

PATRIOT DRILLING, LLC

3002542742

HOBBS OCD

FEB 18 2016

OPERATOR: COG Operating, LLC
WELL/LEASE: Queso State 7H
COUNTY: Lea Co., New Mexico
Sec. 36, T 23S, R 32E

RECEIVED

**STATE OF NEW MEXICO
DEVIATION REPORT**

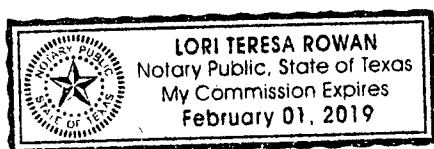
<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
215	1/2	4,504	2 1/2
689	3/4	5,017	1/2
941	1/4	5,475	3/4
1,281	1/2	5,666	3/4
1,856	3/4	6,327	1
2,046	1	6,802	1
2,417	1	7,278	3/4
2,985	1	7,659	1
3,174	1	8,039	1 1/4
3,552	1 1/4	8,420	1
3,933	3/4	8,705	1
4,314	3		

Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 26th day of October, 2015 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 02/01/2019


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



October 16, 2015

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

HOBBS OCD
FEB 18 2016
RECEIVED

Attn: Kanicia Castillo

RE: **Queso State No 007**

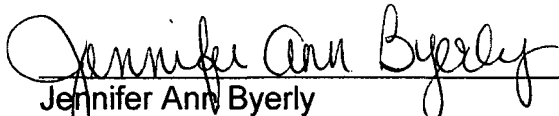
Please find enclosed a copy of the survey from 0' to 8865' ran on the above referenced well.

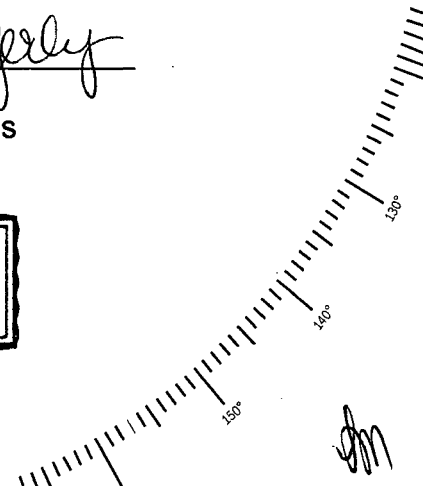
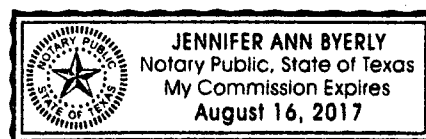
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

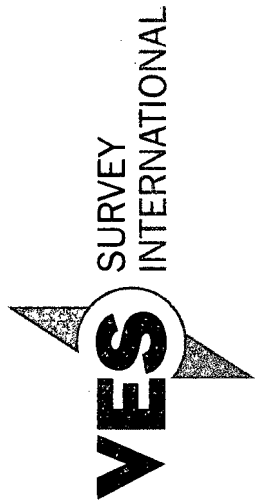
This instrument was acknowledged before me on the 16 day of October,
A.D., 2015, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: Concho Operating
Lease/Well: Queso State No/007H



Rig Name: Patriot 2
State/County: New Mexico/Lea
VS-Azi: 0.90 Degrees
Latitude: 32.25430, Longitude: -103.62620
Grid North = True North -0.38 degs (NAD 27)
Grid Correction Applied = -0.38 degs

Depth Reference : RKB= 19 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: queso 7h.ut
Minimum Curvature Method
Report Date/Time: 10/16/2015 / 08:51

VES Survey International
West Texas
432-563-5444

Surveyor: Eric Warner
Queso State No 007H / API 30-025-42742

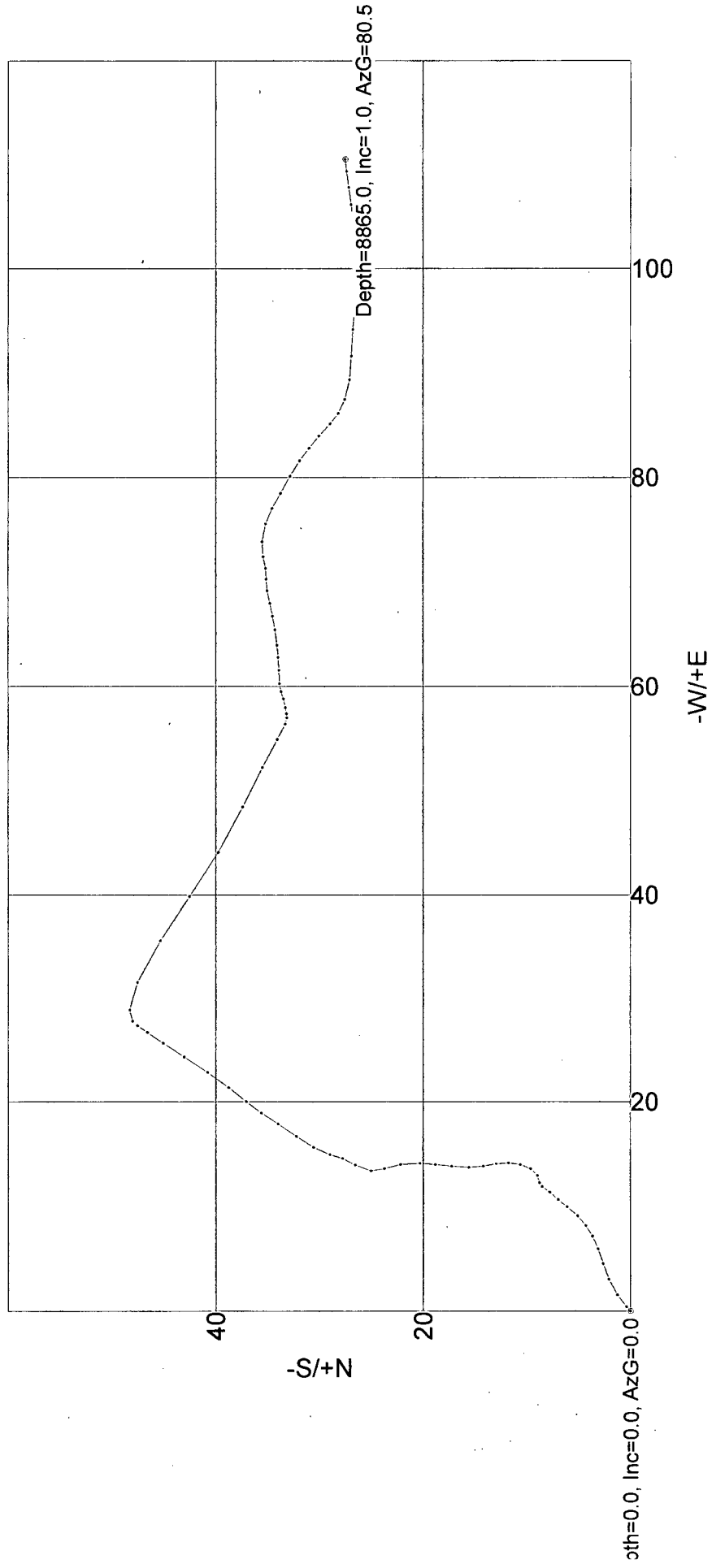
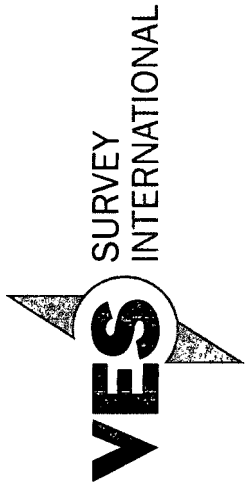
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.63	48.43	100.00	0.36	0.41	0.37	0.55	48.43	0.63
200.00	1.02	53.73	199.99	1.26	1.54	1.28	1.99	50.81	0.40
300.00	0.95	68.71	299.97	2.09	3.03	2.13	3.68	55.48	0.27
400.00	0.86	71.37	399.96	2.63	4.51	2.70	5.22	59.82	0.10
500.00	0.84	68.81	499.95	3.13	5.91	3.22	6.68	62.09	0.05
600.00	0.68	60.54	599.94	3.69	7.11	3.80	8.00	62.58	0.19
700.00	0.67	53.32	699.93	4.33	8.09	4.46	9.18	61.86	0.09
800.00	0.73	45.47	799.93	5.12	9.02	5.26	10.37	60.39	0.11
900.00	0.78	34.63	899.92	6.13	9.86	6.29	11.61	58.12	0.15
1000.00	0.48	48.21	999.91	6.97	10.56	7.14	12.65	56.56	0.33
1100.00	0.75	36.11	1099.91	7.78	11.26	7.96	13.69	55.34	0.30
1200.00	0.30	28.44	1199.90	8.54	11.77	8.72	14.54	54.03	0.46
1300.00	0.31	86.39	1299.90	8.79	12.16	8.98	15.00	54.16	0.29
1400.00	0.55	64.31	1399.90	9.01	12.86	9.21	15.71	54.99	0.29
1500.00	0.56	26.12	1499.89	9.66	13.51	9.87	16.61	54.44	0.36
1600.00	0.68	18.53	1599.89	10.66	13.92	10.88	17.53	52.54	0.15

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
1700.00	0.65	357.14	1699.88	11.80	14.08	12.02	18.37	50.03	0.25
1800.00	0.71	355.11	1799.87	12.98	14.00	13.20	19.09	47.16	0.06
1900.00	0.77	343.36	1899.86	14.24	13.75	14.45	19.79	44.01	0.16
2000.00	0.86	5.30	1999.86	15.62	13.63	15.84	20.73	41.10	0.32
2100.00	1.04	3.21	2099.84	17.28	13.75	17.49	22.08	38.51	0.19
2200.00	0.77	9.42	2199.83	18.85	13.91	19.07	23.43	36.42	0.29
2300.00	0.95	1.30	2299.82	20.35	14.04	20.56	24.72	34.61	0.22
2400.00	1.19	352.09	2399.80	22.20	13.92	22.42	26.20	32.08	0.29
2500.00	0.66	333.41	2499.79	23.74	13.52	23.95	27.32	29.66	0.60
2600.00	0.88	2.94	2599.78	25.02	13.30	25.23	28.33	27.99	0.45
2700.00	1.07	34.79	2699.76	26.55	13.87	26.77	29.96	27.58	0.56
2800.00	0.55	11.41	2799.75	27.79	14.50	28.01	31.34	27.55	0.61
2900.00	0.91	20.61	2899.75	29.00	14.87	29.23	32.59	27.15	0.38
3000.00	1.06	27.70	2999.73	30.56	15.58	30.80	34.31	27.02	0.19
3100.00	1.20	36.28	3099.71	32.22	16.63	32.48	36.26	27.30	0.22
3200.00	1.28	32.99	3199.69	34.00	17.86	34.28	38.41	27.71	0.11
3300.00	0.90	33.17	3299.67	35.60	18.90	35.89	40.31	27.96	0.38
3400.00	1.23	39.99	3399.65	37.08	20.02	37.39	42.14	28.36	0.35
3500.00	1.23	36.99	3499.63	38.76	21.35	39.09	44.25	28.85	0.06
3600.00	1.63	34.64	3599.60	40.79	22.81	41.14	46.73	29.21	0.40
3700.00	1.49	32.85	3699.56	43.05	24.32	43.43	49.44	29.46	0.15
3800.00	1.30	33.92	3799.53	45.08	25.66	45.48	51.87	29.64	0.19
3900.00	0.82	35.89	3899.51	46.61	26.71	47.02	53.72	29.82	0.48
4000.00	0.49	31.44	3999.51	47.55	27.36	47.98	54.86	29.91	0.34
4100.00	0.29	65.06	4099.51	48.03	27.81	48.46	55.50	30.07	0.30
4200.00	0.99	79.28	4199.50	48.29	28.89	48.74	56.27	30.89	0.72
4300.00	2.36	115.80	4299.46	47.56	31.60	48.05	57.10	33.60	1.67
4400.00	2.90	121.92	4399.35	45.32	35.60	45.88	57.63	38.15	0.61
4500.00	2.92	124.74	4499.22	42.54	39.84	43.16	58.28	43.12	0.14
4600.00	2.92	121.35	4599.09	39.76	44.10	40.45	59.38	47.97	0.17
4700.00	2.73	115.73	4698.97	37.40	48.43	38.16	61.19	52.32	0.33
4800.00	2.10	117.48	4798.88	35.52	52.20	36.33	63.14	55.77	0.64
4900.00	1.40	119.50	4898.83	34.07	54.89	34.93	64.61	58.17	0.70
5000.00	0.52	112.05	4998.82	33.30	56.37	34.18	65.47	59.43	0.89
5100.00	0.22	81.78	5098.82	33.16	56.98	34.05	65.92	59.80	0.34
5200.00	0.23	89.48	5198.82	33.19	57.37	34.09	66.28	59.95	0.03
5300.00	0.48	77.51	5298.81	33.28	57.97	34.19	66.85	60.14	0.25
5400.00	0.48	75.15	5398.81	33.48	58.78	34.40	67.65	60.34	0.02
5500.00	0.38	66.36	5498.81	33.72	59.50	34.65	68.39	60.46	0.12

