

JUN 11 2015

1 of 2

RECEIVED

WELL NAME AND NUMBER Newcastle 6 Federal Com PDK No. 7H
LOCATION Section 1, T17S, R29E, Unit P, 1030 FSL, 10 FEL, Eddy County
OPERATOR COG Operating LLC
DRILLING CONTRACTOR United Drilling, Inc. 3001542506

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
.5° @ 318'
.2° @ 704'
.5° @ 1067'
1.3° @ 1287'
1.1° @ 1703'
1.3° @ 2019'
1.5° @ 2343'
2° @ 2650'
2.2° @ 2904'
2.2° @ 3187'
2.4° @ 3501'
2.3° @ 3785'
2.2° @ 3884'
2.3° @ 3913'
5.4° @ 4007'
10.7° @ 4070'
13.4° @ 4102'
16.5° @ 4128'

Degrees @ Depth
19.1° @ 4159'
21.5° @ 4196'
28.5° @ 4259'
33.1° @ 4291'
37.2° @ 4322'
42.4° @ 4385'
44.4° @ 4416'
50.7° @ 4511'
52.9° @ 4542'
55.8° @ 4574'
77.4° @ 4732'
80.9° @ 4763'
82.3° @ 4795'
84.6° @ 4826'
88.7° @ 4919'
90.8° @ 4950'
92.7° @ 4982'
93.0° @ 5013'

Degrees @ Depth
92.4° @ 5108'
91.0° @ 5298'
93.1° @ 5486'
90.9° @ 5582'
91.5° @ 5677'
89.8° @ 5961'
90.7° @ 6055'
90.4° @ 6150'
91.2° @ 6246'
91.1° @ 6340'
91.2° @ 6435'
91.5° @ 6529'
91.9° @ 6624'
91.8° @ 6719'
91.3° @ 6813'
91.3° @ 6908'
91.0° @ 7286'
90.8° @ 7476'

Drilling Contractor- UNITED DRILLING, INC.

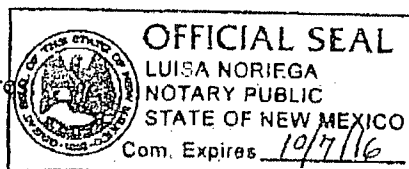
By: Ramon Gonzalez
(Ramon Gonzalez)

Title: Superintendent

Subscribed and sworn to before me this 9th day of December 2014.

Luis Noriega
Notary Public

My Commission Expires



Chaves NM
County State

WELL NAME AND NUMBER Newcastle 6 Federal Com PDK No. 7H
LOCATION Section 1, T17S, R29E, Unit P, 1030 FSL, 10 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
90.7° @ 7571'		
90.6° @ 7760'		
90.4° @ 7918'		
90.0° @ 7949'		
91.3° @ 8044'		
91.2° @ 8139'		
91.0° @ 8233'		
90.9° @ 8328'		
90.6° @ 8422'		
91.4° @ 8517'		
91.2° @ 8706'		
90.9° @ 8896'		
90.0° @ 9085'		
90.0° @ 9149'		

Drilling Contractor- UNITED DRILLING, INC.

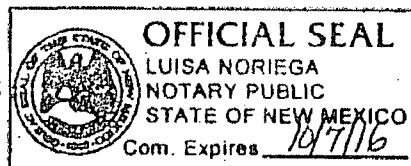
By: Ramon Gonzalez
(Ramon Gonzalez)

Title: Superintendent

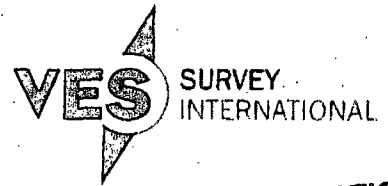
Subscribed and sworn to before me this 9th day of December 2014.

Luis Noriega
Notary Public

My Commission Expires:



Chaves NM
County State



NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 11 2015

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December 9, 2014

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

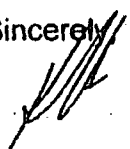
Attn: Kanicia Castillo

RE: Newcastle 6 Federal Com PDK 7H

Please find enclosed a copy of the survey from 0.00' to 3873.00' 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.

