



NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 20 2015

RECEIVED

October 27, 2014

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

30-015-42410

Attn: Kanicia Castillo

RE: Passion 1 Federal Com PDK5H

Please find enclosed a copy of the survey from 0.00' to 3813.00' ran on the above referenced well.

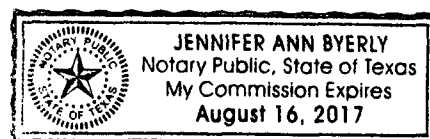
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 27 day of October A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: COG Operating, LLC (Concho)
Lease/Well: Passion 1 Federal Com PDK/6H
Location: Sec 1 T17S R29E
Rig Name: United 43
State/County: New Mexico/Eddy
Latitude: 32.86, Longitude: -104.02
GRID North is 0.17 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 14.5 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 10/27/2014 / 12:33

VES Survey International
West Texas
(432) 563-5444

Surveyor: Noe Garza

Passion 1 Federal Com PDK 6H / API 30-015-42410

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 20 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	0.26	314.57	100.00	0.16	-0.16	0.16	0.23	314.57	0.26
200.00	0.57	281.23	200.00	0.41	-0.81	0.41	0.91	297.03	0.38
300.00	0.75	279.94	299.99	0.63	-1.95	0.63	2.05	287.77	0.18
400.00	0.29	256.26	399.99	0.68	-2.84	0.68	2.92	283.43	0.50
500.00	0.40	267.02	499.98	0.60	-3.44	0.60	3.49	279.91	0.13
600.00	0.12	246.97	599.98	0.54	-3.88	0.54	3.92	277.96	0.29
700.00	0.32	210.64	699.98	0.27	-4.12	0.27	4.12	273.69	0.23
800.00	0.19	359.83	799.98	0.19	-4.26	0.19	4.26	272.61	0.49
900.00	0.24	84.92	899.98	0.38	-4.05	0.38	4.06	275.34	0.30
1000.00	0.80	89.67	999.98	0.40	-3.14	0.40	3.16	277.29	0.56
1100.00	1.13	86.68	1099.96	0.46	-1.45	0.46	1.52	287.64	0.33
1200.00	0.67	73.60	1199.95	0.68	0.09	0.68	0.69	7.73	0.50
1300.00	0.53	88.01	1299.94	0.87	1.12	0.87	1.41	52.16	0.21
1400.00	0.20	89.26	1399.94	0.88	1.75	0.88	1.96	63.14	0.33
1500.00	0.15	46.97	1499.94	0.98	2.02	0.98	2.24	64.12	0.13
1600.00	0.28	105.06	1599.94	1.01	2.35	1.01	2.55	66.79	0.23
1700.00	0.31	106.89	1699.94	0.87	2.83	0.87	2.96	73.01	0.03
1800.00	0.15	101.51	1799.94	0.76	3.21	0.76	3.30	76.65	0.16

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	0.14	64.35	1899.94	0.79	3.45	0.79	3.54	77.11	0.09
2000.00	0.23	56.04	1999.94	0.95	3.72	0.95	3.85	75.62	0.10
2100.00	0.32	9.67	2099.94	1.35	3.94	1.35	4.17	71.12	0.23
2200.00	0.22	326.33	2199.94	1.78	3.88	1.78	4.27	65.34	0.22
2300.00	0.36	2.83	2299.94	2.26	3.80	2.26	4.42	59.24	0.23
2400.00	0.63	345.96	2399.93	3.11	3.68	3.11	4.82	49.76	0.30
2500.00	0.49	334.17	2499.93	4.03	3.36	4.03	5.24	39.82	0.19
2600.00	0.79	316.65	2599.92	4.91	2.70	4.91	5.60	28.82	0.36
2700.00	0.74	308.72	2699.91	5.81	1.73	5.81	6.06	16.56	0.12
2800.00	1.16	304.92	2799.90	6.79	0.40	6.79	6.80	3.36	0.42
2900.00	1.39	294.52	2899.87	7.87	-1.53	7.87	8.02	348.97	0.33
3000.00	1.49	287.31	2999.84	8.77	-3.89	8.77	9.59	336.10	0.21
3100.00	1.04	277.81	3099.82	9.28	-6.03	9.28	11.07	326.98	0.50
3200.00	0.79	249.95	3199.80	9.17	-7.58	9.17	11.89	320.41	0.50
3300.00	0.71	251.99	3299.80	8.74	-8.82	8.74	12.41	314.74	0.08
3400.00	0.86	248.21	3399.79	8.26	-10.11	8.26	13.06	309.28	0.16
3500.00	0.66	257.20	3499.78	7.86	-11.37	7.86	13.82	304.64	0.23
3600.00	0.59	230.17	3599.77	7.40	-12.33	7.40	14.38	300.98	0.30
3700.00	0.76	234.43	3699.76	6.69	-13.26	6.69	14.85	296.76	0.18
3813.00	0.40	230.38	3812.76	6.00	-14.17	6.00	15.39	292.96	0.32



