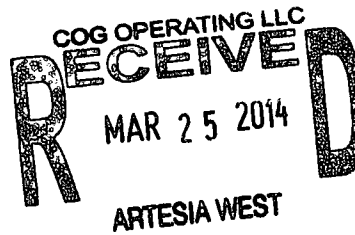


**McVAY DRILLING COMPANY**

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



Well Name and Num: Coinflip State 3H
Location: Sec 18, T20S, R30E
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>
0.74	247	1.00	5621
1.03	452	0.80	6094
0.83	720	0.50	6380
0.91	949	1.00	6854
1.60	775	1.70	7140
0.70	1092	2.10	7459
0.80	1470	1.60	7809
2.20	1978	14.20	7968
1.80	2553	44.20	8319
0.60	2644	84.10	8733
0.80	3024	90.20	9749
1.00	3216	89.40	10512
1.10	3600	89.50	11179
1.50	4070	88.50	11843
1.10	4353	92.70	12507
0.80	4671		
0.70	4959		

15-41938

NM OIL CONSERVATION
ARTESIA DISTRICT

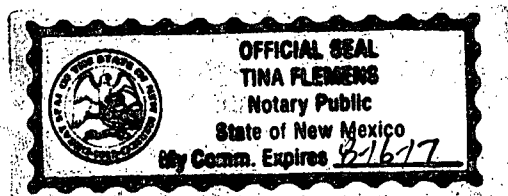
AUG 20 2014

RECEIVED

By: Hector Crank

Subscribed and sworn to before me this 24th day of March, 2014

Tina Flemens
Notary Public, Lea County, New Mexico





A GYRO TECHNOLOGIES INC. COMPANY

P.O. Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

March 28, 2014

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

Attn: Kanicia Castillo

RE: **Coinflip State Com 3H**

Please find enclosed a copy of the survey from 0.00' to 7295.00' ran on the above referenced well.

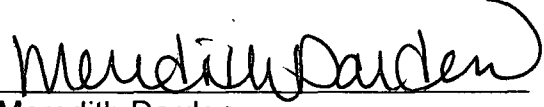
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 28th day of March, A.D., 2014, by Keith Havelka.




Meredith Darden
Notary Public, State of Texas

Company: COG Operating, LLC (Concho)

Lease/Well: Coinflip State Com/No. 003H



Rig Name: McVay #6

State/County: New Mexico/Eddy

Latitude: 32.58, Longitude: -104.02

GRID North is 0.17 Degrees East of True North

VS-Azi: 0.00 Degrees



Depth Reference : 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 3/25/2014 / 13:07

