



January 13, 2015

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

HOBBS OGD
APR 14 2015
RECEIVED

Attn: Kanicia Castillo

RE: **Queso State No 005H**

Please find enclosed a copy of the survey from 0.00' to 8985.00' 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.

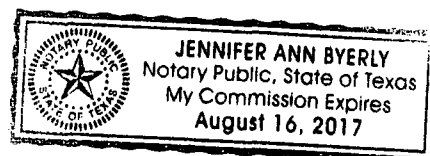
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 13 day of January A.D., 2015, by Keith Havelka.

Jennifer Ann Byerly
Notary Public, State of Texas



APR 21 2015



Company: COG Operating
Lease/Well: Queso State/No 005H

Location: S36 - T23/S - R32/E

Rig Name: Independence #205

State/County: New Mexico/Lea

Latitude: 32.25, Longitude: -103.62

GRID North is 0.38 Degrees East of True North

VS-Azi: 0.00 Degrees



Depth Reference : RKB = 26 FT

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 1/13/2015 / 15:18

VES Survey International

West Texas

(432) 563-5444

Surveyor: Cody Johnson

Queso State No 005H / API 30-025-41800

HOBBS OGD
APR 14 2015
RECEIVED

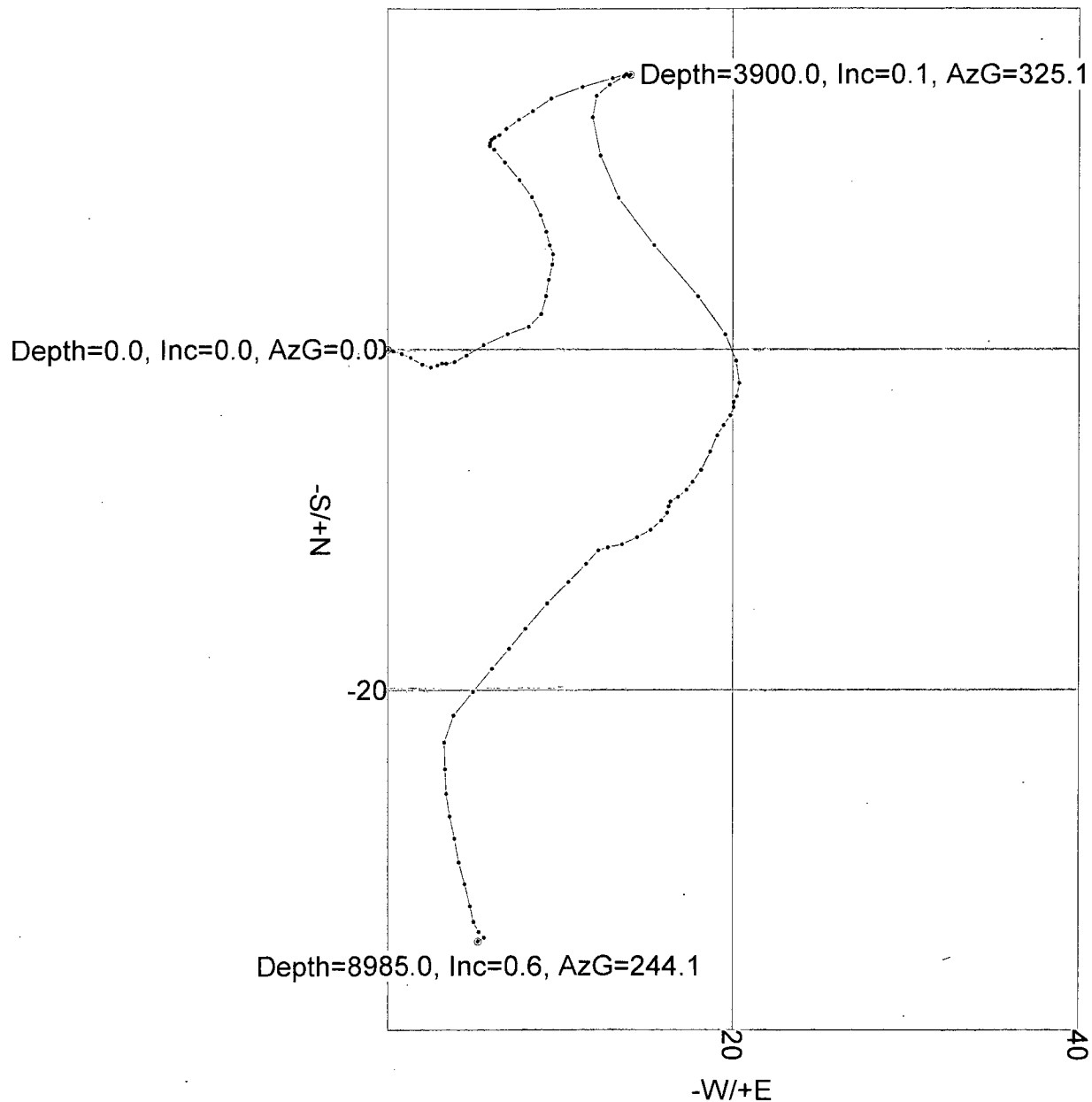
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.40	106.70	100.00	-0.10	0.33	-0.10	0.34	106.70	0.40
200.00	0.19	109.79	200.00	-0.25	0.81	-0.25	0.85	107.29	0.21
300.00	0.50	115.29	300.00	-0.50	1.36	-0.50	1.45	109.98	0.31
400.00	0.40	126.18	399.99	-0.89	2.04	-0.89	2.22	113.51	0.13
500.00	0.24	81.02	499.99	-1.06	2.53	-1.06	2.74	112.71	0.28
600.00	0.22	62.23	599.99	-0.93	2.91	-0.93	3.05	107.79	0.08
700.00	0.12	76.21	699.99	-0.82	3.19	-0.82	3.29	104.38	0.11
800.00	0.16	107.93	799.99	-0.83	3.42	-0.83	3.52	103.70	0.09
900.00	0.44	66.07	899.99	-0.72	3.91	-0.72	3.98	100.44	0.34
1000.00	0.44	56.68	999.99	-0.35	4.59	-0.35	4.60	94.38	0.07
1100.00	0.91	59.53	1099.98	0.26	5.60	0.26	5.60	87.30	0.47
1200.00	0.85	70.78	1199.97	0.91	6.98	0.91	7.04	82.57	0.18
1300.00	0.64	71.22	1299.96	1.33	8.20	1.33	8.31	80.78	0.21
1400.00	0.69	19.34	1399.95	2.08	8.93	2.08	9.17	76.87	0.58
1500.00	0.56	9.16	1499.95	3.14	9.21	3.14	9.73	71.18	0.17
1600.00	0.55	9.24	1599.94	4.10	9.36	4.10	10.22	66.37	0.01
1700.00	0.51	18.74	1699.94	4.99	9.58	4.99	10.80	62.50	0.10
1800.00	0.25	329.47	1799.94	5.59	9.61	5.59	11.12	59.80	0.39

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	0.38	346.25	1899.93	6.11	9.42	6.11	11.23	57.05	0.16
2000.00	0.57	345.55	1999.93	6.91	9.22	6.91	11.52	53.14	0.19
2100.00	0.62	336.82	2099.92	7.89	8.88	7.89	11.88	48.40	0.10
2200.00	0.70	333.29	2199.92	8.93	8.39	8.93	12.26	43.22	0.10
2300.00	0.74	314.83	2299.91	9.94	7.66	9.94	12.55	37.62	0.23
2400.00	0.82	326.17	2399.90	10.98	6.81	10.98	12.92	31.78	0.17
2500.00	0.29	305.49	2499.90	11.72	6.20	11.72	13.26	27.88	0.55
2600.00	0.10	326.73	2599.90	11.94	5.95	11.94	13.34	26.48	0.20
2700.00	0.13	28.06	2699.90	12.12	5.96	12.12	13.50	26.17	0.12
2800.00	0.13	25.20	2799.90	12.32	6.06	12.32	13.73	26.18	0.01
2900.00	0.13	74.32	2899.90	12.46	6.22	12.46	13.92	26.53	0.11
3000.00	0.21	59.58	2999.89	12.58	6.49	12.58	14.16	27.29	0.09
3100.00	0.44	41.27	3099.89	12.96	6.90	12.96	14.68	28.03	0.25
3200.00	0.61	63.33	3199.89	13.49	7.63	13.49	15.49	29.49	0.26
3300.00	0.49	52.27	3299.88	13.99	8.44	13.99	16.33	31.10	0.16
3400.00	1.02	56.50	3399.88	14.74	9.51	14.74	17.54	32.85	0.53
3500.00	1.24	80.62	3499.86	15.40	11.32	15.40	19.12	36.33	0.52
3600.00	0.85	64.09	3599.84	15.90	13.07	15.90	20.58	39.40	0.49
3700.00	0.17	121.63	3699.84	16.15	13.86	16.15	21.28	40.64	0.78
3800.00	0.10	87.11	3799.84	16.08	14.08	16.08	21.37	41.20	0.10
3900.00	0.07	325.15	3899.84	16.13	14.13	16.13	21.45	41.23	0.15
4000.00	0.46	246.49	3999.83	16.02	13.73	16.02	21.10	40.61	0.45
4100.00	0.65	234.25	4099.83	15.53	12.91	15.53	20.19	39.74	0.22
4200.00	0.51	223.39	4199.82	14.88	12.15	14.88	19.20	39.23	0.18
4300.00	1.07	175.31	4299.82	13.63	11.92	13.63	18.10	41.18	0.82
4400.00	1.58	163.96	4399.79	11.37	12.38	11.37	16.81	47.42	0.57
4500.00	1.53	150.28	4499.75	8.89	13.42	8.89	16.10	56.48	0.37
4600.00	2.45	139.33	4599.69	6.11	15.47	6.11	16.63	68.46	0.99
4700.00	2.04	140.66	4699.61	3.11	18.00	3.11	18.26	80.20	0.41
4800.00	1.10	152.14	4799.58	0.88	19.57	0.88	19.59	87.41	0.99
4900.00	0.85	166.45	4899.56	-0.68	20.19	-0.68	20.20	91.93	0.35
5000.00	0.67	178.60	4999.55	-1.98	20.38	-1.98	20.48	95.55	0.24
5100.00	0.30	217.20	5099.55	-2.77	20.24	-2.77	20.43	97.78	0.47
5200.00	0.14	191.84	5199.55	-3.09	20.06	-3.09	20.29	98.76	0.18
5300.00	0.23	174.10	5299.55	-3.40	20.05	-3.40	20.34	99.63	0.10
5400.00	0.40	216.84	5399.55	-3.88	19.86	-3.88	20.24	101.05	0.28
5500.00	0.39	212.17	5499.54	-4.45	19.47	-4.45	19.97	102.88	0.03
5600.00	0.42	211.36	5599.54	-5.05	19.10	-5.05	19.75	104.83	0.03
5700.00	0.77	198.03	5699.54	-6.01	18.70	-6.01	19.64	107.81	0.37