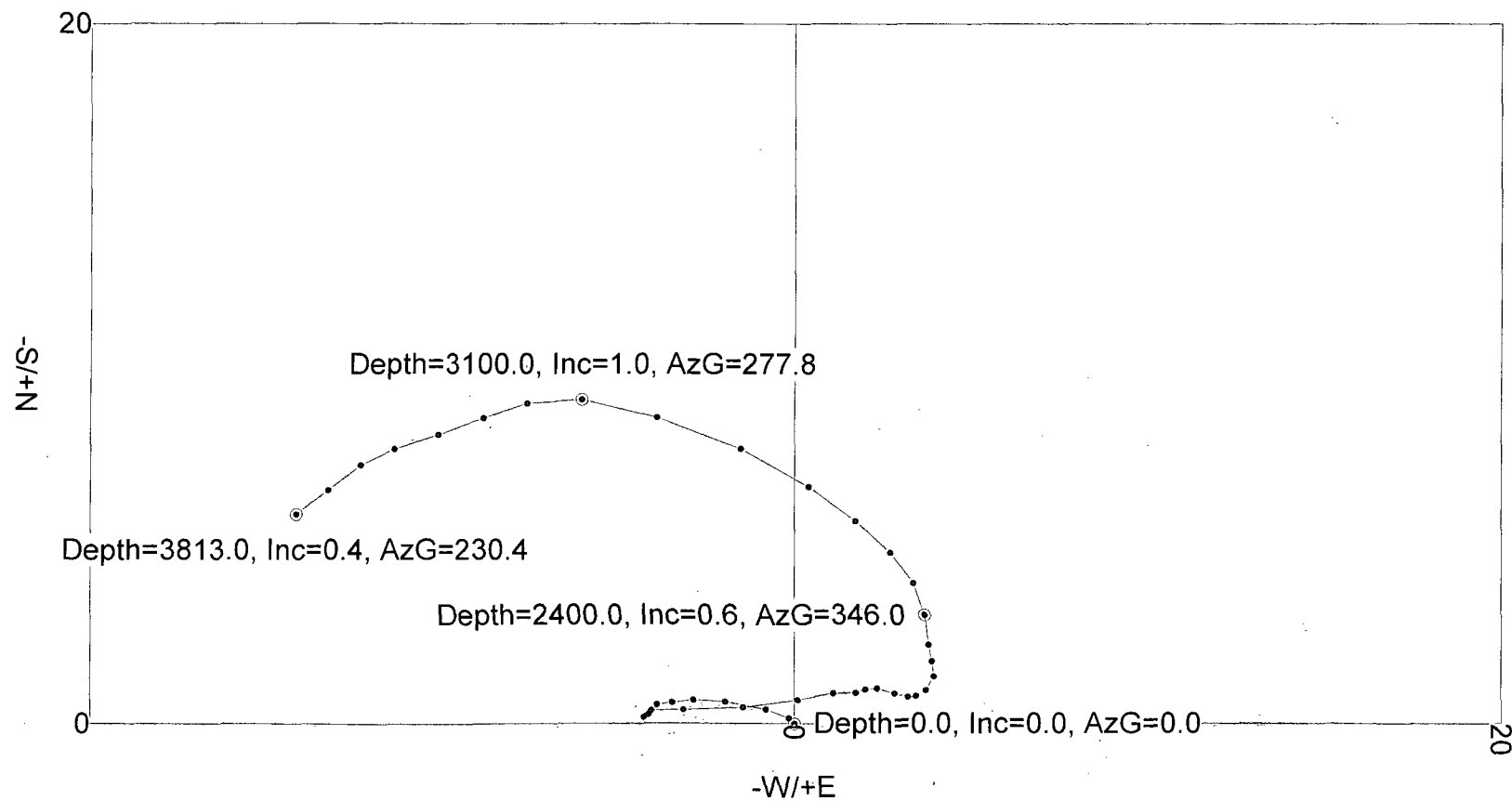
VES Survey International

West Texas

(432) 563-5444

Surveyor: Noe Garza

Passion 1 Federal Com PDK 6H / API 30-015-42410



VES Survey Date: 10/06/2014

JAN 20 2015

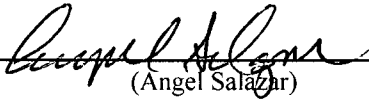
1 of 2

RECEIVED

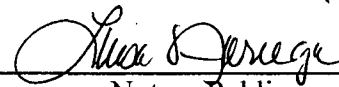
WELL NAME AND NUMBER Passion 1 Federal Com PDK 5 HLOCATION Section 1, T17S, R29E, Unit I, 1910-FSL, 180 FEL, Eddy CountyOPERATOR COG Operating LLCDRILLING CONTRACTOR United Drilling, Inc.

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

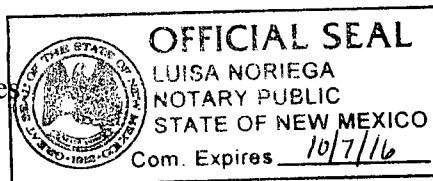
Degrees @ Depth	Degrees @ Depth	Degrees @ Depth
.5° @ 324'	24.4° @ 4227'	90.5° @ 4950'
.5° @ 479'	27.6° @ 4258'	89.7° @ 5234'
.2° @ 888'	35.2° @ 4322'	91.6° @ 5424'
1° @ 1749'	39.3° @ 4353'	91.9° @ 5518'
.4° @ 2191'	43.0° @ 4385'	91.7° @ 5613'
.75° @ 2633'	46.9° @ 4416'	90.1° @ 5709'
1.3° @ 2996'	50.3° @ 4448'	90.7° @ 5804'
1.0° @ 3436'	54.3° @ 4479'	91.0° @ 5898'
.4° @ 3880'	58.3° @ 4510'	91.6° @ 5993'
.8° @ 3911'	62.5° @ 4542'	90.3° @ 6087'
3.2° @ 3943'	70.7° @ 4605'	90.5° @ 6182'
5.8° @ 3974'	78.5° @ 4668'	90.5° @ 6276'
8.9° @ 4006'	82.2° @ 4699'	91.2° @ 6371'
12° @ 4037'	84.9° @ 4731'	91.4° @ 6495'
14.7° @ 4068'	87.3° @ 4762'	91.1° @ 6560'
16.7° @ 4100'	89.5° @ 4794'	91.2° @ 6749'
17.8° @ 4132'	90.9° @ 4825'	91.4° @ 6844'
21.5° @ 4195'	91.8° @ 4856'	91.5° @ 7033'

Drilling Contractor- UNITED DRILLING, INC.By: 

(Angel Salazar)

Title: Vice PresidentSubscribed and sworn to before me this 15th day of October, 2014.

 Notary Public

My Commission Expires


Grant
 County

NM
 State

JAN 20 2015
2 of 2

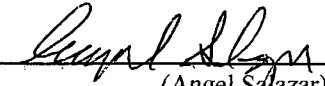
RECEIVED

WELL NAME AND NUMBER Passion 1 Federal Com PDK 6H⁵₁₆
LOCATION Section 1, T17S, R29E, Unit I, 1910 FSL, 180 FEL, Eddy County
OPERATOR COG Operating LLC
DRILLING CONTRACTOR United Drilling, Inc.

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

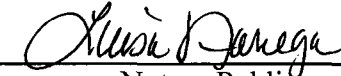
Degrees @ Depth	Degrees @ Depth	Degrees @ Depth
89.2° @ 7224'	90.8° @ 8928'	
89.6° @ 7319'	91.2° @ 9041'	
89.7° @ 7413'		
89.8° @ 7508'		
90.9° @ 7602'		
91.0° @ 7697'		
91.0° @ 7791'		
91.1° @ 7886'		
91.2° @ 7981'		
91.2° @ 8076'		
91.7° @ 8171'		
91.6° @ 8265'		
91.5° @ 8359'		
91.6° @ 8454'		
91.5° @ 8549'		
91.4° @ 8644'		
91.3° @ 8738'		
91.2° @ 8833'		

Drilling Contractor- UNITED DRILLING, INC.