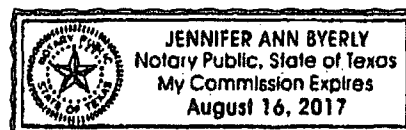
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 9 day of December A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: COG Operating
Lease/Well: NEWCASTLE 6 FEDERAL COM PDK/7H

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: 12.5 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 12/9/2014 / 13:44

VES Survey International
West Texas
(432) 563-5444

Surveyor: Jordan Shelleby
Newcastle 6 Federal Com PDK 7H / API 30-015-42506

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 11 2015

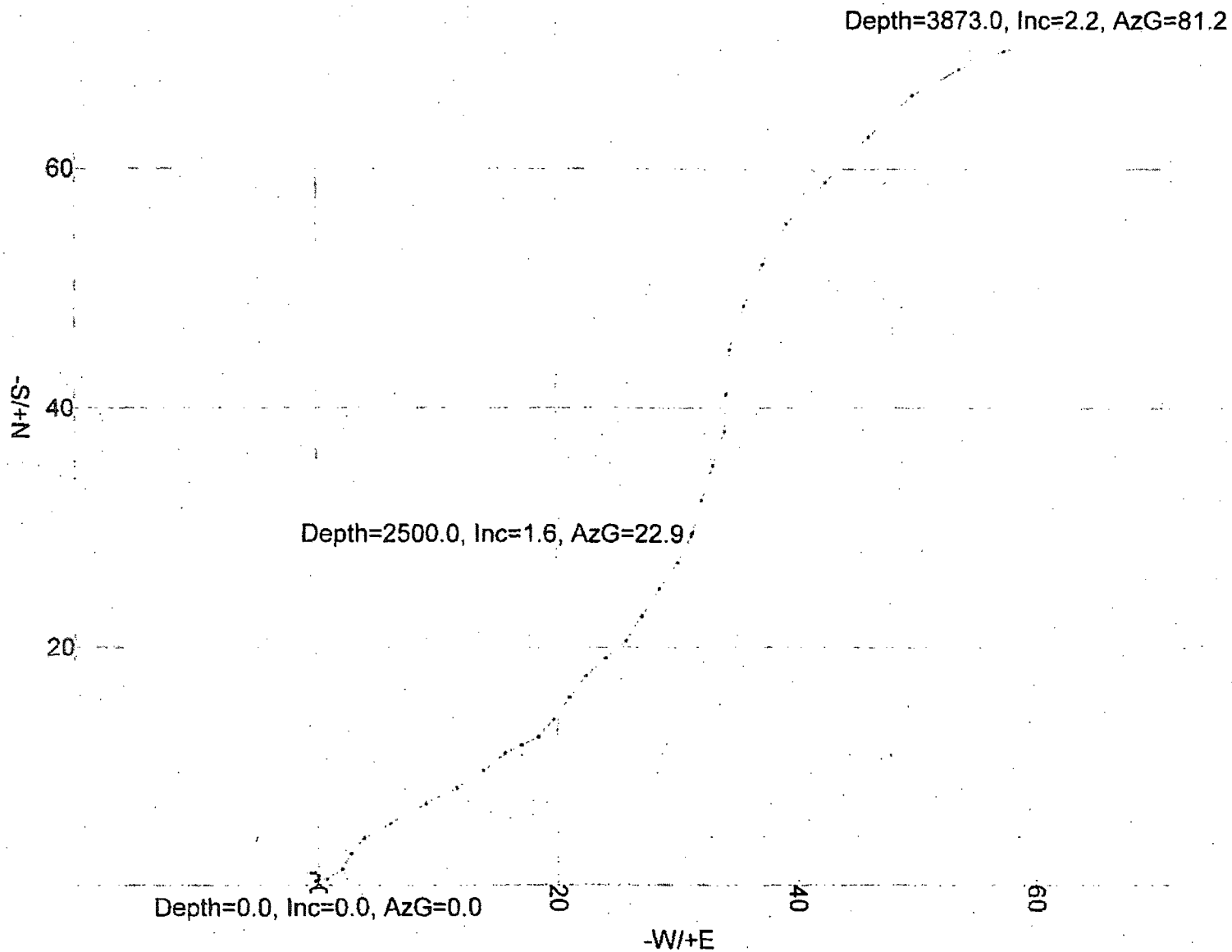
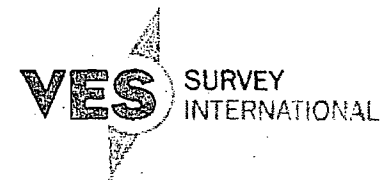
RECEIVED

