	103° 30' 21.230 W
11,207.0	76.50	357.10	10,953.0	596.3	-51.9	592,483.93	754,744.74	32° 37' 34.015 N	103° 30' 21.248 W
11,239.0	79.70	357.50	10,959.6	627.6	-53.3	592,515.20	754,743.27	32° 37' 34.325 N	103° 30' 21.262 W
11,271.0	83.20	358.10	10,964.3	659.2	-54.5	592,546.82	754,742.05	32° 37' 34.638 N	103° 30' 21.274 W
11,302.0	86.60	358.20	10,967.1	690.1	-55.5	592,577.67	754,741.06	32° 37' 34.943 N	103° 30' 21.282 W
11,366.0	90.60	357.50	10,968.7	754.0	-57.9	592,641.60	754,738.66	32° 37' 35.576 N	103° 30' 21.305 W
11,461.0	93.60	359.80	10,965.2	848.9	-60.2	592,736.49	754,736.42	32° 37' 36.515 N	103° 30' 21.322 W
11,554.0	94.40	359.90	10,958.7	941.7	-60.4	592,829.26	754,736.18	32° 37' 37.433 N	103° 30' 21.317 W
11,648.0	91.70	0.60	10,953.7	1,035.5	-60.0	592,923.12	754,736.59	32° 37' 38.361 N	103° 30' 21.303 W
11,742.0	91.60	1.50	10,951.0	1,129.5	-58.3	593,017.06	754,738.31	32° 37' 39.291 N	103° 30' 21.275 W
11,837.0	92.10	2.40	10,947.9	1,224.4	-55.1	593,111.96	754,741.54	32° 37' 40.230 N	103° 30' 21.228 W
11,932.0	92.10	2.00	10,944.4	1,319.2	-51.4	593,206.82	754,745.18	32° 37' 41.168 N	103° 30' 21.177 W
12,027.0	90.90	0.10	10,942.0	1,414.2	-49.7	593,301.77	754,746.92	32° 37' 42.107 N	103° 30' 21.148 W
12,122.0	91.30	0.70	10,940.1	1,509.1	-49.0	593,396.75	754,747.59	32° 37' 43.047 N	103° 30' 21.132 W
12,216.0	90.00	0.40	10,939.1	1,603.1	-48.1	593,490.73	754,748.49	32° 37' 43.977 N	103° 30' 21.112 W
12,312.0	90.60	1.20	10,938.6	1,699.1	-46.8	593,586.72	754,749.83	32° 37' 44.927 N	103° 30' 21.088 W
12,407.0	91.00	1.60	10,937.2	1,794.1	-44.4	593,681.68	754,752.15	32° 37' 45.866 N	103° 30' 21.052 W
12,436.0	90.90	1.90	10,936.8	1,823.1	-43.6	593,710.67	754,753.03	32° 37' 46.153 N	103° 30' 21.039 W
12,531.0	89.50	0.60	10,936.4	1,918.0	-41.5	593,805.64	754,755.11	32° 37' 47.092 N	103° 30' 21.006 W
12,626.0	90.20	359.70	10,936.7	2,013.0	-41.2	593,900.64	754,755.36	32° 37' 48.032 N	103° 30' 20.995 W
12,721.0	90.00	358.70	10,936.5	2,108.0	-42.6	593,995.63	754,754.03	32° 37' 48.972 N	103° 30' 21.002 W
12,816.0	90.70	358.00	10,935.9	2,203.0	-45.3	594,090.58	754,751.29	32° 37' 49.912 N	103° 30' 21.025 W
12,911.0	91.20	357.50	10,934.3	2,297.9	-49.0	594,185.50	754,747.56	32° 37' 50.852 N	103° 30' 21.060 W
13,006.0	91.90	357.90	10,931.8	2,392.8	-52.8	594,280.39	754,743.75	32° 37' 51.791 N	103° 30' 21.096 W
13,101.0	92.50	358.70	10,928.1	2,487.7	-55.7	594,375.27	754,740.94	32° 37' 52.730 N	103° 30' 21.120 W
13,195.0	93.10	359.40	10,923.5	2,581.5	-57.2	594,469.15	754,739.38	32° 37' 53.659 N	103° 30' 21.130 W
13,290.0	91.60	358.00	10,919.6	2,676.4	-59.4	594,564.04	754,737.23	32° 37' 54.598 N	103° 30' 21.146 W
13,385.0	89.10	356.60	10,919.1	2,771.3	-63.8	594,658.92	754,732.75	32° 37' 55.537 N	103° 30' 21.190 W
13,479.0	89.50	357.20	10,920.2	2,865.2	-68.9	594,752.77	754,727.67	32° 37' 56.466 N	103° 30' 21.241 W
13,574.0	90.40	358.00	10,920.3	2,960.1	-72.9	594,847.69	754,723.69	32° 37' 57.406 N	103° 30' 21.279 W
13,669.0	90.90	358.70	10,919.2	3,055.0	-75.6	594,942.64	754,720.96	32° 37' 58.345 N	103° 30' 21.302 W
13,763.0	91.70	359.50	10,917.1	3,149.0	-77.1	595,036.61	754,719.48	32° 37' 59.275 N	103° 30' 21.311 W
13,859.0	92.20	0.10	10,913.8	3,244.9	-77.5	595,132.55	754,719.14	32° 38' 0.224 N	103° 30' 21.306 W
13,953.0	93.10	0.70	10,909.5	3,338.8	-76.8	595,226.44	754,719.80	32° 38' 1.154 N	103° 30' 21.290 W
14,049.0	92.80	0.20	10,904.5	3,434.7	-76.0	595,322.31	754,720.55	32° 38' 2.102 N	103° 30' 21.272 W
14,143.0	92.70	359.50	10,900.0	3,528.6	-76.3	595,416.21	754,720.31	32° 38' 3.031 N	103° 30' 21.267 W
14,238.0	92.20	358.90	10,896.0	3,623.5	-77.6	595,511.11	754,718.98	32° 38' 3.970 N	103° 30' 21.273 W
14,332.0	91.30	357.90	10,893.1	3,717.4	-80.2	595,605.03	754,716.36	32° 38' 4.900 N	103° 30' 21.296 W
14,426.0	90.50	356.50	10,891.6	3,811.3	-84.8	595,698.90	754,711.77	32° 38' 5.829 N	103° 30' 21.341 W



Wellplanning

Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3751.9usft (Original Well Elev)
Site:	Tusk Federal	MD Reference:	WELL @ 3751.9usft (Original Well Elev)
Well:	#5H	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
14,521.0	90.50	356.00	10,890.8	3,906.1	-91.0	595,793.69	754,705.55	32° 38' 6.767 N	103° 30' 21.405 W
14,616.0	91.10	355.60	10,889.5	4,000.8	-98.0	595,888.43	754,698.60	32° 38' 7.705 N	103° 30' 21.477 W
14,711.0	91.60	355.40	10,887.2	4,095.5	-105.5	595,983.11	754,691.14	32° 38' 8.643 N	103° 30' 21.556 W
14,806.0	90.70	356.60	10,885.3	4,190.3	-112.1	596,077.85	754,684.52	32° 38' 9.581 N	103° 30' 21.625 W
14,900.0	89.80	359.30	10,884.9	4,284.2	-115.4	596,171.78	754,681.16	32° 38' 10.510 N	103° 30' 21.656 W
14,993.0	90.70	0.10	10,884.5	4,377.2	-115.9	596,264.78	754,680.67	32° 38' 11.431 N	103° 30' 21.653 W
15,087.0	91.50	0.10	10,882.7	4,471.2	-115.8	596,358.76	754,680.83	32° 38' 12.360 N	103° 30' 21.642 W
15,182.0	92.10	0.30	10,879.7	4,566.1	-115.4	596,453.71	754,681.17	32° 38' 13.300 N	103° 30' 21.630 W
15,307.0	92.70	359.80	10,874.5	4,691.0	-115.3	596,578.60	754,681.28	32° 38' 14.536 N	103° 30' 21.617 W
15,356.0	92.70	359.80	10,872.2	4,739.9	-115.5	596,627.55	754,681.10	32° 38' 15.020 N	103° 30' 21.615 W
PBHL(TF#5H)									

Checked By: _____ Approved By: _____ Date: _____