Vaughn Energy Services

Fort Worth, Texas

817-908-3586

Surveyor: Jason Wilson

Coinflip State Com No. 003H / API 30-015-41938

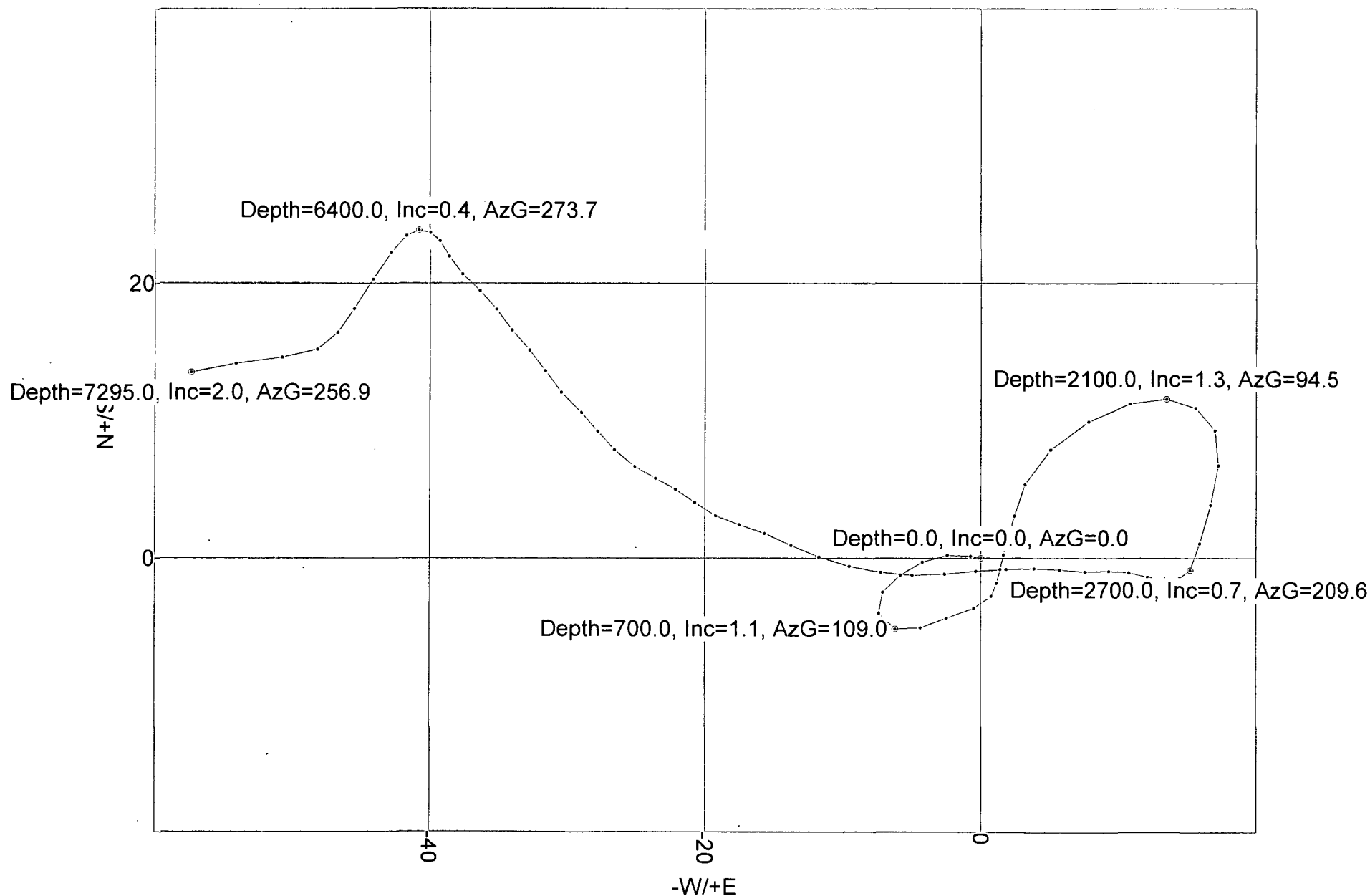
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.88	281.81	100.00	0.16	-0.75	0.16	0.76	281.81	0.88
200.00	1.07	263.19	199.98	0.20	-2.42	0.20	2.43	274.76	0.37
300.00	1.08	246.08	299.96	-0.29	-4.22	-0.29	4.23	266.03	0.32
400.00	1.05	232.31	399.95	-1.23	-5.80	-1.23	5.93	257.99	0.26
500.00	1.01	219.23	499.93	-2.48	-7.08	-2.48	7.51	250.73	0.24
600.00	1.02	161.32	599.92	-4.00	-7.36	-4.00	8.38	241.44	0.98
700.00	1.09	108.97	699.90	-5.16	-6.17	-5.16	8.04	230.13	0.93
800.00	1.14	67.36	799.89	-5.08	-4.36	-5.08	6.70	220.63	0.79
900.00	1.16	71.01	899.87	-4.37	-2.49	-4.37	5.03	209.63	0.07
1000.00	1.24	68.70	999.84	-3.65	-0.52	-3.65	3.68	188.15	0.10
1100.00	0.63	30.43	1099.83	-2.78	0.76	-2.78	2.88	164.63	0.84
1200.00	0.58	12.50	1199.83	-1.81	1.15	-1.81	2.15	147.60	0.19
1300.00	0.59	15.74	1299.82	-0.82	1.40	-0.82	1.62	120.36	0.04
1400.00	0.65	10.75	1399.81	0.24	1.65	0.24	1.67	81.84	0.08
1500.00	0.79	19.81	1499.81	1.45	1.99	1.45	2.46	53.98	0.18
1600.00	1.14	12.44	1599.79	3.07	2.44	3.07	3.92	38.46	0.37
1700.00	1.67	22.93	1699.76	5.39	3.22	5.39	6.28	30.88	0.59
1800.00	1.98	48.12	1799.71	7.88	5.08	7.88	9.38	32.78	0.85

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	1.97	58.43	1899.65	9.94	7.82	9.94	12.65	38.22	0.35
2000.00	1.84	75.01	1999.60	11.25	10.84	11.25	15.62	43.93	0.56
2100.00	1.26	94.51	2099.56	11.58	13.49	11.58	17.77	49.36	0.77
2200.00	1.32	118.95	2199.54	10.93	15.59	10.93	19.04	54.96	0.55
2300.00	1.31	160.38	2299.51	9.30	16.98	9.30	19.36	61.30	0.93
2400.00	1.70	185.81	2399.48	6.75	17.22	6.75	18.49	68.60	0.76
2500.00	1.68	196.25	2499.44	3.87	16.66	3.87	17.10	76.93	0.31
2600.00	1.65	194.81	2599.39	1.07	15.88	1.07	15.92	86.16	0.05
2700.00	0.73	209.64	2699.37	-0.88	15.20	-0.88	15.22	93.31	0.97
2800.00	0.56	265.11	2799.37	-1.47	14.40	-1.47	14.47	95.83	0.62
2900.00	0.66	271.33	2899.36	-1.50	13.34	-1.50	13.42	96.41	0.12
3000.00	0.75	279.75	2999.35	-1.37	12.11	-1.37	12.19	96.47	0.14
3100.00	0.82	287.35	3099.34	-1.05	10.78	-1.05	10.83	95.56	0.12
3200.00	0.92	262.78	3199.33	-0.94	9.31	-0.94	9.35	95.75	0.38
3300.00	1.07	271.75	3299.32	-1.01	7.58	-1.01	7.64	97.59	0.22
3400.00	1.05	278.27	3399.30	-0.85	5.73	-0.85	5.79	98.42	0.12
3500.00	1.09	266.98	3499.28	-0.77	3.88	-0.77	3.95	101.19	0.21
3600.00	1.25	269.74	3599.26	-0.82	1.84	-0.82	2.01	114.06	0.17
3700.00	1.28	263.42	3699.24	-0.95	-0.36	-0.95	1.02	200.60	0.14
3800.00	1.32	265.95	3799.21	-1.16	-2.62	-1.16	2.86	246.03	0.07
3900.00	1.35	269.51	3899.19	-1.26	-4.94	-1.26	5.10	255.75	0.09
4000.00	1.29	282.06	3999.16	-1.03	-7.21	-1.03	7.29	261.87	0.29
4100.00	1.39	280.25	4099.13	-0.58	-9.50	-0.58	9.52	266.50	0.11
4200.00	1.28	294.26	4199.11	0.09	-11.71	0.09	11.71	270.46	0.34
4300.00	1.23	290.20	4299.08	0.92	-13.74	0.92	13.77	273.84	0.10
4400.00	1.23	298.81	4399.06	1.81	-15.68	1.81	15.79	276.58	0.18
4500.00	1.02	277.01	4499.04	2.43	-17.51	2.43	17.68	277.91	0.47
4600.00	1.12	303.30	4599.02	3.08	-19.21	3.08	19.46	279.11	0.50
4700.00	0.98	302.80	4699.01	4.08	-20.74	4.08	21.14	281.12	0.14
4800.00	0.94	305.96	4798.99	5.02	-22.12	5.02	22.68	282.78	0.07
4900.00	0.96	292.31	4898.98	5.82	-23.56	5.82	24.27	283.87	0.23
5000.00	1.03	306.52	4998.96	6.67	-25.06	6.67	25.94	284.91	0.26
5100.00	1.16	311.93	5098.95	7.89	-26.54	7.89	27.69	286.55	0.16
5200.00	0.92	326.13	5198.93	9.23	-27.74	9.23	29.24	288.40	0.35
5300.00	1.15	313.68	5298.91	10.59	-28.92	10.59	30.80	290.11	0.32
5400.00	1.24	317.05	5398.89	12.08	-30.38	12.08	32.70	291.68	0.11
5500.00	1.03	329.78	5498.87	13.64	-31.57	13.64	34.39	293.37	0.33
5600.00	1.15	315.56	5598.85	15.14	-32.73	15.14	36.06	294.82	0.30
5700.00	1.09	321.68	5698.83	16.60	-34.02	16.60	37.85	296.01	0.13

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	1.06	324.84	5798.82	18.11	-35.14	18.11	39.53	297.26	0.07
5900.00	1.03	312.10	5898.80	19.47	-36.34	19.47	41.23	298.17	0.23
6000.00	0.96	315.21	5998.79	20.67	-37.60	20.67	42.91	298.79	0.08
6100.00	0.92	331.85	6098.77	21.97	-38.57	21.97	44.39	299.66	0.28
6200.00	0.57	330.70	6198.76	23.11	-39.19	23.11	45.50	300.52	0.34
6300.00	0.61	286.65	6298.76	23.69	-39.95	23.69	46.45	300.68	0.44
6400.00	0.39	273.66	6398.75	23.87	-40.80	23.87	47.27	300.33	0.24
6500.00	0.79	232.04	6498.75	23.47	-41.68	23.47	47.83	299.38	0.56
6600.00	1.14	218.20	6598.74	22.26	-42.84	22.26	48.28	297.45	0.42
6700.00	1.57	210.97	6698.71	20.30	-44.16	20.30	48.61	294.69	0.46
6800.00	1.33	213.96	6798.67	18.16	-45.52	18.16	49.01	291.75	0.25
6900.00	1.10	215.67	6898.65	16.42	-46.72	16.42	49.53	289.37	0.23
7000.00	1.20	244.96	6998.63	15.20	-48.23	15.20	50.57	287.49	0.59
7100.00	1.88	264.94	7098.60	14.61	-50.81	14.61	52.87	286.04	0.85
7200.00	1.99	260.26	7198.54	14.17	-54.16	14.17	55.98	284.67	0.20
7295.00	1.98	256.88	7293.48	13.52	-57.38	13.52	58.95	283.26	0.12



Vaughn Energy Services
Fort Worth, Texas
817-908-3586
Surveyor: Jason Wilson
Coinflip State Com No. 003H / API 30-015-41938



VES Survey Date: 03/16/2014

Archer Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 3H
Project:	Eddy County, NM	TVD Reference:	3310'GL+19.5 @ 3329.00usft (Planning)
Site:	Coinflip State 3H	MD Reference:	3310'GL+19.5 @ 3329.00usft (Planning)
Well:	3H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000 MULTI