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	0.49	325.22	100.00	0.35	-0.25	0.35	0.43	325.22	0.49
200.00	0.41	340.64	200.00	1.04	-0.61	1.04	1.21	329.71	0.15
300.00	0.61	126.81	299.99	1.06	-0.30	1.06	1.10	344.22	0.98
400.00	0.13	276.47	399.99	0.75	0.01	0.75	0.75	0.93	0.73
500.00	0.33	161.06	499.99	0.49	-0.01	0.49	0.49	358.77	0.41
600.00	0.84	63.04	599.99	0.55	0.74	0.55	0.92	53.33	0.95
700.00	0.88	49.84	699.98	1.38	1.98	1.38	2.41	55.16	0.20
800.00	0.95	14.44	799.96	2.67	2.77	2.67	3.85	46.01	0.56
900.00	1.08	59.14	899.95	3.96	3.79	3.96	5.48	43.72	0.78
1000.00	1.89	62.04	999.92	5.22	6.06	5.22	8.00	49.24	0.81
1100.00	1.97	60.24	1099.86	6.84	9.00	6.84	11.31	52.75	0.10
1200.00	1.40	67.17	1199.82	8.17	11.61	8.17	14.20	54.88	0.60
1300.00	1.69	47.30	1299.78	9.64	13.82	9.64	16.85	55.10	0.60
1400.00	0.97	58.50	1399.75	11.08	15.62	11.08	19.15	54.65	0.76
1500.00	0.83	71.62	1499.74	11.75	17.03	11.75	20.69	55.40	0.25
1600.00	0.96	54.49	1599.73	12.48	18.42	12.48	22.26	55.88	0.31
1700.00	1.26	32.01	1699.71	13.90	19.70	13.90	24.11	54.78	0.51
1800.00	1.38	38.44	1799.68	15.78	21.03	15.78	26.29	53.11	0.19

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	1.26	36.29	1899.66	17.61	22.43	17.61	28.52	51.86	0.13
2000.00	1.34	59.16	1999.63	19.10	24.09	19.10	30.74	51.58	0.52
2100.00	1.26	37.76	2099.61	20.57	25.76	20.57	32.97	51.40	0.49
2200.00	1.53	28.79	2199.58	22.61	27.08	22.61	35.27	50.14	0.35
2300.00	1.57	36.23	2299.54	24.88	28.53	24.88	37.86	48.91	0.20
2400.00	1.51	32.66	2399.50	27.09	30.05	27.09	40.46	47.96	0.11
2500.00	1.55	22.89	2499.47	29.45	31.29	29.45	42.97	46.73	0.26
2600.00	1.77	8.75	2599.43	32.22	32.05	32.22	45.45	44.84	0.46
2700.00	1.81	27.97	2699.38	35.15	33.03	35.15	48.23	43.22	0.60
2800.00	1.70	9.10	2799.33	38.01	34.00	38.01	51.00	41.82	0.59
2900.00	1.97	357.11	2899.28	41.18	34.15	41.18	53.60	39.67	0.47
3000.00	2.30	9.73	2999.21	44.87	34.40	44.87	56.54	37.48	0.57
3100.00	2.20	27.25	3099.14	48.55	35.62	48.55	60.21	36.27	0.69
3200.00	2.19	20.93	3199.06	52.04	37.18	52.04	63.95	35.54	0.24
3300.00	2.40	39.79	3298.99	55.43	39.20	55.43	67.89	35.27	0.78
3400.00	3.04	46.62	3398.87	58.85	42.46	58.85	72.57	35.81	0.72
3500.00	2.98	40.11	3498.74	62.66	46.06	62.66	77.76	36.32	0.35
3600.00	2.78	53.19	3598.61	66.10	49.67	66.10	82.68	36.93	0.68
3700.00	2.47	70.17	3698.51	68.28	53.65	68.28	86.84	38.16	0.83
3800.00	2.19	65.02	3798.42	69.82	57.41	69.82	90.39	39.43	0.36
3873.00	2.24	81.18	3871.37	70.63	60.08	70.63	92.73	40.39	0.86



VES Survey International
West Texas
(432) 563-5444
Surveyor: Jordan Shelleby
Newcastle 6 Federal Com PDK 7H / API 30-015-42506



VES Survey Date: 11/28/2014



NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 11 2015

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COG Operating LLC

Eddy County, NM

Newcastle 6 Federal Com PDK

#7H

OH

Survey: MWD #1

Standard Survey Report

08 December, 2014



Wellplanning Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3691.0usft (Original Well Elev)
Site:	Newcastle 6 Federal Com PDK	MD Reference:	WELL @ 3691.0usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

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:	Newcastle 6 Federal Com PDK				
Site Position:		Northing:	676,354.20 usft	Latitude:	32° 51' 32.353 N
From:	Map	Easting:	596,464.50 usft	Longitude:	104° 1' 9.080 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17 °

Well:	#7H					
Well Position	+N-S	0.0 usft	Northing:	676,354.20 usft	Latitude:	32° 51' 32.353 N
	+E-W	0.0 usft	Easting:	596,464.50 usft	Longitude:	104° 1' 9.080 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,678.0 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	(mT)		($^{\circ}$)	($^{\circ}$)	(nT)
	IGRF2010	11/28/2014	7.42	60.61	48,601

Design:	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	90.17	

Survey Program		Date	12/8/2014		
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
100.0	3,873.0	GYRO (OH)	NS-GYRO-SS	NS Gyro single shots	
3,976.0	9,149.0	MWD #1 (OH)	MWD	MWD - Standard	

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)
3,873.0	2.24	81.18	3,871.4	70.7	60.1	59.9	0.00	0.00	0.00
3,976.0	4.20	73.80	3,974.2	72.0	65.7	65.5	1.94	1.90	-7.17
4,007.0	5.40	83.10	4,005.1	72.5	68.3	68.0	4.60	3.87	30.00
4,039.0	10.70	85.30	4,036.8	72.9	72.7	72.5	16.59	16.56	6.88
4,070.0	7.70	84.20	4,067.4	73.4	77.6	77.4	9.69	-9.68	-3.55
4,102.0	13.40	91.80	4,098.8	73.5	83.5	83.3	18.30	17.81	23.75
4,133.0	16.50	101.20	4,128.8	72.5	91.4	91.2	12.67	10.00	30.32
4,165.0	19.10	102.80	4,159.2	70.5	101.0	100.8	8.27	8.13	5.00
4,196.0	21.50	101.20	4,188.3	68.3	111.5	111.3	7.95	7.74	-5.16
4,228.0	24.20	99.40	4,217.8	66.0	123.7	123.5	8.71	8.44	-5.63



Wellplanning Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County NM	TVD Reference:	WELL @ 3691.0usft (Original Well Elev)
Site:	Newcastle 6 Federal Com PDK	MD Reference:	WELL @ 3691.0usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

