



30-015-42506

December 9, 2014

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

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 6 2015

RECEIVED

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.

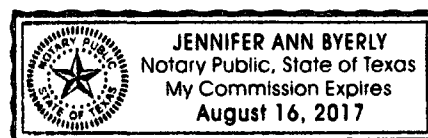
Sincerely,

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



NM OIL CONSERVATION
ARTISTA DISTRICT
MAR 6 2015
RECEIVED

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

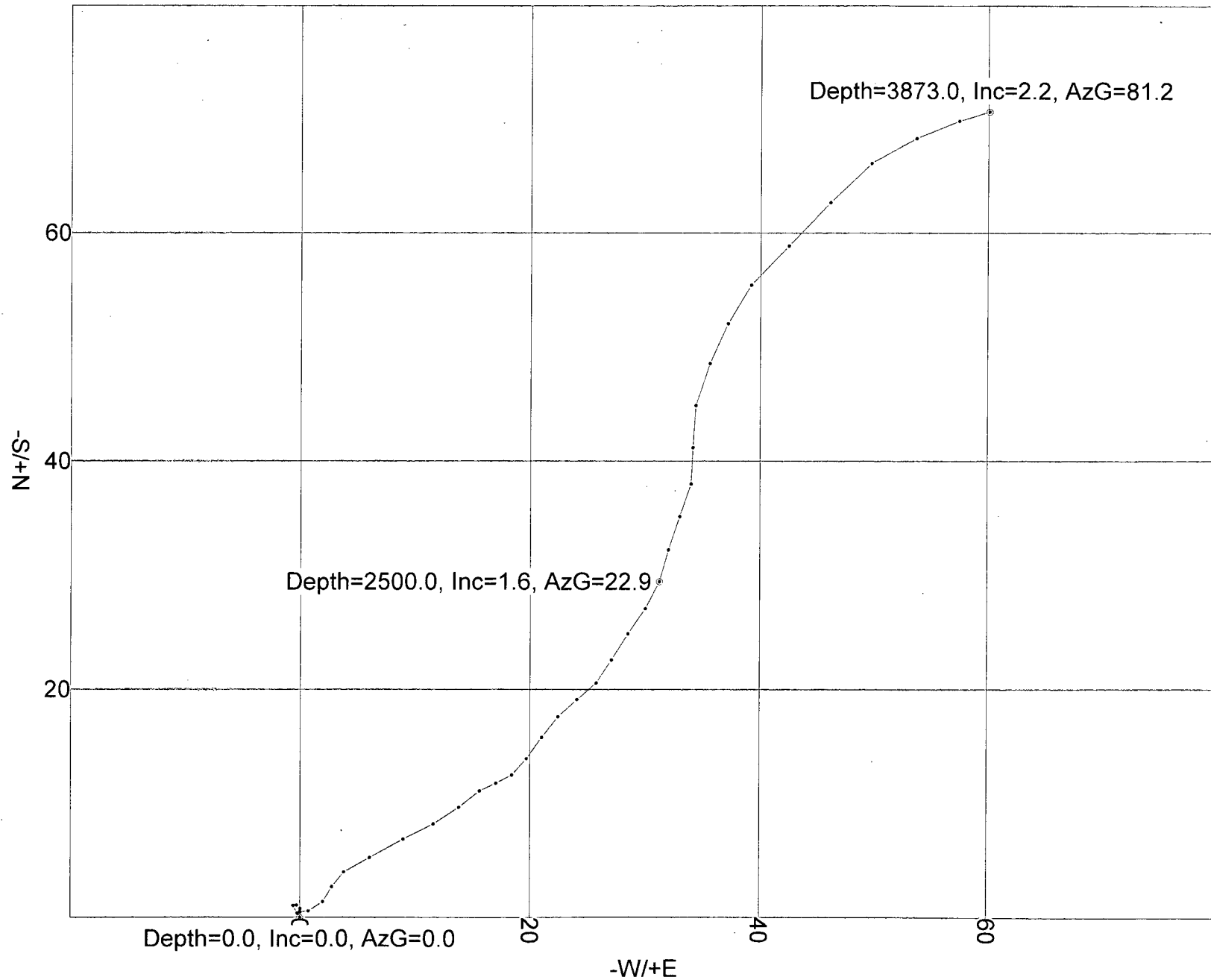
Newcastle 6 Federal Com PDK 7H / API 30-015-42506

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	0.98	54.49	1599.73	12.48	18.42	12.48	22.25	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	53.50	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	0.35
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



COG Operating LLC

Eddy County, NM

Newcastle 6 Federal Com PDK

#7H

OH

Survey: MWD #1

Standard Survey Report

08 December, 2014

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 6 2015

RECEIVED



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
From:	Map	Easting:	596,464.50 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 51' 32.353 N
		Longitude:	104° 1' 9.080 W
		Grid Convergence:	0.17 °

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

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	11/28/2014	7.42
			Dip Angle
			(°)
			60.61
			Field Strength
			(nT)
			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
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			90.17

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

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)
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

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)
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



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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

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)
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: _____

MAR 6 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.

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° @ 318'	19.1° @ 4159'	92.4° @ 5108'
.2° @ 704'	21.5° @ 4196'	91.0° @ 5298'
.5° @ 1067'	28.5° @ 4259'	93.1° @ 5486'
1.3° @ 1287'	33.1° @ 4291'	90.9° @ 5582'
1.1° @ 1703'	37.2° @ 4322'	91.5° @ 5677'
1.3° @ 2019'	42.4° @ 4385'	89.8° @ 5961'
1.5° @ 2343'	44.4° @ 4416'	90.7° @ 6055'
2° @ 2650'	50.7° @ 4511'	90.4° @ 6150'
2.2° @ 2904'	52.9° @ 4542'	91.2° @ 6246'
2.2° @ 3187'	55.8° @ 4574'	91.1° @ 6340'
2.4° @ 3501'	77.4° @ 4732'	91.2° @ 6435'
2.3° @ 3785'	80.9° @ 4763'	91.5° @ 6529'
2.2° @ 3884'	82.3° @ 4795'	91.9° @ 6624'
2.3° @ 3913'	84.6° @ 4826'	91.8° @ 6719'
5.4° @ 4007'	88.7° @ 4919'	91.3° @ 6813'
10.7° @ 4070'	90.8° @ 4950'	91.3° @ 6908'
13.4° @ 4102'	92.7° @ 4982'	91.0° @ 7286'
16.5° @ 4128'	93.0° @ 5013'	90.8° @ 7476'

Drilling Contractor- UNITED DRILLING, INC.

By:

Ramon Gonzalez
(Ramon Gonzalez)

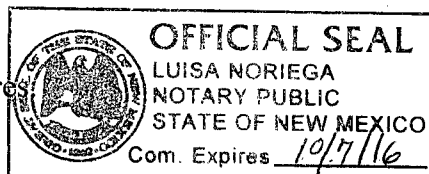
Title:

Superintendent

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

Luisa 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.

Maria Noriega
Notary Public
Charles *WM*
County State

My Commission Expires:

