



COG Operating LLC

Eddy County, NM (NAD27 NME)

Daisy 24 State Com

505H

OH \ 66036

Design: Surveys (Pioneer 84)

Standard Survey Report

27 February, 2020



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 505H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Well:	505H	North Reference:	Grid
Wellbore:	OH \ 66036	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

Project	Eddy County, NM (NAD27 NME)		
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	Daisy 24 State Com		
Site Position:		Northing:	408,073.20 usft
From:	Map	Easting:	556,552.70 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 7' 18.400350 N
		Longitude:	104° 9' 2.377557 W
		Grid Convergence:	0.10 °

Well	505H		
Well Position	+N/-S	0.00 usft	Northing: 408,157.83 usft
	+E/-W	0.00 usft	Easting: 560,719.89 usft
Position Uncertainty	1.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 7' 19.165404 N
		Longitude:	104° 8' 13.917948 W
		Ground Level:	3,089.00 usft

Wellbore	OH \ 66036				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	2/15/2020	7.03	59.80	47,770.00000000

Design	Surveys (Pioneer 84)				
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	221.78	

Survey Program	Date	2/27/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	7,037.00	SDI Gyro Surveys (OH \ 66036)	Scientific Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
7,079.00	18,127.00	Phoenix MWD Surveys - SQC (OH \ 66036)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction	

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	0.68	176.90	100.00	-0.59	0.03	0.42	0.68	0.68	0.00	
125.00	0.71	167.26	125.00	-0.89	0.07	0.62	0.48	0.12	-38.56	
150.00	0.64	162.16	149.99	-1.18	0.15	0.78	0.37	-0.28	-20.40	
175.00	0.55	176.13	174.99	-1.43	0.20	0.93	0.68	-0.36	55.88	
200.00	0.56	223.65	199.99	-1.64	0.13	1.14	1.79	0.04	190.08	
225.00	0.51	235.06	224.99	-1.79	-0.05	1.37	0.47	-0.20	45.64	
250.00	0.91	238.33	249.99	-1.96	-0.31	1.67	1.61	1.60	13.08	
275.00	1.17	235.19	274.98	-2.21	-0.69	2.10	1.06	1.04	-12.56	
300.00	1.34	237.35	299.98	-2.51	-1.14	2.63	0.71	0.68	8.64	

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Site:	Daisy 24 State Com	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Well:	505H	North Reference:	Grid
Wellbore:	OH \ 66036	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