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	0.61	216.95	5799.53	-7.07	18.17	-7.07	19.50	111.27	0.27
5900.00	0.37	210.99	5899.52	-7.78	17.68	-7.78	19.31	113.76	0.25
6000.00	0.30	223.52	5999.52	-8.25	17.33	-8.25	19.19	115.47	0.10
6100.00	0.41	234.57	6099.52	-8.65	16.85	-8.65	18.94	117.18	0.13
6200.00	0.18	245.54	6199.52	-8.93	16.41	-8.93	18.68	118.54	0.23
6300.00	0.26	168.09	6299.52	-9.21	16.31	-9.21	18.74	119.46	0.28
6400.00	0.23	220.69	6399.52	-9.59	16.23	-9.59	18.85	120.58	0.22
6500.00	0.42	213.16	6499.52	-10.05	15.89	-10.05	18.80	122.32	0.19
6600.00	0.54	240.45	6599.51	-10.60	15.28	-10.60	18.59	124.74	0.25
6700.00	0.48	240.01	6699.51	-11.04	14.51	-11.04	18.23	127.27	0.06
6800.00	0.63	249.31	6799.50	-11.44	13.63	-11.44	17.80	130.00	0.18
6900.00	0.35	272.70	6899.50	-11.62	12.81	-11.62	17.29	132.21	0.34
7000.00	0.36	231.10	6999.50	-11.80	12.25	-11.80	17.01	133.93	0.26
7100.00	0.85	218.14	7099.49	-12.59	11.55	-12.59	17.08	137.47	0.50
7200.00	0.85	229.99	7199.48	-13.65	10.52	-13.65	17.23	142.37	0.18
7300.00	1.19	221.32	7299.47	-14.90	9.27	-14.90	17.55	148.11	0.37
7400.00	1.03	218.63	7399.45	-16.38	8.03	-16.38	18.24	153.90	0.16
7500.00	0.70	219.76	7499.44	-17.56	7.07	-17.56	18.93	158.06	0.33
7600.00	1.05	219.65	7599.42	-18.73	6.10	-18.73	19.70	161.97	0.35
7700.00	0.97	219.13	7699.41	-20.09	4.98	-20.09	20.70	166.08	0.08
7800.00	1.08	218.19	7799.39	-21.49	3.86	-21.49	21.83	169.81	0.11
7900.00	0.98	177.92	7899.38	-23.08	3.31	-23.08	23.32	171.83	0.71
8000.00	0.81	177.85	7999.37	-24.64	3.37	-24.64	24.87	172.21	0.17
8100.00	0.87	177.15	8099.36	-26.10	3.43	-26.10	26.33	172.51	0.06
8200.00	0.68	163.82	8199.35	-27.43	3.64	-27.43	27.67	172.45	0.26
8300.00	0.87	171.24	8299.34	-28.75	3.92	-28.75	29.01	172.24	0.22
8400.00	0.75	168.66	8399.33	-30.14	4.16	-30.14	30.43	172.14	0.12
8500.00	0.77	161.90	8499.32	-31.43	4.50	-31.43	31.75	171.85	0.09
8600.00	0.77	170.79	8599.31	-32.73	4.82	-32.73	33.08	171.63	0.12
8700.00	0.32	162.42	8699.30	-33.66	5.01	-33.66	34.03	171.54	0.45
8800.00	0.45	143.74	8799.30	-34.25	5.33	-34.25	34.66	171.16	0.18
8900.00	0.08	108.25	8899.30	-34.59	5.63	-34.59	35.04	170.76	0.39
8985.00	0.62	244.13	8984.30	-34.81	5.27	-34.81	35.21	171.39	0.81



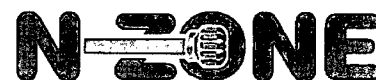
VES Survey International
West Texas
(432) 563-5444
Surveyor: Cody Johnson
Queso State No 005H / API 30-025-41800



VES Survey Date: 12/27/2014



Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Queso State Well No. 5H
Project:	Lea County, New Mexico	TVD Reference:	RKB=3643.7+26 @ 3669.70usft ()
Site:	Queso State	MD Reference:	RKB=3643.7+26 @ 3669.70usft ()
Well:	Queso State Well No. 5H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Project	Lea County, New Mexico		
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:	457,191.00 usft	Latitude:	32.25493998
From:	Map	Easting:	719,477.50 usft	Longitude:	-103.62336572
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.38 °