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
5600.00	0.51	89.43	5598.80	33.86	60.25	34.80	69.11	60.66	0.22
5700.00	0.98	87.99	5698.80	33.89	61.55	34.86	70.26	61.16	0.47
5800.00	0.41	82.33	5798.79	33.97	62.76	34.95	71.36	61.57	0.58
5900.00	0.95	84.75	5898.78	34.10	63.94	35.10	72.46	61.93	0.55
6000.00	0.76	80.04	5998.77	34.29	65.42	35.31	73.86	62.34	0.21
6100.00	0.75	79.07	6098.76	34.52	66.72	35.57	75.12	62.64	0.02
6200.00	0.71	77.50	6198.75	34.78	67.96	35.84	76.34	62.90	0.05
6300.00	0.71	78.83	6298.74	35.03	69.16	36.12	77.53	63.14	0.02
6400.00	0.56	92.32	6398.74	35.13	70.26	36.23	78.55	63.43	0.21
6500.00	0.65	81.13	6498.73	35.20	71.31	36.32	79.52	63.73	0.15
6600.00	0.64	75.32	6598.73	35.43	72.41	36.56	80.61	63.93	0.07
6700.00	1.03	92.60	6698.72	35.53	73.85	36.69	81.95	64.31	0.46
6800.00	0.99	109.41	6798.70	35.20	75.56	36.39	83.36	65.02	0.30
6900.00	0.86	118.13	6898.69	34.56	77.04	35.77	84.44	65.84	0.20
7000.00	1.04	119.87	6998.67	33.76	78.48	34.99	85.44	66.73	0.19
7100.00	1.12	118.96	7098.66	32.83	80.13	34.09	86.59	67.72	0.08
7200.00	0.88	125.90	7198.64	31.91	81.60	33.19	87.62	68.64	0.27
7300.00	0.82	128.83	7298.63	31.01	82.78	32.31	88.40	69.46	0.07
7400.00	0.92	130.18	7398.62	30.05	83.95	31.36	89.17	70.31	0.10
7500.00	0.91	135.21	7498.61	28.96	85.12	30.30	89.92	71.21	0.08
7600.00	0.56	118.75	7598.60	28.16	86.11	29.51	90.60	71.89	0.40
7700.00	1.15	112.58	7698.59	27.54	87.47	28.91	91.70	72.52	0.59
7800.00	1.09	95.38	7798.57	27.07	89.35	28.47	93.36	73.15	0.34
7900.00	1.53	92.81	7898.54	26.91	91.63	28.35	95.50	73.63	0.44
8000.00	1.38	94.76	7998.51	26.75	94.17	28.22	97.90	74.14	0.16
8100.00	1.27	90.85	8098.48	26.63	96.48	28.14	100.09	74.57	0.14
8200.00	1.32	91.11	8198.46	26.59	98.75	28.14	102.27	74.93	0.05
8300.00	1.02	89.42	8298.43	26.58	100.79	28.16	104.23	75.23	0.31
8400.00	0.92	87.98	8398.42	26.62	102.47	28.22	105.87	75.44	0.10
8500.00	1.11	85.43	8498.40	26.72	104.23	28.36	107.60	75.62	0.19
8600.00	1.10	82.38	8598.39	26.93	106.15	28.59	109.51	75.77	0.06
8700.00	0.79	80.53	8698.37	27.17	107.78	28.86	111.15	75.85	0.32
8800.00	1.00	84.67	8798.36	27.36	109.33	29.08	112.70	75.95	0.22
8865.00	1.03	80.55	8863.35	27.51	110.47	29.24	113.84	76.02	0.12



VES Survey International
West Texas
432-563-5444
Surveyor: Eric Warner
Queso State No 007H / API 30-025-42742





I Eric Warner certify that I am employed by Vaughn Energy Services. That I did on the day(s) of 10/13/15 through 10/13/15 conduct or supervise the taking of a Rate Gyro survey from a depth of 0 feet to a depth of 8865 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Vaughn Energy Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of Concho Operating for the Queso State No Well # 007H API # 30-025-42742 in Lea County / Parish New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Vaughn Energy Services


Eric Warner
Service Technician
Vaughn Energy Services

HOBBS OCD

FEB 18 2016

RECEIVED

COG Production LLC

Lea County, NM (NAD27 NME)

Queso State

#7H

OH

Survey: MWD#1

Survey Report - Geographic

21 October, 2015

gm

Survey Report - Geographic

Company:	COG Production LLC	Local Co-ordinate Reference:	Well #7H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3669.9usft (20' KB)
Site:	Queso State	MD Reference:	WELL @ 3669.9usft (20' KB)
Well:	#7H	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		Queso State			
Site Position:		Northing:	457,175.20 usft	Latitude:	32° 15' 17.563 N
From:	Map	Easting:	720,457.30 usft	Longitude:	103° 37' 12.709 W
Position Uncertainty:	5.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.38 °

Well	#7H					
Well Position	+N/-S	0.0 usft	Northing:	456,971.00 usft	Latitude:	32° 15' 15.666 N
	+E/-W	0.0 usft	Easting:	718,578.60 usft	Longitude:	103° 37' 34.601 W
Position Uncertainty		5.0 usft	Wellhead Elevation:	usft	Ground Level:	3,649.9 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/30/2015	7.17	60.10	48,125

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	0.90	

Survey Program	Date	10/21/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	13,984.0	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	
0.0	0.00	0.00	0.0	0.0	0.0	456,971.00	718,578.60	32° 15' 15.666 N	103° 37' 34.601 W	
100.0	0.63	48.43	100.0	0.4	0.4	456,971.37	718,579.01	32° 15' 15.669 N	103° 37' 34.596 W	
200.0	1.02	53.73	200.0	1.3	1.5	456,972.26	718,580.14	32° 15' 15.678 N	103° 37' 34.583 W	
300.0	0.95	68.71	300.0	2.1	3.0	456,973.08	718,581.63	32° 15' 15.686 N	103° 37' 34.565 W	
400.0	0.86	71.37	400.0	2.6	4.5	456,973.62	718,583.11	32° 15' 15.691 N	103° 37' 34.548 W	
500.0	0.84	68.81	499.9	3.1	5.9	456,974.13	718,584.50	32° 15' 15.696 N	103° 37' 34.532 W	
600.0	0.68	60.54	599.9	3.7	7.1	456,974.69	718,585.70	32° 15' 15.702 N	103° 37' 34.518 W	
700.0	0.67	53.32	699.9	4.3	8.1	456,975.33	718,586.69	32° 15' 15.708 N	103° 37' 34.506 W	
800.0	0.73	45.47	799.9	5.1	9.0	456,976.12	718,587.61	32° 15' 15.716 N	103° 37' 34.495 W	
900.0	0.78	34.63	899.9	6.1	9.9	456,977.13	718,588.45	32° 15' 15.726 N	103° 37' 34.485 W	
1,000.0	0.48	48.21	999.9	7.0	10.6	456,977.97	718,589.15	32° 15' 15.734 N	103° 37' 34.477 W	
1,100.0	0.75	36.11	1,099.9	7.8	11.3	456,978.78	718,589.85	32° 15' 15.742 N	103° 37' 34.469 W	

Survey Report - Geographic

Company:	COG Production LLC	Local Co-ordinate Reference:	Well #7H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3669.9usft (20' KB)
Site:	Queso State	MD Reference:	WELL @ 3669.9usft (20' KB)
Well:	#7H	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
1,200.0	0.30	28.44	1,199.9	8.5	11.8	456,979.54	718,590.36	32° 15' 15.749 N	103° 37' 34.463 W
1,300.0	0.31	86.39	1,299.9	8.8	12.2	456,979.78	718,590.76	32° 15' 15.752 N	103° 37' 34.458 W
1,400.0	0.55	64.31	1,399.9	9.0	12.9	456,980.01	718,591.46	32° 15' 15.754 N	103° 37' 34.450 W
1,500.0	0.56	26.12	1,499.9	9.7	13.5	456,980.66	718,592.11	32° 15' 15.760 N	103° 37' 34.443 W
1,600.0	0.68	18.53	1,599.9	10.7	13.9	456,981.66	718,592.51	32° 15' 15.770 N	103° 37' 34.438 W
1,700.0	0.65	357.14	1,699.9	11.8	14.1	456,982.79	718,592.67	32° 15' 15.781 N	103° 37' 34.436 W
1,800.0	0.71	355.11	1,799.9	13.0	14.0	456,983.97	718,592.59	32° 15' 15.793 N	103° 37' 34.437 W
1,900.0	0.77	343.36	1,899.9	14.2	13.7	456,985.23	718,592.34	32° 15' 15.806 N	103° 37' 34.440 W
2,000.0	0.86	5.30	1,999.9	15.6	13.6	456,986.62	718,592.22	32° 15' 15.819 N	103° 37' 34.441 W
2,100.0	1.04	3.21	2,099.8	17.3	13.7	456,988.28	718,592.34	32° 15' 15.836 N	103° 37' 34.439 W
2,200.0	0.77	9.42	2,199.8	18.8	13.9	456,989.84	718,592.50	32° 15' 15.851 N	103° 37' 34.437 W
2,300.0	0.95	1.30	2,299.8	20.3	14.0	456,991.34	718,592.63	32° 15' 15.866 N	103° 37' 34.436 W
2,400.0	1.19	352.09	2,399.8	22.2	13.9	456,993.19	718,592.51	32° 15' 15.884 N	103° 37' 34.437 W
2,500.0	0.66	333.41	2,499.8	23.7	13.5	456,994.74	718,592.11	32° 15' 15.900 N	103° 37' 34.442 W
2,600.0	0.88	2.94	2,599.8	25.0	13.3	456,996.02	718,591.89	32° 15' 15.912 N	103° 37' 34.444 W
2,700.0	1.07	34.79	2,699.8	26.6	13.9	456,997.55	718,592.46	32° 15' 15.927 N	103° 37' 34.437 W
2,800.0	0.55	11.41	2,799.8	27.8	14.5	456,998.79	718,593.09	32° 15' 15.940 N	103° 37' 34.430 W
2,900.0	0.91	20.61	2,899.7	29.0	14.9	457,000.00	718,593.46	32° 15' 15.952 N	103° 37' 34.425 W
3,000.0	1.06	27.70	2,999.7	30.6	15.6	457,001.57	718,594.17	32° 15' 15.967 N	103° 37' 34.417 W
3,100.0	1.20	36.28	3,099.7	32.2	16.6	457,003.23	718,595.22	32° 15' 15.983 N	103° 37' 34.405 W
3,200.0	1.28	32.99	3,199.7	34.0	17.9	457,005.01	718,596.45	32° 15' 16.001 N	103° 37' 34.390 W
3,300.0	0.90	33.17	3,299.7	35.6	18.9	457,006.60	718,597.49	32° 15' 16.017 N	103° 37' 34.378 W
3,400.0	1.23	39.99	3,399.7	37.1	20.0	457,008.08	718,598.61	32° 15' 16.031 N	103° 37' 34.365 W
3,500.0	1.23	36.99	3,499.6	38.8	21.3	457,009.76	718,599.94	32° 15' 16.048 N	103° 37' 34.349 W
3,600.0	1.63	34.64	3,599.6	40.8	22.8	457,011.79	718,601.40	32° 15' 16.068 N	103° 37' 34.332 W
3,700.0	1.49	32.85	3,699.6	43.1	24.3	457,014.05	718,602.91	32° 15' 16.090 N	103° 37' 34.314 W
3,800.0	1.30	33.92	3,799.5	45.1	25.7	457,016.09	718,604.25	32° 15' 16.110 N	103° 37' 34.299 W
3,900.0	0.82	35.89	3,899.5	46.6	26.7	457,017.61	718,605.30	32° 15' 16.125 N	103° 37' 34.286 W
4,000.0	0.49	31.44	3,999.5	47.6	27.3	457,018.55	718,605.94	32° 15' 16.134 N	103° 37' 34.279 W
4,100.0	0.29	65.06	4,099.5	48.0	27.8	457,019.02	718,606.40	32° 15' 16.139 N	103° 37' 34.273 W
4,200.0	0.99	79.28	4,199.5	48.3	28.9	457,019.29	718,607.47	32° 15' 16.142 N	103° 37' 34.261 W
4,300.0	2.36	115.80	4,299.5	47.6	31.6	457,018.56	718,610.18	32° 15' 16.134 N	103° 37' 34.229 W
4,400.0	2.90	121.92	4,399.4	45.3	35.6	457,016.32	718,614.18	32° 15' 16.112 N	103° 37' 34.183 W
4,500.0	2.92	124.74	4,499.2	42.5	39.8	457,013.53	718,618.42	32° 15' 16.084 N	103° 37' 34.134 W
4,600.0	2.92	121.35	4,599.1	39.8	44.1	457,010.76	718,622.69	32° 15' 16.056 N	103° 37' 34.084 W
4,700.0	2.73	115.73	4,699.0	37.4	48.4	457,008.40	718,627.01	32° 15' 16.033 N	103° 37' 34.034 W
4,800.0	2.10	117.48	4,798.9	35.5	52.2	457,006.52	718,630.78	32° 15' 16.014 N	103° 37' 33.990 W
4,900.0	1.40	119.50	4,898.8	34.1	54.9	457,005.07	718,633.47	32° 15' 15.999 N	103° 37' 33.959 W
5,000.0	0.52	112.05	4,998.8	33.3	56.4	457,004.30	718,634.95	32° 15' 15.991 N	103° 37' 33.942 W
5,100.0	0.22	81.78	5,098.8	33.2	57.0	457,004.16	718,635.56	32° 15' 15.990 N	103° 37' 33.935 W
5,200.0	0.23	89.48	5,198.8	33.2	57.4	457,004.19	718,635.95	32° 15' 15.990 N	103° 37' 33.930 W
5,300.0	0.48	77.51	5,298.8	33.3	58.0	457,004.28	718,636.56	32° 15' 15.991 N	103° 37' 33.923 W
5,400.0	0.48	75.15	5,398.8	33.5	58.8	457,004.48	718,637.37	32° 15' 15.993 N	103° 37' 33.914 W
5,500.0	0.38	66.36	5,498.8	33.7	59.5	457,004.72	718,638.08	32° 15' 15.995 N	103° 37' 33.905 W
5,600.0	0.51	89.43	5,598.8	33.9	60.2	457,004.85	718,638.83	32° 15' 15.997 N	103° 37' 33.897 W
5,700.0	0.98	87.99	5,698.8	33.9	61.5	457,004.89	718,640.13	32° 15' 15.997 N	103° 37' 33.882 W
5,800.0	0.41	82.33	5,798.8	34.0	62.7	457,004.97	718,641.34	32° 15' 15.998 N	103° 37' 33.868 W
5,900.0	0.95	84.75	5,898.8	34.1	63.9	457,005.09	718,642.52	32° 15' 15.999 N	103° 37' 33.854 W
6,000.0	0.76	80.04	5,998.8	34.3	65.4	457,005.28	718,644.00	32° 15' 16.001 N	103° 37' 33.837 W
6,100.0	0.75	79.07	6,098.8	34.5	66.7	457,005.52	718,645.30	32° 15' 16.003 N	103° 37' 33.821 W
6,200.0	0.71	77.50	6,198.8	34.8	67.9	457,005.78	718,646.54	32° 15' 16.005 N	103° 37' 33.807 W
6,300.0	0.71	78.83	6,298.7	35.0	69.2	457,006.03	718,647.76	32° 15' 16.008 N	103° 37' 33.793 W
6,400.0	0.56	92.32	6,398.7	35.1	70.3	457,006.13	718,648.85	32° 15' 16.009 N	103° 37' 33.780 W
6,500.0	0.65	81.13	6,498.7	35.2	71.3	457,006.20	718,649.90	32° 15' 16.009 N	103° 37' 33.768 W
6,600.0	0.64	75.32	6,598.7	35.4	72.4	457,006.43	718,651.00	32° 15' 16.011 N	103° 37' 33.755 W

Survey Report - Geographic

Company:	COG Production LLC	Local Co-ordinate Reference:	Well #7H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3669.9usft (20' KB)
Site:	Queso State	MD Reference:	WELL @ 3669.9usft (20' KB)
Well:	#7H	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
6,700.0	1.03	92.60	6,698.7	35.5	73.8	457,006.53	718,652.44	32° 15' 16.012 N	103° 37' 33.738 W
6,800.0	0.99	109.41	6,798.7	35.2	75.6	457,006.20	718,654.15	32° 15' 16.009 N	103° 37' 33.718 W
6,900.0	0.86	118.13	6,898.7	34.6	77.0	457,005.56	718,655.63	32° 15' 16.003 N	103° 37' 33.701 W
7,000.0	1.04	119.87	6,998.7	33.8	78.5	457,004.75	718,657.08	32° 15' 15.995 N	103° 37' 33.684 W
7,100.0	1.12	118.96	7,098.7	32.8	80.1	457,003.83	718,658.72	32° 15' 15.985 N	103° 37' 33.665 W
7,200.0	0.88	125.90	7,198.6	31.9	81.6	457,002.91	718,660.20	32° 15' 15.976 N	103° 37' 33.648 W
7,300.0	0.82	128.83	7,298.6	31.0	82.8	457,002.01	718,661.38	32° 15' 15.967 N	103° 37' 33.634 W
7,400.0	0.92	130.18	7,398.6	30.0	84.0	457,001.04	718,662.55	32° 15' 15.957 N	103° 37' 33.621 W
7,500.0	0.91	135.21	7,498.6	29.0	85.1	456,999.96	718,663.72	32° 15' 15.947 N	103° 37' 33.607 W
7,600.0	0.56	118.75	7,598.6	28.2	86.1	456,999.16	718,664.71	32° 15' 15.939 N	103° 37' 33.596 W
7,700.0	1.15	112.58	7,698.6	27.5	87.5	456,998.54	718,666.06	32° 15' 15.932 N	103° 37' 33.580 W
7,800.0	1.09	95.38	7,798.6	27.1	89.3	456,998.06	718,667.94	32° 15' 15.928 N	103° 37' 33.558 W
7,900.0	1.53	92.81	7,898.5	26.9	91.6	456,997.91	718,670.22	32° 15' 15.926 N	103° 37' 33.532 W
8,000.0	1.38	94.76	7,998.5	26.7	94.2	456,997.74	718,672.75	32° 15' 15.924 N	103° 37' 33.502 W
8,100.0	1.27	90.85	8,098.5	26.6	96.5	456,997.63	718,675.06	32° 15' 15.923 N	103° 37' 33.475 W
8,200.0	1.32	91.11	8,198.5	26.6	98.7	456,997.59	718,677.32	32° 15' 15.922 N	103° 37' 33.449 W
8,300.0	1.02	89.42	8,298.4	26.6	100.8	456,997.58	718,679.36	32° 15' 15.922 N	103° 37' 33.425 W
8,400.0	0.92	87.98	8,398.4	26.6	102.5	456,997.61	718,681.05	32° 15' 15.922 N	103° 37' 33.406 W
8,500.0	1.11	85.43	8,498.4	26.7	104.2	456,997.72	718,682.82	32° 15' 15.923 N	103° 37' 33.385 W
8,600.0	1.10	82.38	8,598.4	26.9	106.1	456,997.92	718,684.74	32° 15' 15.925 N	103° 37' 33.363 W
8,700.0	0.79	80.53	8,698.4	27.2	107.8	456,998.16	718,686.37	32° 15' 15.927 N	103° 37' 33.344 W
8,800.0	1.00	84.67	8,798.4	27.4	109.3	456,998.36	718,687.92	32° 15' 15.929 N	103° 37' 33.326 W
8,865.0	1.03	80.55	8,863.4	27.5	110.5	456,998.51	718,689.06	32° 15' 15.931 N	103° 37' 33.312 W
8,923.0	0.80	60.00	8,921.3	27.8	111.3	456,998.80	718,689.92	32° 15' 15.933 N	103° 37' 33.302 W
8,955.0	0.80	29.10	8,953.3	28.1	111.6	456,999.10	718,690.22	32° 15' 15.936 N	103° 37' 33.299 W
KOP @ 8955 MD									
8,987.0	3.90	20.50	8,985.3	29.3	112.1	457,000.32	718,690.71	32° 15' 15.948 N	103° 37' 33.293 W
9,019.0	8.90	19.20	9,017.1	32.7	113.3	457,003.68	718,691.91	32° 15' 15.982 N	103° 37' 33.279 W
9,050.0	13.30	18.20	9,047.5	38.3	115.2	457,009.33	718,693.81	32° 15' 16.037 N	103° 37' 33.256 W
9,082.0	16.90	18.00	9,078.4	46.3	117.8	457,017.25	718,696.40	32° 15' 16.116 N	103° 37' 33.225 W
9,114.0	20.20	16.20	9,108.7	56.0	120.8	457,026.99	718,699.38	32° 15' 16.212 N	103° 37' 33.190 W
9,145.0	23.00	13.90	9,137.6	67.0	123.7	457,038.01	718,702.33	32° 15' 16.321 N	103° 37' 33.155 W
9,177.0	25.20	11.50	9,166.8	79.8	126.6	457,050.75	718,705.19	32° 15' 16.447 N	103° 37' 33.121 W
9,209.0	28.20	9.10	9,195.4	93.9	129.1	457,064.90	718,707.74	32° 15' 16.586 N	103° 37' 33.090 W
9,241.0	32.00	6.30	9,223.0	109.8	131.3	457,080.80	718,709.87	32° 15' 16.744 N	103° 37' 33.064 W
9,272.0	35.80	2.50	9,248.8	127.0	132.6	457,098.03	718,711.17	32° 15' 16.914 N	103° 37' 33.047 W
9,295.1	39.33	1.09	9,267.1	141.1	133.0	457,112.10	718,711.60	32° 15' 17.053 N	103° 37' 33.041 W
Cross 100' Offset @ 9295.1 MD									
9,304.0	40.70	0.60	9,273.9	146.8	133.1	457,117.82	718,711.69	32° 15' 17.110 N	103° 37' 33.040 W
9,336.0	44.40	0.60	9,297.5	168.5	133.3	457,139.46	718,711.91	32° 15' 17.324 N	103° 37' 33.035 W
9,368.0	46.50	359.20	9,319.9	191.3	133.3	457,162.26	718,711.87	32° 15' 17.550 N	103° 37' 33.034 W
9,399.0	48.30	358.80	9,340.9	214.1	132.9	457,185.08	718,711.47	32° 15' 17.775 N	103° 37' 33.037 W
9,431.0	50.80	359.60	9,361.6	238.4	132.5	457,209.42	718,711.13	32° 15' 18.016 N	103° 37' 33.039 W
9,463.0	53.80	358.70	9,381.2	263.7	132.2	457,234.73	718,710.75	32° 15' 18.267 N	103° 37' 33.042 W
9,494.0	56.90	359.70	9,398.8	289.2	131.8	457,260.23	718,710.40	32° 15' 18.519 N	103° 37' 33.044 W
9,526.0	60.00	0.60	9,415.6	316.5	131.9	457,287.50	718,710.48	32° 15' 18.789 N	103° 37' 33.041 W
9,558.0	62.60	1.10	9,430.9	344.6	132.3	457,315.56	718,710.89	32° 15' 19.067 N	103° 37' 33.034 W
9,590.0	64.10	0.60	9,445.3	373.2	132.7	457,344.16	718,711.32	32° 15' 19.350 N	103° 37' 33.027 W
9,622.0	64.80	0.30	9,459.1	402.0	132.9	457,373.03	718,711.54	32° 15' 19.635 N	103° 37' 33.022 W
9,653.0	67.60	0.50	9,471.6	430.4	133.1	457,401.39	718,711.74	32° 15' 19.916 N	103° 37' 33.017 W
9,685.0	71.40	1.10	9,482.8	460.4	133.6	457,431.35	718,712.16	32° 15' 20.212 N	103° 37' 33.010 W
9,716.0	75.90	1.70	9,491.5	490.1	134.3	457,461.08	718,712.89	32° 15' 20.506 N	103° 37' 32.999 W
9,739.4	79.99	1.92	9,496.4	512.9	135.0	457,483.95	718,713.61	32° 15' 20.733 N	103° 37' 32.989 W
80° @ 9739.4 MD, 9496.4 TVD									
9,748.0	81.50	2.00	9,497.8	521.4	135.3	457,492.43	718,713.90	32° 15' 20.817 N	103° 37' 32.985 W