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)
325.00	1.46	232.05	324.97	-2.86	-1.64	3.23	0.71	0.48	-21.20
350.00	1.48	234.30	349.96	-3.25	-2.15	3.86	0.24	0.08	9.00
375.00	1.68	233.47	374.95	-3.65	-2.71	4.53	0.81	0.80	-3.32
400.00	1.77	237.10	399.94	-4.08	-3.33	5.26	0.57	0.36	14.52
425.00	1.67	237.64	424.93	-4.49	-3.96	5.99	0.41	-0.40	2.16
450.00	1.79	234.46	449.92	-4.91	-4.59	6.72	0.61	0.48	-12.72
475.00	1.75	239.25	474.91	-5.33	-5.23	7.46	0.61	-0.16	19.16
500.00	1.73	244.53	499.90	-5.69	-5.90	8.17	0.65	-0.08	21.12
525.00	1.62	246.04	524.89	-5.99	-6.57	8.84	0.47	-0.44	6.04
550.00	1.32	251.02	549.88	-6.23	-7.16	9.42	1.30	-1.20	19.92
575.00	1.32	253.26	574.87	-6.41	-7.71	9.91	0.21	0.00	8.96
600.00	1.25	254.76	599.86	-6.56	-8.25	10.39	0.31	-0.28	6.00
625.00	1.30	256.25	624.86	-6.70	-8.79	10.85	0.24	0.20	5.96
650.00	1.24	258.18	649.85	-6.82	-9.33	11.30	0.29	-0.24	7.72
675.00	1.28	261.45	674.85	-6.92	-9.87	11.74	0.33	0.16	13.08
700.00	1.27	260.81	699.84	-7.01	-10.42	12.17	0.07	-0.04	-2.56
725.00	1.26	261.05	724.83	-7.09	-10.96	12.59	0.05	-0.04	0.96
750.00	1.39	265.41	749.83	-7.16	-11.54	13.03	0.66	0.52	17.44
775.00	1.36	268.24	774.82	-7.19	-12.13	13.45	0.30	-0.12	11.32
800.00	1.26	267.03	799.81	-7.22	-12.71	13.85	0.42	-0.40	-4.84
825.00	0.88	269.92	824.81	-7.23	-13.17	14.17	1.53	-1.52	11.56
850.00	0.85	260.79	849.81	-7.26	-13.55	14.44	0.56	-0.12	-36.52
875.00	0.74	265.62	874.80	-7.30	-13.89	14.70	0.51	-0.44	19.32
900.00	0.73	253.07	899.80	-7.36	-14.20	14.95	0.64	-0.04	-50.20
925.00	0.64	251.96	924.80	-7.45	-14.49	15.21	0.36	-0.36	-4.44
950.00	0.68	251.24	949.80	-7.54	-14.76	15.46	0.16	0.16	-2.88
975.00	0.48	251.65	974.80	-7.62	-15.00	15.68	0.80	-0.80	1.64
1,000.00	0.45	251.33	999.80	-7.69	-15.19	15.86	0.12	-0.12	-1.28
1,025.00	0.46	253.24	1,024.79	-7.75	-15.38	16.03	0.07	0.04	7.64
1,050.00	0.51	243.66	1,049.79	-7.83	-15.58	16.22	0.38	0.20	-38.32
1,075.00	0.37	236.42	1,074.79	-7.92	-15.75	16.40	0.60	-0.56	-28.96
1,100.00	0.47	247.85	1,099.79	-8.00	-15.91	16.57	0.52	0.40	45.72
1,125.00	0.30	247.68	1,124.79	-8.07	-16.06	16.72	0.68	-0.68	-0.68
1,150.00	0.34	230.68	1,149.79	-8.14	-16.18	16.85	0.41	0.16	-68.00
1,175.00	0.35	236.92	1,174.79	-8.23	-16.30	17.00	0.16	0.04	24.96
1,200.00	0.34	232.36	1,199.79	-8.32	-16.43	17.15	0.12	-0.04	-18.24
1,225.00	0.31	226.44	1,224.79	-8.41	-16.53	17.29	0.18	-0.12	-23.68
1,250.00	0.16	249.63	1,249.79	-8.47	-16.62	17.38	0.70	-0.60	92.76
1,275.00	0.56	238.05	1,274.79	-8.54	-16.75	17.53	1.62	1.60	-46.32
1,300.00	0.37	251.33	1,299.79	-8.63	-16.93	17.72	0.87	-0.76	53.12
1,325.00	0.43	254.82	1,324.79	-8.68	-17.10	17.87	0.26	0.24	13.96
1,350.00	0.46	266.10	1,349.79	-8.72	-17.29	18.02	0.37	0.12	45.12
1,375.00	0.20	290.50	1,374.79	-8.71	-17.43	18.11	1.16	-1.04	97.60

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Design:	Surveys (Pioneer 84)	Database:	USA Compass

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)
1,400.00	0.33	257.17	1,399.79	-8.71	-17.54	18.18	0.79	0.52	-133.32
1,425.00	0.19	308.82	1,424.79	-8.70	-17.64	18.24	1.04	-0.56	206.60
1,450.00	0.40	289.22	1,449.79	-8.64	-17.76	18.28	0.92	0.84	-78.40
1,475.00	0.41	280.16	1,474.79	-8.60	-17.93	18.36	0.26	0.04	-36.24
1,500.00	0.29	304.29	1,499.79	-8.55	-18.07	18.41	0.75	-0.48	96.52
1,525.00	0.55	283.07	1,524.78	-8.48	-18.24	18.48	1.19	1.04	-84.88
1,550.00	0.31	316.17	1,549.78	-8.41	-18.40	18.53	1.34	-0.96	132.40
1,575.00	0.38	307.42	1,574.78	-8.31	-18.52	18.53	0.35	0.28	-35.00
1,600.00	0.43	309.10	1,599.78	-8.20	-18.65	18.54	0.21	0.20	6.72
1,625.00	0.33	57.70	1,624.78	-8.10	-18.67	18.48	2.48	-0.40	434.40
1,650.00	0.39	76.14	1,649.78	-8.04	-18.52	18.34	0.52	0.24	73.76
1,675.00	0.57	76.67	1,674.78	-7.99	-18.32	18.17	0.72	0.72	2.12
1,700.00	0.95	80.53	1,699.78	-7.93	-17.99	17.90	1.53	1.52	15.44
1,725.00	0.89	73.97	1,724.78	-7.84	-17.60	17.58	0.48	-0.24	-26.24
1,750.00	1.02	72.98	1,749.77	-7.72	-17.20	17.22	0.52	0.52	-3.96
1,775.00	0.82	74.62	1,774.77	-7.61	-16.82	16.88	0.81	-0.80	6.56
1,800.00	0.83	78.11	1,799.77	-7.53	-16.47	16.59	0.20	0.04	13.96
1,825.00	0.91	77.02	1,824.76	-7.45	-16.10	16.28	0.33	0.32	-4.36
1,850.00	0.99	76.16	1,849.76	-7.35	-15.69	15.94	0.33	0.32	-3.44
1,875.00	1.03	78.97	1,874.76	-7.25	-15.26	15.58	0.25	0.16	11.24
1,900.00	0.95	82.13	1,899.75	-7.18	-14.84	15.24	0.39	-0.32	12.64
1,925.00	1.17	79.24	1,924.75	-7.11	-14.38	14.88	0.91	0.88	-11.56
1,950.00	1.40	87.93	1,949.74	-7.05	-13.83	14.47	1.20	0.92	34.76
1,975.00	1.53	88.24	1,974.73	-7.03	-13.19	14.03	0.52	0.52	1.24
2,000.00	1.80	92.24	1,999.72	-7.03	-12.46	13.55	1.18	1.08	16.00
2,025.00	1.99	94.52	2,024.71	-7.08	-11.64	13.03	0.82	0.76	9.12
2,050.00	2.36	94.85	2,049.69	-7.16	-10.69	12.46	1.48	1.48	1.32
2,075.00	2.71	94.23	2,074.67	-7.25	-9.59	11.79	1.40	1.40	-2.48
2,100.00	2.90	95.55	2,099.64	-7.35	-8.37	11.06	0.80	0.76	5.28
2,125.00	2.88	99.47	2,124.61	-7.52	-7.12	10.35	0.79	-0.08	15.68
2,150.00	2.70	109.94	2,149.58	-7.82	-5.95	9.79	2.16	-0.72	41.88
2,175.00	2.35	126.33	2,174.55	-8.32	-4.98	9.53	3.19	-1.40	65.56
2,200.00	2.32	138.29	2,199.53	-9.01	-4.23	9.54	1.95	-0.12	47.84
2,225.00	2.28	151.32	2,224.51	-9.82	-3.66	9.76	2.09	-0.16	52.12
2,250.00	2.10	162.09	2,249.49	-10.69	-3.28	10.16	1.79	-0.72	43.08
2,275.00	2.18	164.86	2,274.48	-11.59	-3.01	10.65	0.52	0.32	11.08
2,300.00	2.20	162.56	2,299.46	-12.50	-2.74	11.15	0.36	0.08	-9.20
2,325.00	2.14	165.87	2,324.44	-13.41	-2.49	11.66	0.56	-0.24	13.24
2,350.00	2.17	162.62	2,349.42	-14.32	-2.23	12.16	0.50	0.12	-13.00
2,375.00	2.08	166.69	2,374.40	-15.21	-1.99	12.67	0.70	-0.36	16.28
2,400.00	1.79	172.18	2,399.39	-16.04	-1.83	13.18	1.38	-1.16	21.96
2,425.00	1.10	175.13	2,424.38	-16.67	-1.75	13.60	2.78	-2.76	11.80
2,450.00	0.73	182.85	2,449.38	-17.06	-1.74	13.89	1.56	-1.48	30.88

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Wellbore:	OH \ 66036	Survey Calculation Method:	Minimum Curvature
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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)
2,475.00	0.67	247.83	2,474.38	-17.28	-1.89	14.14	3.01	-0.24	259.92
2,500.00	0.57	251.74	2,499.38	-17.37	-2.14	14.38	0.43	-0.40	15.64
2,525.00	0.58	252.67	2,524.37	-17.45	-2.38	14.60	0.05	0.04	3.72
2,550.00	0.60	248.32	2,549.37	-17.54	-2.62	14.82	0.20	0.08	-17.40
2,575.00	0.52	250.55	2,574.37	-17.62	-2.85	15.04	0.33	-0.32	8.92
2,600.00	0.61	252.15	2,599.37	-17.70	-3.08	15.25	0.37	0.36	6.40
2,625.00	0.65	250.61	2,624.37	-17.79	-3.34	15.49	0.17	0.16	-6.16
2,650.00	0.54	251.53	2,649.37	-17.87	-3.59	15.72	0.44	-0.44	3.68
2,675.00	0.68	258.03	2,674.37	-17.94	-3.84	15.94	0.62	0.56	26.00
2,700.00	0.61	253.70	2,699.36	-18.01	-4.12	16.17	0.34	-0.28	-17.32
2,725.00	0.59	254.27	2,724.36	-18.08	-4.37	16.39	0.08	-0.08	2.28
2,750.00	0.62	255.39	2,749.36	-18.15	-4.62	16.62	0.13	0.12	4.48
2,775.00	0.51	253.87	2,774.36	-18.21	-4.86	16.82	0.44	-0.44	-6.08
2,800.00	0.73	259.14	2,799.36	-18.28	-5.13	17.04	0.91	0.88	21.08
2,825.00	0.55	243.06	2,824.36	-18.36	-5.39	17.28	1.01	-0.72	-64.32
2,850.00	0.55	255.59	2,849.36	-18.44	-5.61	17.49	0.48	0.00	50.12
2,875.00	0.56	281.35	2,874.36	-18.45	-5.85	17.65	0.99	0.04	103.04
2,900.00	0.88	321.12	2,899.35	-18.28	-6.09	17.69	2.30	1.28	159.08
2,925.00	1.50	330.96	2,924.35	-17.84	-6.37	17.55	2.60	2.48	39.36
2,950.00	1.73	329.81	2,949.34	-17.23	-6.72	17.32	0.93	0.92	-4.60
2,975.00	1.84	327.85	2,974.33	-16.56	-7.12	17.09	0.50	0.44	-7.84
3,000.00	1.87	328.51	2,999.31	-15.88	-7.55	16.87	0.15	0.12	2.64
3,025.00	1.73	328.75	3,024.30	-15.20	-7.95	16.64	0.56	-0.56	0.96
3,050.00	1.90	325.31	3,049.29	-14.54	-8.39	16.43	0.81	0.68	-13.76
3,075.00	1.87	326.91	3,074.27	-13.86	-8.84	16.23	0.24	-0.12	6.40
3,100.00	1.93	326.73	3,099.26	-13.17	-9.30	16.01	0.24	0.24	-0.72
3,125.00	1.78	326.01	3,124.25	-12.49	-9.75	15.81	0.61	-0.60	-2.88
3,150.00	1.79	326.35	3,149.24	-11.84	-10.18	15.62	0.06	0.04	1.36
3,175.00	1.70	324.68	3,174.22	-11.22	-10.61	15.43	0.41	-0.36	-6.68
3,200.00	1.65	321.46	3,199.21	-10.63	-11.05	15.29	0.43	-0.20	-12.88
3,225.00	1.62	320.24	3,224.20	-10.08	-11.50	15.18	0.18	-0.12	-4.88
3,250.00	1.67	318.28	3,249.19	-9.54	-11.97	15.08	0.30	0.20	-7.84
3,275.00	1.63	323.15	3,274.18	-8.98	-12.42	14.97	0.58	-0.16	19.48
3,300.00	1.64	321.96	3,299.17	-8.41	-12.86	14.84	0.14	0.04	-4.76
3,325.00	1.61	322.59	3,324.16	-7.85	-13.29	14.71	0.14	-0.12	2.52
3,350.00	1.54	327.90	3,349.15	-7.29	-13.68	14.55	0.65	-0.28	21.24
3,375.00	1.64	319.54	3,374.14	-6.73	-14.09	14.41	1.01	0.40	-33.44
3,400.00	1.61	322.11	3,399.13	-6.18	-14.54	14.30	0.32	-0.12	10.28
3,425.00	1.60	320.96	3,424.12	-5.63	-14.98	14.18	0.13	-0.04	-4.60
3,450.00	1.64	321.94	3,449.11	-5.08	-15.42	14.06	0.19	0.16	3.92
3,475.00	1.68	317.94	3,474.10	-4.53	-15.88	13.96	0.49	0.16	-16.00
3,500.00	1.68	320.55	3,499.09	-3.97	-16.36	13.86	0.31	0.00	10.44
3,525.00	1.77	319.18	3,524.08	-3.40	-16.85	13.76	0.40	0.36	-5.48
3,550.00	1.68	320.92	3,549.07	-2.82	-17.33	13.65	0.42	-0.36	6.96

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 505H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Well:	505H	North Reference:	Grid
Wellbore:	OH \ 66036	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

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)
3,575.00	1.68	318.60	3,574.06	-2.26	-17.80	13.55	0.27	0.00	-9.28
3,600.00	1.76	317.83	3,599.05	-1.70	-18.30	13.46	0.33	0.32	-3.08
3,625.00	1.74	325.63	3,624.04	-1.10	-18.78	13.33	0.96	-0.08	31.20
3,650.00	1.74	318.98	3,649.02	-0.50	-19.24	13.19	0.81	0.00	-26.60
3,675.00	1.67	321.36	3,674.01	0.07	-19.72	13.09	0.40	-0.28	9.52
3,700.00	1.67	317.36	3,699.00	0.62	-20.19	12.99	0.47	0.00	-16.00
3,725.00	1.59	318.06	3,723.99	1.14	-20.67	12.92	0.33	-0.32	2.80
3,750.00	1.55	316.43	3,748.98	1.65	-21.13	12.85	0.24	-0.16	-6.52
3,775.00	1.51	315.93	3,773.97	2.13	-21.60	12.80	0.17	-0.16	-2.00
3,800.00	1.44	315.85	3,798.97	2.59	-22.04	12.75	0.28	-0.28	-0.32
3,825.00	1.38	314.70	3,823.96	3.03	-22.48	12.72	0.27	-0.24	-4.60
3,850.00	1.36	313.21	3,848.95	3.44	-22.91	12.69	0.16	-0.08	-5.96
3,875.00	1.27	310.03	3,873.94	3.82	-23.34	12.70	0.46	-0.36	-12.72
3,900.00	1.15	306.80	3,898.94	4.15	-23.75	12.73	0.55	-0.48	-12.92
3,925.00	1.16	301.07	3,923.93	4.43	-24.17	12.79	0.46	0.04	-22.92
3,950.00	1.10	301.10	3,948.93	4.69	-24.59	12.89	0.24	-0.24	0.12
3,975.00	1.17	301.04	3,973.92	4.94	-25.01	12.98	0.28	0.28	-0.24
4,000.00	1.10	306.54	3,998.92	5.22	-25.42	13.05	0.52	-0.28	22.00
4,025.00	1.30	294.96	4,023.91	5.48	-25.87	13.15	1.25	0.80	-46.32
4,050.00	2.30	293.45	4,048.90	5.80	-26.59	13.39	4.00	4.00	-6.04
4,075.00	3.05	295.92	4,073.87	6.29	-27.65	13.73	3.03	3.00	9.88
4,100.00	3.45	294.07	4,098.83	6.89	-28.93	14.14	1.65	1.60	-7.40
4,125.00	3.99	294.08	4,123.78	7.55	-30.42	14.63	2.16	2.16	0.04
4,150.00	5.21	290.53	4,148.70	8.30	-32.27	15.31	5.01	4.88	-14.20
4,175.00	5.81	288.92	4,173.58	9.11	-34.53	16.21	2.48	2.40	-6.44
4,200.00	6.16	287.20	4,198.45	9.92	-37.01	17.26	1.57	1.40	-6.88
4,225.00	6.70	287.22	4,223.29	10.75	-39.69	18.43	2.16	2.16	0.08
4,250.00	7.93	284.10	4,248.09	11.60	-42.75	19.83	5.17	4.92	-12.48
4,275.00	8.12	284.06	4,272.84	12.45	-46.14	21.46	0.76	0.76	-0.16
4,300.00	8.14	283.69	4,297.59	13.30	-49.57	23.11	0.22	0.08	-1.48
4,325.00	8.23	283.59	4,322.34	14.13	-53.03	24.79	0.36	0.36	-0.40
4,350.00	8.20	282.83	4,347.08	14.95	-56.50	26.50	0.45	-0.12	-3.04
4,375.00	7.97	282.30	4,371.83	15.72	-59.94	28.21	0.97	-0.92	-2.12
4,400.00	7.84	281.48	4,396.59	16.42	-63.30	29.93	0.69	-0.52	-3.28
4,425.00	7.79	281.43	4,421.36	17.10	-66.63	31.64	0.20	-0.20	-0.20
4,450.00	7.85	280.38	4,446.13	17.74	-69.97	33.39	0.62	0.24	-4.20
4,475.00	7.58	278.87	4,470.90	18.31	-73.28	35.17	1.35	-1.08	-6.04
4,500.00	7.47	278.03	4,495.69	18.79	-76.52	36.97	0.62	-0.44	-3.36
4,525.00	7.33	277.48	4,520.48	19.22	-79.71	38.77	0.63	-0.56	-2.20
4,550.00	7.15	276.94	4,545.28	19.62	-82.84	40.56	0.77	-0.72	-2.16
4,575.00	7.13	276.13	4,570.09	19.97	-85.92	42.35	0.41	-0.08	-3.24
4,600.00	7.18	277.11	4,594.89	20.33	-89.02	44.15	0.53	0.20	3.92
4,625.00	8.03	280.30	4,619.67	20.83	-92.28	45.95	3.80	3.40	12.76

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 505H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Well:	505H	North Reference:	Grid
Wellbore:	OH \ 66036	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

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)
4,650.00	8.30	280.52	4,644.42	21.48	-95.78	47.80	1.09	1.08	0.88
4,675.00	8.30	280.94	4,669.16	22.15	-99.32	49.66	0.24	0.00	1.68
4,700.00	8.26	280.87	4,693.90	22.83	-102.86	51.51	0.17	-0.16	-0.28
4,725.00	7.88	279.39	4,718.65	23.45	-106.31	53.35	1.73	-1.52	-5.92
4,750.00	7.61	278.65	4,743.42	23.98	-109.64	55.17	1.15	-1.08	-2.96
4,775.00	7.63	278.58	4,768.20	24.47	-112.92	56.98	0.09	0.08	-0.28
4,800.00	8.06	280.13	4,792.96	25.03	-116.28	58.81	1.92	1.72	6.20
4,825.00	9.26	283.79	4,817.68	25.82	-119.96	60.67	5.28	4.80	14.64
4,850.00	9.53	285.18	4,842.34	26.84	-123.91	62.54	1.41	1.08	5.56
4,875.00	9.65	285.49	4,866.99	27.94	-127.93	64.40	0.52	0.48	1.24
4,900.00	9.62	285.49	4,891.64	29.06	-131.96	66.25	0.12	-0.12	0.00
4,925.00	9.50	285.70	4,916.30	30.17	-135.96	68.08	0.50	-0.48	0.84
4,950.00	9.51	284.85	4,940.95	31.26	-139.94	69.93	0.56	0.04	-3.40
4,975.00	9.42	285.17	4,965.61	32.33	-143.91	71.78	0.42	-0.36	1.28
5,000.00	9.48	284.69	4,990.27	33.38	-147.88	73.63	0.40	0.24	-1.92
5,025.00	9.41	285.27	5,014.93	34.44	-151.84	75.48	0.47	-0.28	2.32
5,050.00	9.18	285.39	5,039.61	35.51	-155.74	77.28	0.92	-0.92	0.48
5,075.00	8.78	284.40	5,064.30	36.51	-159.51	79.04	1.72	-1.60	-3.96
5,100.00	8.71	284.03	5,089.01	37.45	-163.19	80.80	0.36	-0.28	-1.48
5,125.00	8.62	284.27	5,113.72	38.37	-166.84	82.55	0.39	-0.36	0.96
5,150.00	8.63	284.47	5,138.44	39.30	-170.48	84.28	0.13	0.04	0.80
5,175.00	8.46	283.36	5,163.16	40.19	-174.08	86.01	0.95	-0.68	-4.44
5,200.00	8.26	282.71	5,187.90	41.01	-177.62	87.76	0.88	-0.80	-2.60
5,225.00	8.22	282.74	5,212.64	41.80	-181.12	89.50	0.16	-0.16	0.12
5,250.00	8.14	282.46	5,237.38	42.58	-184.59	91.23	0.36	-0.32	-1.12
5,275.00	8.37	283.57	5,262.13	43.39	-188.09	92.96	1.12	0.92	4.44
5,300.00	9.21	282.85	5,286.83	44.26	-191.81	94.79	3.39	3.36	-2.88
5,325.00	10.54	283.21	5,311.46	45.23	-195.98	96.85	5.33	5.32	1.44
5,350.00	10.86	282.78	5,336.03	46.27	-200.51	99.08	1.32	1.28	-1.72