By: 
(Angel Salazar)

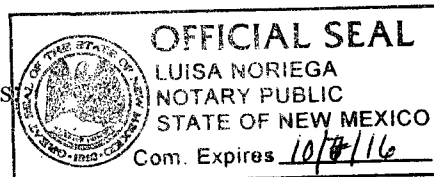
Title: Vice President

Subscribed and sworn to before me this 15th day of October, 2014.


Notary Public

Chaves NM
County State

My Commission Expires



NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 20 2015

RECEIVED

COG OPERATING, LLC

Eddy County, NM

Passion 1 Federal Com PDK 5H

5H

Lateral

Design: Surveys

Standard Survey Report

13 October, 2014

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	3682 GL+13'KB @ 3695.00usft (Planning)
Site:	Passion 1 Federal Com PDK 5H	MD Reference:	3682 GL+13'KB @ 3695.00usft (Planning)
Well:	5H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000.1 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:	Passion 1 Federal Com PDK 5H		
Site Position:		Northing:	677,233.89 usft
From:	Map	Easting:	596,294.50 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	32° 51' 41.06 N
		Longitude:	104° 1' 11.04 W
		Grid Convergence:	0.17 °

Well:	5H		
Well Position	+N/-S	0.00 usft	Northing: 677,233.89 usft
	+E/-W	0.00 usft	Easting: 596,294.50 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 51' 41.06 N
		Longitude:	104° 1' 11.04 W
		Ground Level:	3,682.00 usft

Wellbore:	Lateral		
Magnetics	Model Name	Sample Date	Declination
	HDGM	9/5/2014	(°)
			7.82
			(°)
			60.72
			(nT)
			48,563

Design:	Surveys		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			274.41
			(°)

Survey Program	Date 10/13/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	3,813.00	Survey #1 (Lateral)	GYD_DP_MS
3,848.00	9,041.00	Survey #2 (Lateral)	MWD+HDGM
9,108.00	9,108.00	Survey #3 (Lateral)	Project
			Description
			Gyrodata gyro-compassing and drop
			OWSG MWD + HDGM
			Projection

Survey	Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
	Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
	(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	100.00	0.26	314.57	100.00	0.16	-0.16	0.17	0.26	0.26	0.00
	200.00	0.57	281.23	200.00	0.42	-0.81	0.84	0.38	0.31	-33.34
	300.00	0.75	279.94	299.99	0.63	-1.94	1.99	0.18	0.18	-1.29
	400.00	0.29	256.26	399.99	0.68	-2.83	2.88	0.50	-0.46	-23.68
	500.00	0.40	267.02	499.98	0.60	-3.43	3.46	0.13	0.11	10.76
	600.00	0.12	246.97	599.98	0.54	-3.87	3.90	0.29	-0.28	-20.05
	700.00	0.32	210.64	699.98	0.26	-4.11	4.12	0.23	0.20	-36.33
	800.00	0.19	359.83	799.98	0.18	-4.26	4.26	0.49	-0.13	149.19

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well: 5H
Project:	Eddy County, NM	TVD Reference:	3682' GL+13' KB @ 3695.00usft (Planning)
Site:	Passion 1 Federal Com-PDK 5H	MD Reference:	3682' GL+13' KB @ 3695.00usft (Planning)
Well:	5H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM/R5000.1 MULTI

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	0.24	84.92	899.98	0.37	-4.05	4.06	0.29	0.05	85.09
1,000.00	0.80	89.67	999.98	0.39	-3.14	3.16	0.56	0.56	4.75
1,100.00	1.13	86.68	1,099.96	0.45	-1.46	1.49	0.33	0.33	-2.99
1,200.00	0.67	73.60	1,199.95	0.68	0.09	-0.04	0.50	-0.46	-13.08
1,300.00	0.53	88.01	1,299.94	0.86	1.11	-1.04	0.20	-0.14	14.41
1,400.00	0.20	89.26	1,399.94	0.87	1.75	-1.67	0.33	-0.33	1.25
1,500.00	0.15	46.97	1,499.94	0.97	2.02	-1.94	0.13	-0.05	-42.29
1,600.00	0.28	105.06	1,599.94	0.99	2.35	-2.27	0.24	0.13	58.09
1,700.00	0.31	106.89	1,699.94	0.85	2.84	-2.77	0.03	0.03	1.83
1,800.00	0.15	101.51	1,799.94	0.75	3.23	-3.16	0.16	-0.16	-5.38
1,900.00	0.14	64.35	1,899.94	0.77	3.47	-3.40	0.09	-0.01	-37.16
2,000.00	0.23	56.04	1,999.94	0.94	3.75	-3.66	0.09	0.09	-8.31
2,100.00	0.32	9.67	2,099.94	1.32	3.96	-3.85	0.23	0.09	-46.37
2,200.00	0.22	326.33	2,199.94	1.76	3.90	-3.75	0.22	-0.10	-43.34
2,300.00	0.36	2.83	2,299.94	2.23	3.81	-3.63	0.23	0.14	36.50
2,400.00	0.63	345.96	2,399.93	3.08	3.69	-3.44	0.30	0.27	-16.87
2,500.00	0.49	334.17	2,499.93	4.00	3.37	-3.05	0.18	-0.14	-11.79
2,600.00	0.79	316.65	2,599.92	4.88	2.71	-2.33	0.35	0.30	-17.52
2,700.00	0.74	308.72	2,699.91	5.79	1.73	-1.28	0.12	-0.05	-7.93
2,800.00	1.16	304.92	2,799.90	6.77	0.40	0.12	0.42	0.42	-3.80
2,900.00	1.39	294.52	2,899.87	7.86	-1.53	2.13	0.33	0.23	-10.40
3,000.00	1.49	287.31	2,999.84	8.75	-3.88	4.54	0.21	0.10	-7.21
3,100.00	1.04	277.81	3,099.82	9.26	-6.02	6.71	0.49	-0.45	-9.50
3,200.00	0.79	249.95	3,199.80	9.14	-7.56	8.24	0.50	-0.25	-27.86
3,300.00	0.71	251.99	3,299.80	8.72	-8.80	9.45	0.08	-0.08	2.04
3,400.00	0.86	248.21	3,399.79	8.25	-10.09	10.69	0.16	0.15	-3.78
3,500.00	0.66	257.20	3,499.78	7.84	-11.35	11.91	0.23	-0.20	8.99
3,600.00	0.59	230.17	3,599.77	7.38	-12.30	12.83	0.30	-0.07	-27.03
3,700.00	0.76	234.43	3,699.77	6.67	-13.24	13.71	0.18	0.17	4.26
3,813.00	0.40	230.38	3,812.76	5.98	-14.15	14.57	0.32	-0.32	-3.58
3,848.00	0.40	184.20	3,847.76	5.78	-14.25	14.66	0.90	0.00	-131.94
3,880.00	0.40	217.80	3,879.76	5.58	-14.33	14.72	0.72	0.00	105.00
3,911.00	0.80	291.10	3,910.76	5.57	-14.60	14.98	2.53	1.29	236.45
3,943.00	3.20	319.80	3,942.73	6.33	-15.38	15.83	7.90	7.50	89.69
3,974.00	5.80	324.20	3,973.64	8.27	-16.86	17.44	8.45	8.39	14.19
4,006.00	8.90	329.70	4,005.37	11.72	-19.05	19.90	9.92	9.69	17.19
4,037.00	12.00	337.10	4,035.85	16.76	-21.52	22.74	10.88	10.00	23.87
4,068.00	14.70	344.60	4,066.02	23.52	-23.82	25.56	10.33	8.71	24.19
4,100.00	16.70	345.80	4,096.82	31.89	-26.02	28.40	6.33	6.25	3.75
4,132.00	17.80	338.50	4,127.38	40.90	-28.94	32.00	7.58	3.44	-22.81
4,163.00	19.20	331.60	4,156.78	49.79	-33.11	36.84	8.38	4.52	-22.26
4,195.00	21.50	326.40	4,186.79	59.31	-38.86	43.30	9.14	7.19	-16.25
4,227.00	24.40	323.30	4,216.25	69.50	-46.05	51.26	9.82	9.06	-9.69

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	3682' GL+13' KB @ 3695' 00usft (Planning)
Site:	Passion-1 Federal Com PDK 5H	MD Reference:	3682' GL+13' KB @ 3695' 00usft (Planning)
Well:	5H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000:1' MULTI

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)
4,258.00	27.60	319.60	4,244.11	80.10	-54.54	60.53	11.57	10.32	-11.94
4,290.00	31.20	316.10	4,271.99	91.72	-65.09	71.95	12.46	11.25	-10.94
4,322.00	35.20	313.50	4,298.76	104.05	-77.54	85.31	13.27	12.50	-8.13
4,353.00	39.30	311.60	4,323.43	116.72	-91.36	100.07	13.73	13.23	-6.13
4,385.00	43.00	309.50	4,347.53	130.40	-107.37	117.08	12.34	11.56	-6.56
4,416.00	46.90	307.10	4,369.46	143.96	-124.56	135.26	13.72	12.58	-7.74
4,448.00	50.30	304.50	4,390.62	157.98	-144.03	155.75	12.25	10.63	-8.13
4,479.00	54.30	302.50	4,409.58	171.51	-164.48	177.19	13.88	12.90	-6.45
4,510.00	58.30	300.80	4,426.78	185.03	-186.44	200.11	13.69	12.90	-5.48
4,542.00	62.50	299.30	4,442.58	198.95	-210.52	225.19	13.74	13.13	-4.69
4,573.00	66.50	297.50	4,455.92	212.25	-235.13	250.75	13.93	12.90	-5.81
4,605.00	70.70	295.90	4,467.60	225.63	-261.74	278.32	13.93	13.13	-5.00
4,636.00	74.90	294.50	4,476.76	238.23	-288.53	306.00	14.22	13.55	-4.52
4,668.00	78.50	292.50	4,484.12	250.64	-317.09	335.42	12.79	11.25	-6.25
4,699.00	82.20	290.60	4,489.32	261.86	-345.51	364.62	13.38	11.94	-6.13
4,731.00	84.90	286.60	4,492.92	272.00	-375.63	395.44	15.01	8.44	-12.50
4,762.00	87.30	285.10	4,495.03	280.44	-405.38	425.75	9.12	7.74	-4.84
4,794.00	89.50	284.20	4,495.92	288.53	-436.33	457.22	7.43	6.88	-2.81
4,825.00	90.90	284.20	4,495.81	296.14	-466.38	487.77	4.52	4.52	0.00
4,856.00	91.80	284.20	4,495.08	303.74	-496.43	518.31	2.90	2.90	0.00
4,950.00	90.50	281.70	4,493.19	324.80	-588.01	611.24	3.00	-1.38	-2.66
5,045.00	90.60	279.30	4,492.28	342.11	-681.40	705.69	2.53	0.11	-2.53
5,139.00	89.80	276.10	4,491.95	354.70	-774.54	799.52	3.51	-0.85	-3.40
5,234.00	89.70	273.20	4,492.37	362.40	-869.22	894.51	3.05	-0.11	-3.05
5,329.00	91.10	270.50	4,491.70	365.47	-964.16	989.40	3.20	1.47	-2.84
5,424.00	91.60	270.40	4,489.47	366.21	-1,059.13	1,084.15	0.54	0.53	-0.11
5,518.00	91.90	270.10	4,486.60	366.62	-1,153.08	1,177.86	0.45	0.32	-0.32
5,613.00	91.70	269.80	4,483.61	366.54	-1,248.04	1,272.53	0.38	-0.21	-0.32
5,709.00	90.10	270.50	4,482.10	366.79	-1,344.02	1,368.24	1.82	-1.67	0.73
5,804.00	90.70	270.10	4,481.44	367.29	-1,439.02	1,463.00	0.76	0.63	-0.42
5,898.00	91.00	269.70	4,480.05	367.12	-1,533.00	1,556.70	0.53	0.32	-0.43
5,993.00	91.60	270.20	4,477.89	367.04	-1,627.98	1,651.38	0.82	0.63	0.53
6,087.00	90.30	269.70	4,476.33	366.96	-1,721.96	1,745.08	1.48	-1.38	-0.53
6,182.00	90.50	269.50	4,475.67	366.30	-1,816.96	1,839.75	0.30	0.21	-0.21
6,276.00	90.50	268.90	4,474.85	364.98	-1,910.95	1,933.35	0.64	0.00	-0.64
6,371.00	91.20	268.60	4,473.44	362.91	-2,005.91	2,027.88	0.80	0.74	-0.32
6,465.00	91.40	268.30	4,471.31	360.37	-2,099.85	2,121.35	0.38	0.21	-0.32
6,560.00	91.10	269.50	4,469.23	358.55	-2,194.81	2,215.88	1.30	-0.32	1.26
6,655.00	91.30	268.90	4,467.24	357.22	-2,289.78	2,310.47	0.67	0.21	-0.63
6,749.00	91.20	269.70	4,465.19	356.07	-2,383.75	2,404.07	0.86	-0.11	0.85
6,844.00	91.40	269.30	4,463.04	355.24	-2,478.72	2,498.70	0.47	0.21	-0.42
6,939.00	91.40	270.80	4,460.72	355.33	-2,573.69	2,593.39	1.58	0.00	1.58
7,033.00	91.50	270.50	4,458.34	356.39	-2,667.66	2,687.16	0.34	0.11	-0.32