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)
4,259.0	28.50	97.20	4,245.6	64.1	137.3	137.1	14.22	13.87	-7.10
4,291.0	33.10	95.40	4,273.0	62.3	153.6	153.4	14.66	14.38	-5.63
4,322.0	37.20	97.60	4,298.4	60.3	171.3	171.2	13.84	13.23	7.10
4,353.0	40.40	101.90	4,322.5	56.9	190.5	190.3	13.49	10.32	13.87
4,385.0	42.40	104.30	4,346.5	52.1	211.1	210.9	7.98	6.25	7.50
4,416.0	44.40	105.90	4,369.1	46.6	231.6	231.5	7.36	6.45	5.16
4,448.0	46.90	106.30	4,391.4	40.2	253.6	253.5	7.86	7.81	1.25
4,479.0	48.80	105.10	4,412.2	34.0	275.7	275.6	6.77	6.13	-3.87
4,511.0	50.70	102.90	4,432.9	28.1	299.4	299.3	7.92	5.94	-6.88
4,542.0	52.90	102.00	4,452.1	22.9	323.2	323.1	7.45	7.10	-2.90
4,574.0	55.80	102.00	4,470.7	17.5	348.6	348.6	9.06	9.06	0.00
4,605.0	58.90	102.80	4,487.5	11.9	374.1	374.1	10.23	10.00	2.58
4,637.0	62.80	104.30	4,503.0	5.3	401.3	401.3	12.86	12.19	4.69
4,669.0	67.50	105.00	4,516.5	-2.0	429.4	429.4	14.82	14.69	2.19
4,700.0	72.40	105.00	4,527.1	-9.6	457.5	457.5	15.81	15.81	0.00
4,732.0	77.40	104.90	4,535.4	-17.5	487.3	487.4	15.63	15.63	-0.31
4,763.0	80.90	104.90	4,541.3	-25.4	516.8	516.8	11.29	11.29	0.00
4,795.0	82.30	105.40	4,546.0	-33.6	547.3	547.4	4.64	4.38	1.56
4,826.0	84.60	106.20	4,549.5	-42.0	576.9	577.1	7.85	7.42	2.58
4,858.0	87.50	107.80	4,551.7	-51.4	607.5	607.6	10.34	9.06	5.00
4,888.0	88.50	108.70	4,552.7	-60.7	635.9	636.1	4.48	3.33	3.00
4,919.0	88.70	107.90	4,553.5	-70.5	665.4	665.6	2.66	0.65	-2.58
4,950.0	90.80	103.30	4,553.6	-78.8	695.2	695.4	16.31	6.77	-14.84
4,982.0	92.70	98.30	4,552.7	-84.8	726.6	726.9	16.71	5.94	-15.63
5,013.0	93.00	98.30	4,551.1	-89.3	757.3	757.5	0.97	0.97	0.00
5,108.0	92.40	98.60	4,546.6	-103.2	851.1	851.4	0.71	-0.63	0.32
5,203.0	90.10	95.40	4,544.6	-114.8	945.4	945.7	4.15	-2.42	-3.37
5,298.0	90.10	95.00	4,544.4	-123.4	1,040.0	1,040.3	0.42	0.00	-0.42
5,392.0	92.50	91.80	4,542.3	-129.0	1,133.8	1,134.2	4.25	2.55	-3.40
5,486.0	93.10	89.30	4,537.7	-129.9	1,227.6	1,228.0	2.73	0.64	-2.66
5,582.0	90.90	87.60	4,534.3	-127.3	1,323.5	1,323.9	2.90	-2.29	-1.77
5,677.0	91.50	87.10	4,532.3	-122.9	1,418.4	1,418.8	0.82	0.63	-0.53
5,771.0	89.50	87.40	4,531.5	-118.4	1,512.3	1,512.7	2.15	-2.13	0.32
5,866.0	89.10	87.10	4,532.7	-113.8	1,607.2	1,607.5	0.53	-0.42	-0.32
5,961.0	89.80	88.30	4,533.6	-110.0	1,702.1	1,702.4	1.46	0.74	1.26
6,055.0	90.70	88.50	4,533.2	-107.4	1,796.1	1,796.4	0.98	0.96	0.21
6,150.0	90.40	88.20	4,532.3	-104.6	1,891.0	1,891.3	0.45	-0.32	-0.32
6,246.0	91.20	88.10	4,530.9	-101.5	1,987.0	1,987.3	0.84	0.83	-0.10
6,340.0	91.10	88.10	4,529.0	-98.4	2,080.9	2,081.2	0.11	-0.11	0.00
6,435.0	91.20	88.10	4,527.1	-95.3	2,175.8	2,176.1	0.11	0.11	0.00
6,529.0	91.50	88.20	4,524.9	-92.2	2,269.7	2,270.0	0.34	0.32	0.11
6,624.0	91.90	88.30	4,522.1	-89.3	2,364.7	2,364.9	0.43	0.42	0.11
6,719.0	91.80	88.20	4,519.0	-86.4	2,459.6	2,459.8	0.15	-0.11	-0.11