Survey Report - Geographic

Company:	COG Production LLC	Local Co-ordinate Reference:	Well #7H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3669.9usft (20' KB)
Site:	Queso State	MD Reference:	WELL @ 3669.9usft (20' KB)
Well:	#7H	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
9,779.0	84.30	2.70	9,501.6	552.2	136.6	457,523.16	718,715.17	32° 15' 21.121 N	103° 37' 32.968 W
9,811.0	86.20	2.70	9,504.3	584.0	138.1	457,555.02	718,716.67	32° 15' 21.436 N	103° 37' 32.948 W
9,842.0	89.50	4.00	9,505.4	614.9	139.9	457,585.94	718,718.48	32° 15' 21.742 N	103° 37' 32.925 W
9,874.0	91.00	4.60	9,505.3	646.8	142.3	457,617.85	718,720.88	32° 15' 22.057 N	103° 37' 32.894 W
9,969.0	89.80	359.80	9,504.6	741.7	145.9	457,712.74	718,724.52	32° 15' 22.996 N	103° 37' 32.845 W
10,064.0	90.90	358.10	9,504.1	836.7	144.2	457,807.72	718,722.78	32° 15' 23.936 N	103° 37' 32.858 W
10,160.0	92.80	358.50	9,501.0	932.6	141.3	457,903.63	718,719.94	32° 15' 24.885 N	103° 37' 32.883 W
10,255.0	92.60	357.30	9,496.5	1,027.5	137.9	457,998.45	718,716.46	32° 15' 25.824 N	103° 37' 32.917 W
10,350.0	92.40	356.70	9,492.3	1,122.2	132.9	458,093.23	718,711.49	32° 15' 26.762 N	103° 37' 32.967 W
10,443.0	90.70	357.90	9,489.8	1,215.1	128.5	458,186.09	718,707.11	32° 15' 27.681 N	103° 37' 33.011 W
10,538.0	89.00	357.90	9,490.1	1,310.0	125.0	458,281.02	718,703.63	32° 15' 28.621 N	103° 37' 33.044 W
10,635.0	90.90	357.90	9,490.2	1,407.0	121.5	458,377.95	718,700.08	32° 15' 29.580 N	103° 37' 33.078 W
10,730.0	93.60	358.50	9,486.4	1,501.8	118.5	458,472.82	718,697.10	32° 15' 30.519 N	103° 37' 33.106 W
10,825.0	94.50	359.70	9,479.7	1,596.6	117.0	458,567.57	718,695.61	32° 15' 31.457 N	103° 37' 33.116 W
10,920.0	93.10	0.10	9,473.4	1,691.4	116.8	458,662.36	718,695.44	32° 15' 32.395 N	103° 37' 33.110 W
11,015.0	92.70	0.00	9,468.6	1,786.2	116.9	458,757.24	718,695.52	32° 15' 33.334 N	103° 37' 33.102 W
11,110.0	91.30	0.50	9,465.3	1,881.2	117.3	458,852.18	718,695.94	32° 15' 34.273 N	103° 37' 33.090 W
11,205.0	90.60	1.00	9,463.7	1,976.2	118.6	458,947.16	718,697.18	32° 15' 35.213 N	103° 37' 33.068 W
11,301.0	89.90	0.50	9,463.3	2,072.1	119.8	459,043.15	718,698.44	32° 15' 36.163 N	103° 37' 33.046 W
11,396.0	92.00	0.70	9,461.7	2,167.1	120.8	459,138.12	718,699.43	32° 15' 37.103 N	103° 37' 33.027 W
11,491.0	91.00	1.70	9,459.3	2,262.1	122.8	459,233.07	718,701.42	32° 15' 38.042 N	103° 37' 32.997 W
11,586.0	90.30	0.00	9,458.2	2,357.0	124.2	459,328.05	718,702.83	32° 15' 38.982 N	103° 37' 32.973 W
11,681.0	89.50	358.30	9,458.3	2,452.0	122.8	459,423.03	718,701.42	32° 15' 39.922 N	103° 37' 32.982 W
11,776.0	89.50	357.40	9,459.2	2,547.0	119.3	459,517.96	718,697.86	32° 15' 40.861 N	103° 37' 33.017 W
11,872.0	89.30	358.20	9,460.2	2,642.9	115.6	459,613.88	718,694.17	32° 15' 41.811 N	103° 37' 33.052 W
11,967.0	89.50	358.90	9,461.2	2,737.8	113.2	459,708.85	718,691.77	32° 15' 42.751 N	103° 37' 33.073 W
12,062.0	89.60	357.60	9,461.9	2,832.8	110.3	459,803.80	718,688.87	32° 15' 43.691 N	103° 37' 33.099 W
12,157.0	89.10	357.90	9,463.0	2,927.7	106.5	459,898.72	718,685.14	32° 15' 44.630 N	103° 37' 33.135 W
12,253.0	89.10	357.20	9,464.5	3,023.6	102.4	459,994.62	718,681.04	32° 15' 45.579 N	103° 37' 33.176 W
12,348.0	90.80	357.30	9,464.6	3,118.5	97.9	460,089.50	718,676.48	32° 15' 46.519 N	103° 37' 33.222 W
12,444.0	90.10	357.80	9,463.8	3,214.4	93.8	460,185.41	718,672.38	32° 15' 47.468 N	103° 37' 33.262 W
12,539.0	89.70	357.90	9,464.0	3,309.3	90.2	460,280.35	718,668.81	32° 15' 48.408 N	103° 37' 33.296 W
12,634.0	90.80	357.10	9,463.6	3,404.3	86.1	460,375.25	718,664.67	32° 15' 49.347 N	103° 37' 33.337 W
12,729.0	90.30	357.60	9,462.7	3,499.1	81.7	460,470.14	718,660.28	32° 15' 50.286 N	103° 37' 33.381 W
12,823.0	90.50	358.40	9,462.0	3,593.1	78.4	460,564.08	718,656.99	32° 15' 51.216 N	103° 37' 33.412 W
12,918.0	92.20	357.50	9,459.8	3,688.0	75.0	460,658.99	718,653.60	32° 15' 52.156 N	103° 37' 33.444 W
13,013.0	91.30	358.30	9,456.9	3,782.9	71.5	460,753.88	718,650.12	32° 15' 53.095 N	103° 37' 33.478 W
13,108.0	89.90	358.30	9,455.9	3,877.8	68.7	460,848.83	718,647.30	32° 15' 54.035 N	103° 37' 33.503 W
13,203.0	89.30	359.10	9,456.5	3,972.8	66.5	460,943.81	718,645.15	32° 15' 54.974 N	103° 37' 33.521 W
13,298.0	90.80	359.10	9,456.5	4,067.8	65.1	461,038.79	718,643.65	32° 15' 55.914 N	103° 37' 33.531 W
13,393.0	88.60	359.30	9,457.0	4,162.8	63.7	461,133.77	718,642.33	32° 15' 56.854 N	103° 37' 33.539 W
13,488.0	89.50	359.10	9,458.5	4,257.8	62.4	461,228.75	718,641.00	32° 15' 57.794 N	103° 37' 33.547 W
13,583.0	90.10	357.90	9,458.9	4,352.7	59.9	461,323.72	718,638.51	32° 15' 58.734 N	103° 37' 33.569 W
13,678.0	90.70	357.80	9,458.2	4,447.6	56.4	461,418.65	718,634.95	32° 15' 59.674 N	103° 37' 33.603 W
13,773.0	91.30	357.80	9,456.5	4,542.6	52.7	461,513.56	718,631.30	32° 16' 0.613 N	103° 37' 33.638 W
13,869.0	91.20	356.70	9,454.4	4,638.4	48.1	461,609.43	718,626.70	32° 16' 1.562 N	103° 37' 33.685 W
13,935.0	91.80	356.70	9,452.7	4,704.3	44.3	461,675.29	718,622.90	32° 16' 2.214 N	103° 37' 33.724 W
13,984.0	91.80	356.70	9,451.2	4,753.2	41.5	461,724.19	718,620.08	32° 16' 2.698 N	103° 37' 33.753 W
TD @ 13984 MD, 9451.2 TVD, 91.8 Inc									

Survey Report - Geographic

Company:	COG Production LLC	Local Co-ordinate Reference:	Well #7H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	WELL @ 3669.9usft (20' KB)
Site:	Queso State	MD Reference:	WELL @ 3669.9usft (20' KB)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,955.0	8,953.3	28.1	111.6	KOP @ 8955 MD
9,295.1	9,267.1	141.1	133.0	Cross 100' Offset @ 9295.1 MD
9,739.4	9,496.4	512.9	135.0	80° @ 9739.4 MD, 9496.4 TVD
13,984.0	9,451.2	4,753.2	41.5	TD @ 13984 MD, 9451.2 TVD, 91.8 Inc

Checked By: _____ Approved By: _____ Date: _____