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	3682'GL+13'KB @ 3695.00usft (Planning)
Site:	Passion 1 Federal Com PDK 5H	MD Reference:	3682'GL+13'KB @ 3695.00usft (Planning)
Well:	5H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM-R5000.1 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)
7,128.00	91.30	269.80	4,456.02	356.64	-2,762.63	2,781.87	0.77	-0.21	-0.74
7,224.00	89.50	270.70	4,455.35	357.06	-2,858.62	2,877.61	2.10	-1.88	0.94
7,319.00	89.60	270.60	4,456.09	358.14	-2,953.61	2,972.40	0.15	0.11	-0.11
7,413.00	89.70	270.00	4,456.67	358.63	-3,047.61	3,066.16	0.65	0.11	-0.64
7,508.00	89.80	270.30	4,457.08	358.88	-3,142.60	3,160.90	0.33	0.11	0.32
7,602.00	90.90	270.60	4,456.51	359.62	-3,236.60	3,254.67	1.21	1.17	0.32
7,697.00	91.00	270.40	4,454.93	360.45	-3,331.58	3,349.43	0.24	0.11	-0.21
7,791.00	91.00	270.20	4,453.29	360.94	-3,425.57	3,443.18	0.21	0.00	-0.21
7,886.00	91.10	270.10	4,451.55	361.19	-3,520.55	3,537.90	0.15	0.11	-0.11
7,981.00	91.20	269.60	4,449.64	360.94	-3,615.53	3,632.58	0.54	0.11	-0.53
8,076.00	91.20	269.40	4,447.66	360.11	-3,710.50	3,727.21	0.21	0.00	-0.21
8,171.00	91.70	269.50	4,445.25	359.20	-3,805.47	3,821.82	0.54	0.53	0.11
8,265.00	91.60	269.10	4,442.54	358.05	-3,899.42	3,915.41	0.44	-0.11	-0.43
8,359.00	91.50	270.90	4,440.00	358.05	-3,993.39	4,009.09	1.92	-0.11	1.91
8,454.00	91.60	270.70	4,437.43	359.38	-4,088.34	4,103.87	0.24	0.11	-0.21
8,549.00	91.50	270.40	4,434.86	360.29	-4,183.30	4,198.62	0.33	-0.11	-0.32
8,644.00	91.40	270.70	4,432.46	361.20	-4,278.27	4,293.37	0.33	-0.11	0.32
8,738.00	91.30	270.40	4,430.24	362.10	-4,372.24	4,387.13	0.34	-0.11	-0.32
8,833.00	91.20	270.00	4,428.17	362.43	-4,467.21	4,481.86	0.43	-0.11	-0.42
8,928.00	90.80	269.50	4,426.51	362.02	-4,562.20	4,576.53	0.67	-0.42	-0.53
9,041.00	91.20	269.50	4,424.54	361.03	-4,675.18	4,689.09	0.35	0.35	0.00
9,108.00	91.20	269.50	4,423.14	360.45	-4,742.16	4,755.83	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
Passion 1-5H Surface	0.00	0.00	0.00	0.00	0.00	677,233.89	596,294.50	32° 51' 41.06 N	104° 1' 11.04 W
- hit/miss target									
- actual wellpath hits target center									
- Point									
Passion 1-5H BHL	0.00	0.00	4,423.14	360.45	-4,742.16	677,594.34	591,552.34	32° 51' 44.77 N	104° 2' 6.63 W
- actual wellpath hits target center									
- Point									