Wellplanning Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3691.0usft (Original Well Elev)
Site:	Newcastle 6 Federal Com PDK	MD Reference:	WELL @ 3691.0usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Databases:	EDM 5000.1 Single User Db

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)
6,813.0	91.30	87.50	4,516.5	-82.9	2,553.5	2,553.7	0.91	-0.53	-0.74
6,908.0	91.30	87.50	4,514.3	-78.8	2,648.3	2,648.6	0.00	0.00	0.00
7,002.0	90.50	87.50	4,512.9	-74.7	2,742.2	2,742.5	0.85	-0.85	0.00
7,097.0	91.10	87.70	4,511.5	-70.7	2,837.2	2,837.4	0.67	0.63	0.21
7,192.0	90.60	88.00	4,510.1	-67.1	2,932.1	2,932.3	0.61	-0.53	0.32
7,286.0	91.00	88.10	4,508.8	-63.9	3,026.0	3,026.2	0.44	0.43	0.11
7,381.0	90.90	88.20	4,507.2	-60.9	3,121.0	3,121.1	0.15	-0.11	0.11
7,476.0	90.80	88.00	4,505.8	-57.7	3,215.9	3,216.0	0.24	-0.11	-0.21
7,571.0	90.70	88.00	4,504.6	-54.4	3,310.8	3,311.0	0.11	-0.11	0.00
7,665.0	90.90	88.90	4,503.3	-51.9	3,404.8	3,404.9	0.98	0.21	0.96
7,760.0	90.60	89.00	4,502.0	-50.1	3,499.8	3,499.9	0.33	-0.32	0.11
7,854.0	90.40	88.90	4,501.2	-48.4	3,593.7	3,593.9	0.24	-0.21	-0.11
7,949.0	90.00	88.60	4,500.9	-46.3	3,688.7	3,688.8	0.53	-0.42	-0.32
8,044.0	91.30	89.40	4,499.8	-44.7	3,783.7	3,783.8	1.61	1.37	0.84
8,139.0	91.20	89.20	4,497.7	-43.5	3,878.7	3,878.8	0.24	-0.11	-0.21
8,233.0	91.00	88.90	4,495.9	-42.0	3,972.6	3,972.7	0.38	-0.21	-0.32
8,328.0	90.90	88.50	4,494.3	-39.8	4,067.6	4,067.7	0.43	-0.11	-0.42
8,422.7	90.60	87.80	4,493.1	-36.7	4,162.3	4,162.3	0.80	-0.32	-0.74
8,517.0	91.40	88.00	4,491.5	-33.3	4,256.5	4,256.5	0.87	0.85	0.21
8,611.0	91.30	87.50	4,489.2	-29.6	4,350.4	4,350.4	0.54	-0.11	-0.53
8,706.0	91.20	88.20	4,487.2	-26.0	4,445.3	4,445.3	0.74	-0.11	0.74
8,801.0	91.00	88.20	4,485.4	-23.1	4,540.2	4,540.2	0.21	-0.21	0.00
8,896.0	90.90	87.50	4,483.8	-19.5	4,635.1	4,635.2	0.74	-0.11	-0.74
8,990.0	90.20	87.60	4,482.9	-15.5	4,729.0	4,729.1	0.75	-0.74	0.11
9,085.0	90.00	87.50	4,482.7	-11.4	4,823.9	4,824.0	0.24	-0.21	-0.11
9,132.3	90.00	87.50	4,482.7	-9.3	4,871.2	4,871.2	0.00	0.00	0.00
PBHL(NC#7H)									
9,149.0	90.00	87.50	4,482.7	-8.6	4,887.9	4,887.9	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____