Project	Eddy 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	Coinflip State 3H			
Site Position:		Northing:	573,739.80 usft	Latitude: 32° 34' 36.91 N
From:	Map	Easting:	597,368.20 usft	Longitude: 104° 1' 2.07 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence: 0.17 °

Well	3H			
Well Position	+N/-S	0.00 usft	Northing:	573,739.80 usft
	+E/-W	0.00 usft	Easting:	597,368.20 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level: 3,310.00 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	03/01/14	7.49	60.37	48,510

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	98.82	

Survey Program	Date	03/21/14			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	7,295.00	Survey #2 (Lateral)	Gyroscope	Gyroscope	
7,495.00	12,584.00	Survey #3 (Lateral)	MWD	Std MWD	
12,650.00	12,650.00	Survey #4 (Lateral)	Project	Projection	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.88	281.81	100.00	0.16	-0.75	-0.77	0.88	0.88	0.00	
200.00	1.07	263.19	199.98	0.20	-2.43	-2.43	0.37	0.19	-18.62	
300.00	1.08	246.08	299.96	-0.29	-4.22	-4.12	0.32	0.01	-17.11	
400.00	1.05	232.31	399.95	-1.23	-5.81	-5.55	0.26	-0.03	-13.77	
500.00	1.01	219.23	499.93	-2.47	-7.09	-6.62	0.24	-0.04	-13.08	
600.00	1.02	161.32	599.92	-4.00	-7.36	-6.66	0.98	0.01	-57.91	
700.00	1.09	108.97	699.90	-5.15	-6.18	-5.31	0.93	0.07	-52.35	
800.00	1.14	67.36	799.89	-5.08	-4.36	-3.53	0.79	0.05	-41.61	

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 3H
Project:	Eddy County, NM	TVD Reference:	3310'GL+19.5 @ 3329.00usft (Planning)
Site:	Coinflip State 3H	MD Reference:	3310'GL+19.5 @ 3329.00usft (Planning)
Well:	3H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000 MULTI

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
900.00	1.16	71.01	899.87	-4.37	-2.48	-1.78	0.08	0.02	3.65	
1,000.00	1.24	68.70	999.84	-3.64	-0.52	0.05	0.09	0.08	-2.31	
1,100.00	0.63	30.43	1,099.83	-2.78	0.77	1.19	0.84	-0.61	-38.27	
1,200.00	0.58	12.50	1,199.83	-1.81	1.16	1.42	0.19	-0.05	-17.93	
1,300.00	0.59	15.74	1,299.82	-0.82	1.41	1.52	0.03	0.01	3.24	
1,400.00	0.65	10.75	1,399.81	0.23	1.65	1.60	0.08	0.06	-4.99	
1,500.00	0.79	19.81	1,499.81	1.44	1.99	1.75	0.18	0.14	9.06	
1,600.00	1.14	12.44	1,599.79	3.06	2.44	1.94	0.37	0.35	-7.37	
1,700.00	1.67	22.93	1,699.76	5.37	3.22	2.36	0.59	0.53	10.49	
1,800.00	1.98	48.12	1,799.71	7.87	5.07	3.81	0.85	0.31	25.19	
1,900.00	1.97	58.43	1,899.65	9.92	7.83	6.21	0.35	-0.01	10.31	
2,000.00	1.84	75.01	1,999.60	11.24	10.84	8.99	0.56	-0.13	16.58	
2,100.00	1.26	94.51	2,099.56	11.57	13.49	11.55	0.78	-0.58	19.50	
2,200.00	1.32	118.95	2,199.54	10.92	15.59	13.73	0.55	0.06	24.44	
2,300.00	1.31	160.38	2,299.51	9.29	16.98	15.36	0.93	-0.01	41.43	
2,400.00	1.70	185.81	2,399.48	6.73	17.22	15.98	0.76	0.39	25.43	
2,500.00	1.68	196.25	2,499.44	3.85	16.66	15.87	0.31	-0.02	10.44	
2,600.00	1.65	194.81	2,599.40	1.05	15.88	15.53	0.05	-0.03	-1.44	
2,700.00	0.73	209.64	2,699.37	-0.89	15.20	15.15	0.96	-0.92	14.83	
2,800.00	0.56	265.11	2,799.37	-1.49	14.39	14.45	0.62	-0.17	55.47	
2,900.00	0.66	271.33	2,899.36	-1.52	13.33	13.41	0.12	0.10	6.22	
3,000.00	0.75	279.75	2,999.35	-1.39	12.11	12.18	0.14	0.09	8.42	
3,100.00	0.82	287.35	3,099.34	-1.07	10.78	10.82	0.13	0.07	7.60	
3,200.00	0.92	262.78	3,199.33	-0.96	9.30	9.34	0.38	0.10	-24.57	
3,300.00	1.07	271.75	3,299.32	-1.03	7.57	7.64	0.22	0.15	8.97	
3,400.00	1.05	278.27	3,399.30	-0.87	5.73	5.80	0.12	-0.02	6.52	
3,500.00	1.09	266.98	3,499.28	-0.79	3.88	3.95	0.21	0.04	-11.29	
3,600.00	1.25	269.74	3,599.26	-0.84	1.84	1.94	0.17	0.16	2.76	
3,700.00	1.28	263.42	3,699.24	-0.97	-0.36	-0.21	0.14	0.03	-6.32	
3,800.00	1.32	265.95	3,799.21	-1.18	-2.62	-2.41	0.07	0.04	2.53	
3,900.00	1.35	269.51	3,899.19	-1.28	-4.95	-4.70	0.09	0.03	3.56	
4,000.00	1.29	282.06	3,999.16	-1.05	-7.23	-6.98	0.29	-0.06	12.55	
4,100.00	1.39	280.25	4,099.13	-0.60	-9.52	-9.32	0.11	0.10	-1.81	
4,200.00	1.28	294.26	4,199.11	0.08	-11.73	-11.61	0.34	-0.11	14.01	
4,300.00	1.23	290.20	4,299.08	0.91	-13.76	-13.74	0.10	-0.05	-4.06	
4,400.00	1.23	298.81	4,399.06	1.79	-15.71	-15.80	0.18	0.00	8.61	
4,500.00	1.02	277.01	4,499.04	2.42	-17.53	-17.70	0.47	-0.21	-21.80	
4,600.00	1.12	303.30	4,599.02	3.06	-19.23	-19.47	0.50	0.10	26.29	
4,700.00	0.98	302.80	4,699.01	4.06	-20.77	-21.15	0.14	-0.14	-0.50	
4,800.00	0.94	305.96	4,798.99	5.01	-22.15	-22.66	0.07	-0.04	3.16	
4,900.00	0.96	292.31	4,898.98	5.81	-23.59	-24.20	0.23	0.02	-13.65	
5,000.00	1.03	306.52	4,998.96	6.66	-25.09	-25.81	0.26	0.07	14.21	
5,100.00	1.16	311.93	5,098.95	7.87	-26.56	-27.46	0.17	0.13	5.41	

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 3H
Project:	Eddy County, NM	TVD Reference:	3310'GL+19.5 @ 3329.00usft (Planning)
Site:	Coinflip State 3H	MD Reference:	3310'GL+19.5 @ 3329.00usft (Planning)
Well:	3H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000 MULTI

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,200.00	0.92	326.13	5,198.93	9.22	-27.76	-28.85	0.35	-0.24	14.20
5,300.00	1.15	313.68	5,298.91	10.58	-28.94	-30.22	0.32	0.23	-12.45
5,400.00	1.24	317.05	5,398.89	12.06	-30.40	-31.89	0.11	0.09	3.37
5,500.00	1.03	329.78	5,498.87	13.63	-31.59	-33.30	0.33	-0.21	12.73
5,600.00	1.15	315.56	5,598.85	15.12	-32.74	-34.68	0.29	0.12	-14.22
5,700.00	1.09	321.68	5,698.83	16.58	-34.04	-36.18	0.13	-0.06	6.12
5,800.00	1.06	324.84	5,798.82	18.09	-35.16	-37.52	0.07	-0.03	3.16
5,900.00	1.03	312.10	5,898.80	19.45	-36.36	-38.91	0.23	-0.03	-12.74
6,000.00	0.96	315.21	5,998.78	20.64	-37.61	-40.34	0.09	-0.07	3.11
6,100.00	0.92	331.85	6,098.77	21.95	-38.58	-41.49	0.27	-0.04	16.64
6,200.00	0.57	330.70	6,198.76	23.09	-39.21	-42.28	0.35	-0.35	-1.15
6,300.00	0.61	286.65	6,298.76	23.67	-39.96	-43.12	0.44	0.04	-44.05
6,400.00	0.39	273.66	6,398.75	23.85	-40.81	-43.98	0.25	-0.22	-12.99
6,500.00	0.79	232.04	6,498.75	23.45	-41.69	-44.79	0.56	0.40	-41.62
6,600.00	1.14	218.20	6,598.74	22.24	-42.85	-45.75	0.42	0.35	-13.84
6,700.00	1.57	210.97	6,698.71	20.28	-44.17	-46.76	0.46	0.43	-7.23
6,800.00	1.33	213.96	6,798.67	18.15	-45.52	-47.77	0.25	-0.24	2.99
6,900.00	1.10	215.67	6,898.65	16.40	-46.73	-48.70	0.23	-0.23	1.71
7,000.00	1.20	244.96	6,998.63	15.18	-48.24	-50.00	0.59	0.10	29.29
7,100.00	1.88	264.94	7,098.60	14.59	-50.82	-52.46	0.86	0.68	19.98
7,200.00	1.99	260.26	7,198.54	14.15	-54.17	-55.70	0.19	0.11	-4.68
7,295.00	1.98	256.88	7,293.48	13.50	-57.39	-58.78	0.12	-0.01	-3.56
7,495.00	2.10	242.40	7,493.36	11.02	-64.01	-64.94	0.26	0.06	-7.24
7,695.00	1.50	190.40	7,693.27	6.75	-67.73	-67.96	0.83	-0.30	-26.00
7,809.00	1.60	186.80	7,807.23	3.70	-68.18	-67.94	0.12	0.09	-3.16
7,841.00	2.30	138.80	7,839.21	2.77	-67.81	-67.44	5.34	2.19	-150.00
7,873.00	5.30	117.30	7,871.14	1.61	-66.08	-65.54	10.22	9.38	-67.19
7,904.00	8.50	110.70	7,901.91	0.15	-62.66	-61.94	10.62	10.32	-21.29
7,936.00	11.60	108.80	7,933.42	-1.73	-57.40	-56.46	9.74	9.69	-5.94
7,968.00	14.20	109.20	7,964.61	-4.06	-50.65	-49.43	8.13	8.13	1.25
8,000.00	16.30	108.40	7,995.48	-6.76	-42.68	-41.14	6.60	6.56	-2.50
8,032.00	19.10	108.10	8,025.96	-9.81	-33.44	-31.54	8.75	8.75	-0.94
8,064.00	22.20	108.10	8,055.90	-13.31	-22.71	-20.40	9.69	9.69	0.00
8,096.00	24.80	108.80	8,085.24	-17.36	-10.61	-7.83	8.17	8.13	2.19
8,128.00	27.70	109.60	8,113.94	-22.02	2.75	6.09	9.13	9.06	2.50
8,159.00	30.90	111.90	8,140.97	-27.40	16.93	20.93	10.94	10.32	7.42
8,191.00	33.50	113.90	8,168.05	-34.05	32.63	37.46	8.78	8.13	6.25
8,223.00	36.10	115.50	8,194.32	-41.68	49.21	55.02	8.61	8.13	5.00
8,255.00	38.90	116.80	8,219.71	-50.27	66.69	73.61	9.09	8.75	4.06
8,287.00	41.80	118.00	8,244.09	-59.81	85.08	93.25	9.38	9.06	3.75
8,319.00	44.20	120.10	8,267.50	-70.42	104.15	113.72	8.73	7.50	6.56
8,351.00	46.70	122.70	8,289.95	-82.30	123.61	134.77	9.72	7.81	8.13
8,382.00	49.80	124.30	8,310.59	-95.07	142.89	155.77	10.72	10.00	5.16

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 3H
Project:	Eddy County, NM	TVD Reference:	3310'GL+19.5 @ 3329.00usft (Planning)
Site:	Coinflip State 3H	MD Reference:	3310'GL+19.5 @ 3329.00usft (Planning)
Well:	3H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000 MULTI

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,414.00	53.10	123.90	8,330.53	-109.10	163.61	178.40	10.36	10.31	-1.25	
8,446.00	56.20	123.10	8,349.04	-123.50	185.37	202.12	9.90	9.69	-2.50	
8,478.00	59.20	122.00	8,366.14	-138.05	208.17	226.87	9.81	9.38	-3.44	
8,510.00	62.20	121.50	8,381.79	-152.73	231.90	252.57	9.47	9.38	-1.56	
8,542.00	64.70	120.90	8,396.10	-167.56	256.38	279.04	7.99	7.81	-1.88	
8,574.00	67.40	121.00	8,409.09	-182.60	281.46	306.13	8.44	8.44	0.31	
8,605.00	70.90	119.40	8,420.12	-197.16	306.50	333.10	12.28	11.29	-5.16	
8,637.00	74.30	117.60	8,429.69	-211.72	333.33	361.85	11.90	10.63	-5.63	
8,669.00	77.50	116.60	8,437.48	-225.86	360.95	391.32	10.45	10.00	-3.13	
8,701.00	81.20	116.90	8,443.39	-240.01	389.03	421.23	11.60	11.56	0.94	
8,733.00	84.10	118.20	8,447.49	-254.69	417.17	451.28	9.92	9.06	4.06	
8,765.00	87.30	119.80	8,449.89	-270.16	445.07	481.23	11.17	10.00	5.00	
8,797.00	89.60	122.20	8,450.75	-286.63	472.48	510.85	10.39	7.19	7.50	
8,829.00	90.90	125.50	8,450.61	-304.45	499.06	539.84	11.08	4.06	10.31	
8,860.00	90.80	127.70	8,450.15	-322.93	523.94	567.26	7.10	-0.32	7.10	
8,892.00	91.00	127.80	8,449.65	-342.52	549.24	595.26	0.70	0.63	0.31	
8,988.00	87.10	123.60	8,451.24	-398.51	627.15	680.84	5.97	-4.06	-4.38	
9,083.00	86.60	119.90	8,456.46	-448.42	707.80	768.19	3.92	-0.53	-3.89	
9,179.00	88.00	116.50	8,460.99	-493.72	792.30	858.63	3.83	1.46	-3.54	
9,274.00	89.60	113.20	8,462.98	-533.63	878.47	949.90	3.86	1.68	-3.47	
9,369.00	91.60	109.50	8,461.98	-568.21	966.92	1,042.61	4.43	2.11	-3.89	
9,464.00	90.80	105.80	8,459.99	-597.00	1,057.42	1,136.45	3.98	-0.84	-3.89	
9,559.00	90.50	103.40	8,458.92	-620.94	1,149.34	1,230.95	2.55	-0.32	-2.53	
9,654.00	89.60	101.80	8,458.83	-641.67	1,242.04	1,325.74	1.93	-0.95	-1.68	
9,749.00	90.20	99.40	8,459.00	-659.14	1,335.42	1,420.69	2.60	0.63	-2.53	
9,844.00	89.20	95.20	8,459.50	-671.21	1,429.62	1,515.63	4.54	-1.05	-4.42	
9,940.00	88.90	92.20	8,461.09	-677.40	1,525.40	1,611.23	3.14	-0.31	-3.13	
10,035.00	89.60	91.20	8,462.33	-680.22	1,620.35	1,705.48	1.28	0.74	-1.05	
10,066.00	88.70	89.60	8,462.79	-680.44	1,651.34	1,736.14	5.92	-2.90	-5.16	
10,130.00	89.20	89.30	8,463.96	-679.82	1,715.33	1,799.28	0.91	0.78	-0.47	
10,226.00	90.80	89.10	8,463.96	-678.48	1,811.31	1,893.93	1.68	1.67	-0.21	
10,321.00	90.00	89.50	8,463.30	-677.32	1,906.30	1,987.62	0.94	-0.84	0.42	
10,417.00	88.50	90.00	8,464.56	-676.90	2,002.29	2,082.40	1.65	-1.56	0.52	
10,512.00	89.40	90.10	8,466.30	-676.99	2,097.27	2,176.28	0.95	0.95	0.11	
10,608.00	90.20	89.60	8,466.63	-676.73	2,193.27	2,271.10	0.98	0.83	-0.52	
10,704.00	88.30	90.30	8,467.89	-676.65	2,289.26	2,365.94	2.11	-1.98	0.73	
10,799.00	88.60	90.20	8,470.46	-677.06	2,384.22	2,459.84	0.33	0.32	-0.11	
10,894.00	89.50	89.90	8,472.03	-677.15	2,479.21	2,553.72	1.00	0.95	-0.32	
10,989.00	90.50	89.70	8,472.03	-676.82	2,574.21	2,647.54	1.07	1.05	-0.21	
11,084.00	88.60	89.60	8,472.78	-676.24	2,669.20	2,741.32	2.00	-2.00	-0.11	
11,179.00	89.50	89.70	8,474.36	-675.66	2,764.18	2,835.09	0.95	0.95	0.11	
11,274.00	90.50	89.50	8,474.36	-674.99	2,859.18	2,928.87	1.07	1.05	-0.21	
11,369.00	89.90	90.90	8,474.02	-675.32	2,954.17	3,022.79	1.60	-0.63	1.47	
11,463.00	90.50	90.50	8,473.70	-676.47	3,048.17	3,115.85	0.77	0.64	-0.43	

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 3H
Project:	Eddy County, NM	TVD Reference:	3310'GL+19.5 @ 3329.00usft (Planning)
Site:	Coinflip State 3H	MD Reference:	3310'GL+19.5 @ 3329.00usft (Planning)
Well:	3H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000 MULTI

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,558.00	89.30	90.50	8,473.86	-677.30	3,143.16	3,209.84	1.26	-1.26	0.00
11,653.00	88.70	91.10	8,475.52	-678.63	3,238.14	3,303.90	0.89	-0.63	0.63
11,748.00	89.10	91.20	8,477.34	-680.53	3,333.10	3,398.03	0.43	0.42	0.11
11,843.00	88.50	91.30	8,479.33	-682.61	3,428.06	3,492.18	0.64	-0.63	0.11
11,938.00	88.60	90.00	8,481.74	-683.68	3,523.02	3,586.19	1.37	0.11	-1.37
12,033.00	89.80	90.00	8,483.06	-683.68	3,618.01	3,680.05	1.26	1.26	0.00
12,128.00	91.10	90.10	8,482.32	-683.77	3,713.00	3,773.94	1.37	1.37	0.11
12,222.00	90.60	90.20	8,480.92	-684.01	3,806.99	3,866.85	0.54	-0.53	0.11
12,317.00	89.90	90.60	8,480.51	-684.68	3,901.99	3,960.83	0.85	-0.74	0.42
12,412.00	91.40	90.50	8,479.43	-685.59	3,996.97	4,054.83	1.58	1.58	-0.11
12,507.00	92.70	90.30	8,476.03	-686.25	4,091.91	4,148.74	1.38	1.37	-0.21
12,584.00	92.70	90.30	8,472.41	-686.65	4,168.82	4,224.81	0.00	0.00	0.00
12,650.00	92.70	90.30	8,469.30	-687.00	4,234.75	4,290.01	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Coinflip 3H Surface	0.00	0.00	0.00	0.00	0.00	573,739.80	597,368.20	32° 34' 36.91 N	104° 1' 2.07 W
- actual wellpath hits target center									
- Point									
Coinflip 3H BHL	0.00	0.01	8,469.30	-687.00	4,234.75	573,052.81	601,602.95	32° 34' 29.99 N	104° 0' 12.61 W
- actual wellpath hits target center									
- Point									

COG OPERATING, LLC

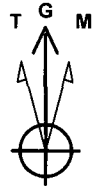
Field: Eddy County, NM

Site: Coinflip State 3H

Well: 3H

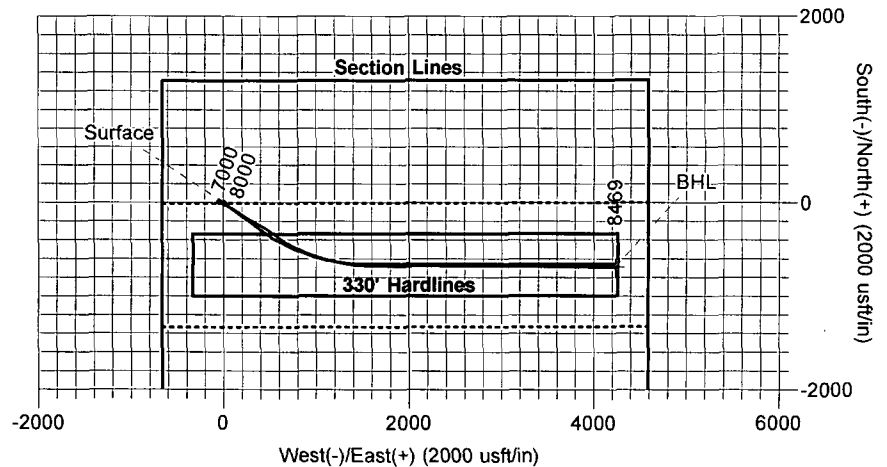
Wellbore: Lateral

Plan: Surveys



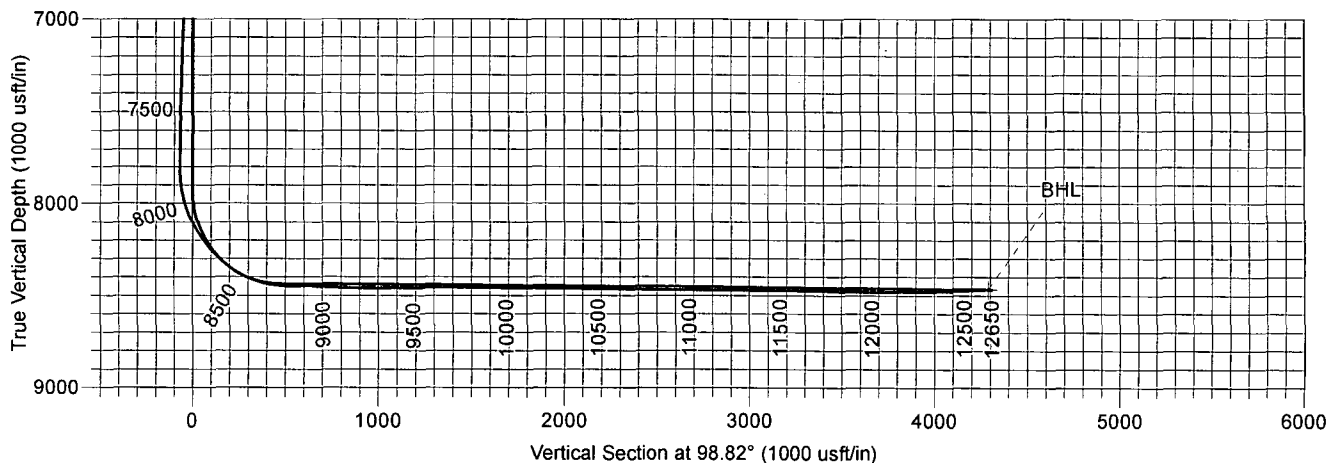
Azimuths to Grid North
True North: -0.17°
Magnetic North: 7.32°

Magnetic Field
Strength: 48509.8snT
Dip Angle: 60.37°
Date: 03/01/2014
Model: IGRF2010



LEGEND

- 3H, Lateral, Plan #2 V0
- Surveys



TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Coinflip 3H Surface	0.00	0.00	0.00	573739.80	597368.20	$32^\circ 34' 36.91^\circ \text{ N}$	$104^\circ 1' 2.07^\circ \text{ W}$	Point
Coinflip 3H BHL	8469.30	-687.00	4234.75	573052.80	601602.95	$32^\circ 34' 29.99^\circ \text{ N}$	$104^\circ 0' 12.61^\circ \text{ W}$	Point



ARCHER DIRECTIONAL DRILLING SERVICES
12101 Cutten Rd. Houston, Texas 77066
Phone: 281-301-2600 Fax: 281-301-2795

Design: Surveys (3H/Lateral)
Created By: Alexa Ramirez
Date: 16:40, March 21 2014