Well	Queso State Well No. 5H					
Well Position	+N/-S	0.00 usft	Northing:	457,192.30 usft	Latitude:	32.25494173
	+E/-W	0.00 usft	Easting:	719,577.40 usft	Longitude:	-103.62304256
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,643.70 usft	

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/22/2014	7.19	60.12	48,284

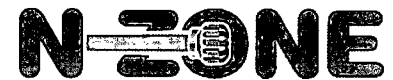
Design	Surveys Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	1.84	

Survey Program	Date	1/6/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	8,985.00	Gyro (Original Hole)	NS-GYRO-MS	North sensing gyrocompassing m/s
9,158.00	14,134.00	MWD TIP=8985 MD (Original Hole)	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
0.00	0.00	0.00	0.00	0.00	0.00	457,192.30	719,577.40	32.25494173	-103.62304256
100.00	0.40	106.70	100.00	-0.10	0.33	457,192.20	719,577.73	32.25494145	-103.62304148
Gyro									
200.00	0.19	109.79	200.00	-0.26	0.82	457,192.04	719,578.22	32.25494101	-103.62303990
300.00	0.50	115.29	300.00	-0.50	1.38	457,191.80	719,578.77	32.25494034	-103.62303812
400.00	0.40	126.18	399.99	-0.89	2.05	457,191.41	719,579.45	32.25493924	-103.62303594
500.00	0.24	81.02	499.99	-1.07	2.54	457,191.24	719,579.94	32.25493876	-103.62303436
600.00	0.22	62.23	599.99	-0.94	2.92	457,191.36	719,580.31	32.25493909	-103.62303314
700.00	0.12	76.21	699.99	-0.83	3.19	457,191.47	719,580.58	32.25493940	-103.62303226
800.00	0.16	107.93	799.99	-0.85	3.42	457,191.45	719,580.82	32.25493934	-103.62303150
900.00	0.44	66.07	899.99	-0.73	3.91	457,191.57	719,581.30	32.25493965	-103.62302994



Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Queso State Well No. 5H
Project:	Lea County, New Mexico	TVD Reference:	RKB=3643.7+26 @ 3669.70usft ()
Site:	Queso State	MD Reference:	RKB=3643.7+26 @ 3669.70usft ()
Well:	Queso State Well No. 5H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,000.00	0.44	56.68	999.99	-0.37	4.58	457,191.93	719,581.97	32.25494064	-103.62302776
1,100.00	0.91	59.53	1,099.98	0.25	5.58	457,192.55	719,582.98	32.25494231	-103.62302449
1,200.00	0.85	70.78	1,199.97	0.89	6.97	457,193.19	719,584.36	32.25494406	-103.62302000
1,300.00	0.64	71.22	1,299.96	1.32	8.20	457,193.62	719,585.59	32.25494521	-103.62301601
1,400.00	0.69	19.34	1,399.95	2.07	8.93	457,194.37	719,586.32	32.25494725	-103.62301364
1,500.00	0.56	9.16	1,499.95	3.12	9.20	457,195.42	719,586.60	32.25495013	-103.62301272
1,600.00	0.55	9.24	1,599.94	4.07	9.36	457,196.37	719,586.75	32.25495276	-103.62301220
1,700.00	0.51	18.74	1,699.94	4.97	9.58	457,197.27	719,586.97	32.25495521	-103.62301147
1,800.00	0.25	329.47	1,799.94	5.58	9.61	457,197.88	719,587.01	32.25495689	-103.62301135
1,900.00	0.38	346.25	1,899.93	6.09	9.42	457,198.39	719,586.82	32.25495829	-103.62301196
2,000.00	0.57	345.55	1,999.93	6.89	9.22	457,199.19	719,586.61	32.25496051	-103.62301260
2,100.00	0.62	336.82	2,099.92	7.87	8.88	457,200.17	719,586.28	32.25496320	-103.62301366
2,200.00	0.70	333.29	2,199.92	8.91	8.39	457,201.21	719,585.79	32.25496608	-103.62301522
2,300.00	0.74	314.83	2,299.91	9.91	7.66	457,202.21	719,585.06	32.25496884	-103.62301757
2,400.00	0.82	326.17	2,399.90	10.96	6.80	457,203.26	719,584.20	32.25497174	-103.62302031
2,500.00	0.29	305.49	2,499.90	11.70	6.20	457,204.00	719,583.60	32.25497379	-103.62302225
2,600.00	0.10	326.73	2,599.90	11.92	5.95	457,204.22	719,583.34	32.25497440	-103.62302307
2,700.00	0.13	28.06	2,699.90	12.10	5.95	457,204.40	719,583.35	32.25497488	-103.62302305
2,800.00	0.13	25.20	2,799.90	12.30	6.05	457,204.60	719,583.45	32.25497543	-103.62302272
2,900.00	0.13	74.32	2,899.90	12.43	6.21	457,204.73	719,583.61	32.25497580	-103.62302220
3,000.00	0.21	59.58	2,999.89	12.56	6.48	457,204.86	719,583.87	32.25497613	-103.62302134
3,100.00	0.44	41.27	3,099.89	12.94	6.89	457,205.24	719,584.29	32.25497717	-103.62302000
3,200.00	0.61	63.33	3,199.89	13.47	7.62	457,205.77	719,585.01	32.25497861	-103.62301763
3,300.00	0.49	52.27	3,299.88	13.97	8.43	457,206.27	719,585.83	32.25497997	-103.62301499
3,400.00	1.02	56.50	3,399.88	14.72	9.51	457,207.02	719,586.91	32.25498202	-103.62301147
3,500.00	1.24	80.62	3,499.86	15.39	11.32	457,207.69	719,588.72	32.25498382	-103.62300561
3,600.00	0.85	64.09	3,599.84	15.89	13.06	457,208.19	719,590.45	32.25498517	-103.62299998
3,700.00	0.17	121.63	3,699.84	16.13	13.85	457,208.43	719,591.25	32.25498583	-103.62299741
3,800.00	0.10	87.11	3,799.84	16.06	14.06	457,208.36	719,591.46	32.25498562	-103.62299672
3,900.00	0.07	325.15	3,899.84	16.11	14.12	457,208.42	719,591.51	32.25498577	-103.62299655
4,000.00	0.46	246.49	3,999.83	16.00	13.71	457,208.31	719,591.11	32.25498548	-103.62299786
4,100.00	0.65	234.25	4,099.83	15.51	12.88	457,207.81	719,590.28	32.25498414	-103.62300055
4,200.00	0.51	223.39	4,199.82	14.86	12.12	457,207.16	719,589.51	32.25498236	-103.62300304
4,300.00	1.07	175.31	4,299.82	13.60	11.89	457,205.90	719,589.29	32.25497891	-103.62300381
4,400.00	1.58	163.96	4,399.79	11.35	12.35	457,203.65	719,589.74	32.25497270	-103.62300238
4,500.00	1.53	150.28	4,499.75	8.86	13.39	457,201.16	719,590.79	32.25496586	-103.62299906
4,600.00	2.45	139.33	4,599.69	6.08	15.44	457,198.38	719,592.84	32.25495818	-103.62299247
4,700.00	2.04	140.66	4,699.61	3.09	17.97	457,195.39	719,595.36	32.25494989	-103.62298438
4,800.00	1.10	152.14	4,799.58	0.86	19.54	457,193.16	719,596.94	32.25494374	-103.62297933
4,900.00	0.85	166.45	4,899.56	-0.71	20.16	457,191.59	719,597.56	32.25493942	-103.62297735
5,000.00	0.67	178.60	4,999.55	-2.01	20.35	457,190.29	719,597.75	32.25493583	-103.62297677
5,100.00	0.30	217.20	5,099.55	-2.81	20.21	457,189.49	719,597.60	32.25493365	-103.62297725
5,200.00	0.14	191.84	5,199.55	-3.14	20.03	457,189.16	719,597.42	32.25493275	-103.62297785
5,300.00	0.23	174.10	5,299.55	-3.45	20.02	457,188.85	719,597.42	32.25493187	-103.62297787
5,400.00	0.40	216.84	5,399.55	-3.93	19.83	457,188.37	719,597.23	32.25493056	-103.62297849
5,500.00	0.39	212.17	5,499.54	-4.50	19.44	457,187.80	719,596.84	32.25492901	-103.62297977
5,600.00	0.42	211.36	5,599.54	-5.10	19.07	457,187.20	719,596.47	32.25492736	-103.62298098
5,700.00	0.77	198.03	5,699.54	-6.05	18.67	457,186.25	719,596.07	32.25492475	-103.62298229
5,800.00	0.61	216.95	5,799.53	-7.12	18.14	457,185.18	719,595.54	32.25492184	-103.62298403
5,900.00	0.37	210.99	5,899.52	-7.82	17.66	457,184.48	719,595.05	32.25491992	-103.62298561
6,000.00	0.30	223.52	5,999.52	-8.29	17.31	457,184.01	719,594.71	32.25491864	-103.62298674
6,100.00	0.41	234.57	6,099.52	-8.68	16.84	457,183.62	719,594.23	32.25491756	-103.62298828
6,200.00	0.18	245.54	6,199.52	-8.96	16.40	457,183.34	719,593.80	32.25491681	-103.62298969
6,300.00	0.26	168.09	6,299.52	-9.24	16.31	457,183.06	719,593.70	32.25491603	-103.62299001
6,400.00	0.23	220.69	6,399.52	-9.62	16.22	457,182.68	719,593.62	32.25491500	-103.62299029



Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, New Mexico
Site: Queso State
Well: Queso State Well No. 5H
Wellbore: Original Hole
Design: Surveys Original Hole

Local Co-ordinate Reference: Well Queso State Well No. 5H
TVD Reference: RKB=3643.7+26 @ 3669.70usft ()
MD Reference: RKB=3643.7+26 @ 3669.70usft ()
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Dbase Nov0914

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,500.00	0.42	213.16	6,499.52	-10.08	15.89	457,182.22	719,593.29	32.25491374	-103.62299137
6,600.00	0.54	240.45	6,599.51	-10.62	15.28	457,181.68	719,592.68	32.25491227	-103.62299335
6,700.00	0.48	240.01	6,699.51	-11.06	14.51	457,181.24	719,591.91	32.25491107	-103.62299586
6,800.00	0.63	249.31	6,799.50	-11.46	13.63	457,180.84	719,591.03	32.25490998	-103.62299871
6,900.00	0.35	272.70	6,899.50	-11.64	12.81	457,180.66	719,590.21	32.25490950	-103.62300136
7,000.00	0.36	231.10	6,999.50	-11.82	12.26	457,180.48	719,589.66	32.25490901	-103.62300314
7,100.00	0.85	218.14	7,099.49	-12.61	11.56	457,179.69	719,588.96	32.25490687	-103.62300543
7,200.00	0.85	229.99	7,199.48	-13.67	10.53	457,178.63	719,587.93	32.25490398	-103.62300878
7,300.00	1.19	221.32	7,299.47	-14.92	9.28	457,177.38	719,586.68	32.25490055	-103.62301286
7,400.00	1.03	218.63	7,399.45	-16.40	8.03	457,175.90	719,585.43	32.25489650	-103.62301692
7,500.00	0.70	219.76	7,499.44	-17.58	7.08	457,174.72	719,584.48	32.25489329	-103.62302003
7,600.00	1.05	219.65	7,599.42	-18.75	6.11	457,173.55	719,583.50	32.25489008	-103.62302321
7,700.00	0.97	219.13	7,699.41	-20.11	4.99	457,172.19	719,582.38	32.25488636	-103.62302685
7,800.00	1.08	218.19	7,799.39	-21.51	3.87	457,170.79	719,581.27	32.25488254	-103.62303050
7,900.00	0.98	177.92	7,899.38	-23.11	3.32	457,169.19	719,580.72	32.25487816	-103.62303232
8,000.00	0.81	177.85	7,999.37	-24.67	3.38	457,167.63	719,580.77	32.25487387	-103.62303216
8,100.00	0.87	177.15	8,099.36	-26.13	3.44	457,166.17	719,580.84	32.25486984	-103.62303199
8,200.00	0.68	163.82	8,199.35	-27.46	3.64	457,164.84	719,581.04	32.25486619	-103.62303136
8,300.00	0.87	171.24	8,299.34	-28.78	3.93	457,163.52	719,581.32	32.25486255	-103.62303048
8,400.00	0.75	168.66	8,399.33	-30.17	4.17	457,162.13	719,581.57	32.25485872	-103.62302972
8,500.00	0.77	161.90	8,499.32	-31.45	4.51	457,160.85	719,581.90	32.25485520	-103.62302865
8,600.00	0.77	170.79	8,599.31	-32.75	4.82	457,159.55	719,582.22	32.25485161	-103.62302766
8,700.00	0.32	162.42	8,699.30	-33.68	5.02	457,158.62	719,582.41	32.25484905	-103.62302706
8,800.00	0.45	143.74	8,799.30	-34.27	5.33	457,158.03	719,582.73	32.25484745	-103.62302604
8,900.00	0.08	108.25	8,899.30	-34.60	5.63	457,157.70	719,583.03	32.25484651	-103.62302509
8,985.00	0.62	244.13	8,984.30	-34.82	5.27	457,157.48	719,582.67	32.25484591	-103.62302625
9,158.00	1.80	236.00	9,157.26	-36.75	2.18	457,155.55	719,579.57	32.25484067	-103.62303630
MWD surveys									
9,252.00	1.20	245.90	9,251.23	-37.98	0.06	457,154.32	719,577.45	32.25483734	-103.62304319
9,284.00	3.30	344.00	9,283.21	-37.23	-0.50	457,155.07	719,576.89	32.25483940	-103.62304499
9,315.00	6.30	12.10	9,314.10	-34.71	-0.39	457,157.59	719,577.00	32.25484633	-103.62304457
9,346.00	10.20	12.40	9,344.77	-30.36	0.55	457,161.94	719,577.95	32.25485826	-103.62304142
9,378.00	15.00	8.90	9,375.99	-23.50	1.80	457,168.80	719,579.20	32.25487710	-103.62303723
9,409.00	19.40	7.90	9,405.60	-14.43	3.13	457,177.87	719,580.53	32.25490200	-103.62303274
9,440.00	23.40	7.20	9,434.45	-3.22	4.61	457,189.08	719,582.01	32.25493279	-103.62302771
9,472.00	25.70	6.10	9,463.56	9.98	6.15	457,202.28	719,583.54	32.25496906	-103.62302247
9,503.00	28.20	4.00	9,491.19	23.98	7.37	457,216.28	719,584.77	32.25500751	-103.62301820
9,535.00	28.90	2.20	9,519.30	39.25	8.19	457,231.55	719,585.59	32.25504946	-103.62301521
9,566.00	30.40	0.50	9,546.24	54.58	8.55	457,246.88	719,585.95	32.25509159	-103.62301373
9,597.00	34.00	0.10	9,572.47	71.09	8.63	457,263.39	719,586.03	32.25513699	-103.62301311
9,629.00	36.20	359.10	9,598.65	89.49	8.50	457,281.79	719,585.90	32.25518757	-103.62301314
9,660.00	40.50	0.10	9,622.96	108.72	8.38	457,301.02	719,585.77	32.25524042	-103.62301314
9,692.00	42.10	0.10	9,646.99	129.84	8.41	457,322.14	719,585.81	32.25529848	-103.62301257
9,723.00	45.20	359.80	9,669.42	151.23	8.39	457,343.53	719,585.79	32.25535729	-103.62301218
9,754.00	46.80	359.80	9,690.96	173.53	8.31	457,365.83	719,585.71	32.25541858	-103.62301195
9,786.00	51.00	359.80	9,711.99	197.64	8.23	457,389.94	719,585.63	32.25548485	-103.62301171
9,817.00	54.20	359.40	9,730.81	222.26	8.06	457,414.56	719,585.45	32.25555254	-103.62301174
9,848.00	59.50	359.40	9,747.76	248.21	7.78	457,440.51	719,585.18	32.25562386	-103.62301207
9,880.00	64.00	0.50	9,762.90	276.39	7.77	457,468.69	719,585.16	32.25570132	-103.62301152
9,911.00	65.50	0.80	9,776.13	304.42	8.08	457,496.72	719,585.48	32.25577838	-103.62300989
9,942.00	66.00	0.50	9,788.86	332.69	8.40	457,524.99	719,585.80	32.25585606	-103.62300825
9,974.00	69.70	0.10	9,800.92	362.32	8.56	457,554.62	719,585.95	32.25593751	-103.62300712
9,990.00	72.10	0.10	9,806.16	377.44	8.59	457,569.74	719,585.98	32.25597906	-103.62300671
10,021.00	76.20	0.50	9,814.62	407.25	8.74	457,599.55	719,586.14	32.25606101	-103.62300556
10,053.00	78.10	0.50	9,821.74	438.45	9.01	457,630.75	719,586.41	32.25614676	-103.62300402



Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Queso State Well No. 5H
Project:	Lea County, New Mexico	TVD Reference:	RKB=3643.7+26 @ 3669.70usft ()
Site:	Queso State	MD Reference:	RKB=3643.7+26 @ 3669.70usft ()
Well:	Queso State Well No. 5H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,084.00	82.20	1.20	9,827.04	468.98	9.47	457,661.28	719,586.86	32.25623068	-103.62300189
10,116.00	85.90	1.90	9,830.36	500.79	10.33	457,693.09	719,587.73	32.25631810	-103.62299843
10,210.00	90.80	1.20	9,833.06	594.69	12.87	457,786.99	719,590.27	32.25657616	-103.62298820
10,304.00	92.20	0.80	9,830.60	688.64	14.51	457,880.94	719,591.91	32.25683438	-103.62298088
10,398.00	91.80	1.90	9,827.32	782.55	16.72	457,974.85	719,594.12	32.25709249	-103.62297171
10,492.00	89.00	2.60	9,826.66	876.47	20.41	458,068.77	719,597.81	32.25735057	-103.62295777
10,586.00	88.70	2.60	9,828.55	970.35	24.68	458,162.65	719,602.07	32.25760856	-103.62294197
10,680.00	90.10	2.20	9,829.54	1,064.26	28.61	458,256.56	719,606.01	32.25786663	-103.62292723
10,774.00	91.70	2.20	9,828.06	1,158.18	32.22	458,350.48	719,609.62	32.25812472	-103.62291355
10,869.00	88.30	2.20	9,828.06	1,253.10	35.87	458,445.40	719,613.26	32.25838555	-103.62289972
10,963.00	88.90	2.60	9,830.36	1,346.98	39.80	458,539.28	719,617.20	32.25864356	-103.62288498
11,057.00	88.90	2.60	9,832.16	1,440.87	44.07	458,633.17	719,621.46	32.25890155	-103.62286918
11,151.00	89.20	2.20	9,833.72	1,534.77	48.00	458,727.07	719,625.40	32.25915960	-103.62285444
11,245.00	87.60	1.90	9,836.34	1,628.67	51.36	458,820.97	719,628.76	32.25941765	-103.62284155
11,340.00	88.30	1.20	9,839.74	1,723.58	53.93	458,915.88	719,631.33	32.25967847	-103.62283122
11,434.00	89.00	0.80	9,841.96	1,817.54	55.57	459,009.84	719,632.97	32.25993671	-103.62282390
11,528.00	88.70	0.10	9,843.84	1,911.51	56.31	459,103.81	719,633.70	32.26019502	-103.62281950
11,621.00	90.10	359.10	9,844.82	2,004.50	55.66	459,196.80	719,633.06	32.26045064	-103.62281961
11,715.00	89.60	358.70	9,845.06	2,098.49	53.85	459,290.79	719,631.25	32.26070900	-103.62282343
11,809.00	90.80	358.40	9,844.73	2,192.45	51.48	459,384.75	719,628.87	32.26096734	-103.62282911
11,903.00	89.20	359.10	9,844.73	2,286.43	49.43	459,478.73	719,626.82	32.26122569	-103.62283374
11,998.00	88.20	0.80	9,846.89	2,381.40	49.34	459,573.70	719,626.74	32.26148675	-103.62283197
12,092.00	88.50	0.10	9,849.60	2,475.36	50.08	459,667.66	719,627.48	32.26174500	-103.62282757
12,186.00	90.60	1.50	9,850.33	2,569.34	51.39	459,761.64	719,628.79	32.26200331	-103.62282131
12,280.00	90.60	0.80	9,849.35	2,663.31	53.28	459,855.61	719,630.68	32.26226159	-103.62281320
12,376.00	91.10	1.50	9,847.93	2,759.28	55.21	459,951.58	719,632.60	32.26252535	-103.62280491
12,470.00	89.20	359.80	9,847.68	2,853.27	56.27	460,045.57	719,633.67	32.26278368	-103.62279945
12,564.00	90.10	0.50	9,848.25	2,947.26	56.52	460,139.56	719,633.91	32.26304204	-103.62279664
12,658.00	91.30	0.80	9,847.11	3,041.25	57.58	460,233.55	719,634.98	32.26330037	-103.62279118
12,752.00	91.50	359.80	9,844.81	3,135.22	58.08	460,327.52	719,635.47	32.26355866	-103.62278757
12,846.00	91.80	0.10	9,842.10	3,229.18	57.99	460,421.48	719,635.39	32.26381694	-103.62278583
12,940.00	92.00	3.30	9,838.99	3,323.07	60.78	460,515.37	719,638.18	32.26407498	-103.62277480
13,034.00	94.30	2.60	9,833.82	3,416.80	65.61	460,609.10	719,643.01	32.26433253	-103.62275717
13,128.00	94.00	2.90	9,827.02	3,510.44	70.11	460,702.74	719,647.51	32.26458985	-103.62274061
13,222.00	91.80	3.60	9,822.26	3,604.17	75.43	460,796.47	719,652.83	32.26484738	-103.62272139
13,316.00	89.40	3.60	9,821.28	3,697.97	81.33	460,890.27	719,658.73	32.26510511	-103.62270029
13,410.00	90.10	3.60	9,821.69	3,791.78	87.24	460,984.08	719,664.63	32.26536287	-103.62267918
13,505.00	91.00	3.30	9,820.78	3,886.60	92.95	461,078.90	719,670.35	32.26562341	-103.62265866
13,599.00	91.70	2.90	9,818.56	3,980.44	98.03	461,172.74	719,675.43	32.26588125	-103.62264021
13,693.00	90.40	1.90	9,816.84	4,074.34	101.97	461,266.64	719,679.37	32.26613929	-103.62262547
13,787.00	88.20	2.20	9,817.99	4,168.27	105.33	461,360.57	719,682.73	32.26639741	-103.62261258
13,881.00	88.50	1.50	9,820.69	4,262.18	108.36	461,454.48	719,685.76	32.26665549	-103.62260075
13,975.00	89.00	1.50	9,822.74	4,356.12	110.83	461,548.42	719,688.22	32.26691368	-103.62259078
14,070.00	90.80	0.10	9,822.91	4,451.11	112.15	461,643.41	719,689.55	32.26717475	-103.62258446
14,089.00	91.00	0.10	9,822.61	4,470.10	112.18	461,662.40	719,689.58	32.26722697	-103.62258394
14,134.00	91.00	0.10	9,821.83	4,515.10	112.26	461,707.40	719,689.66	32.26735064	-103.62258272

Survey projected to 14134.00 MD



Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Queso State Well No. 5H
Project:	Lea County, New Mexico	TVD Reference:	RKB=3643.7+26 @ 3669.70usft ()
Site:	Queso State	MD Reference:	RKB=3643.7+26 @ 3669.70usft ()
Well:	Queso State Well No. 5H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	Dbase Nov0914

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
100.00	100.00	-0.10	0.33	Gyro
9,158.00	9,157.26	-36.75	2.18	MWD surveys
14,134.00	9,821.83	4,515.10	112.26	Survey projected to 14134.00 MD



COG Operating LLC

Well: Queso State Well No. 5H
 Site: Queso State
 Project: Lea County, New Mexico
 Design: rev1
 Rig:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	8985.00	0.62	244.13	8984.30	-34.82	5.27	0.00	0.00	-34.64	Survey @ 8985.00 MD
2	9360.72	0.62	244.13	9360.00	-36.60	1.61	0.00	0.00	-36.53	KOP Begin 12"/100' build/turn
3	10117.76	90.56	1.86	9839.82	445.38	12.65	12.00	117.73	445.56	Begin 90.56 lateral section
4	14226.04	90.56	1.86	9800.00	4551.30	146.20	0.00	0.00	4553.65	PBHL/TD

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
100.00	100.00	0.40	106.70	-0.10	0.33	-0.09	0.35	Gyro
9157.26	9158.00	1.80	236.00	-36.75	2.18	-36.66	97.73	MWD surveys
9821.83	14134.00	91.00	0.10	4515.10	112.26	4516.37	4656.82	Survey projected to 14134.00 MD

Surface Location: RKB=3643.7+26 @ 3669.70usft ()
 US State Plane 1927 (Exact solution)
 New Mexico East 3001

Northing Easting Latitude Longitude
 457192.30 719577.40 32.25494174 -103.62304256
 Total Correction (M => G) To convert a Magnetic Direction to a Grid Direction, Add 6.81°



Azimuths to Grid North
 True North: -0.38°
 Magnetic North: 6.81°

Magnetic Field
 Strength: 48283.7nT
 Dip Angle: 60.12°
 Date: 11/22/2014
 Model: IGRF2010