5,375.00	10.87	283.18	5,360.58	47.33	-205.10	101.36	0.30	0.04	1.60
5,400.00	10.91	283.09	5,385.13	48.40	-209.70	103.62	0.17	0.16	-0.36
5,425.00	10.82	282.89	5,409.68	49.46	-214.29	105.89	0.39	-0.36	-0.80
5,450.00	10.64	282.82	5,434.24	50.50	-218.83	108.14	0.72	-0.72	-0.28
5,475.00	10.35	282.12	5,458.82	51.48	-223.27	110.37	1.27	-1.16	-2.80
5,500.00	9.95	281.93	5,483.43	52.40	-227.58	112.55	1.61	-1.60	-0.76
5,525.00	9.68	281.50	5,508.07	53.26	-231.75	114.69	1.12	-1.08	-1.72
5,550.00	9.58	281.46	5,532.71	54.10	-235.85	116.80	0.40	-0.40	-0.16
5,575.00	9.19	281.02	5,557.38	54.89	-239.85	118.87	1.59	-1.56	-1.76
5,600.00	8.99	280.82	5,582.07	55.64	-243.73	120.90	0.81	-0.80	-0.80
5,625.00	8.99	280.60	5,606.76	56.36	-247.57	122.91	0.14	0.00	-0.88
5,650.00	9.39	280.65	5,631.44	57.10	-251.49	124.98	1.60	1.60	0.20
5,675.00	10.51	280.21	5,656.06	57.88	-255.74	127.23	4.49	4.48	-1.76
5,700.00	10.83	279.45	5,680.63	58.67	-260.30	129.68	1.40	1.28	-3.04

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 505H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Well:	505H	North Reference:	Grid
Wellbore:	OH \ 66036	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

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)
5,725.00	11.04	279.30	5,705.18	59.44	-264.98	132.22	0.85	0.84	-0.60
5,750.00	10.89	278.91	5,729.72	60.20	-269.68	134.78	0.67	-0.60	-1.56
5,775.00	10.78	278.64	5,754.27	60.91	-274.32	137.34	0.48	-0.44	-1.08
5,800.00	10.49	278.50	5,778.84	61.60	-278.88	139.87	1.16	-1.16	-0.56
5,825.00	10.08	278.01	5,803.44	62.24	-283.30	142.34	1.68	-1.64	-1.96
5,850.00	10.18	277.92	5,828.05	62.85	-287.65	144.78	0.40	0.40	-0.36
5,875.00	9.79	277.90	5,852.67	63.45	-291.95	147.20	1.56	-1.56	-0.08
5,900.00	9.48	277.90	5,877.32	64.02	-296.09	149.53	1.24	-1.24	0.00
5,925.00	9.30	278.30	5,901.99	64.60	-300.13	151.79	0.77	-0.72	1.60
5,950.00	9.28	278.55	5,926.66	65.19	-304.12	154.01	0.18	-0.08	1.00
5,975.00	8.73	275.29	5,951.35	65.66	-308.01	156.24	3.00	-2.20	-13.04
6,000.00	8.44	275.60	5,976.07	66.02	-311.72	158.46	1.17	-1.16	1.24
6,025.00	8.21	275.75	6,000.81	66.38	-315.32	160.59	0.92	-0.92	0.60
6,050.00	8.46	276.07	6,025.54	66.75	-318.93	162.71	1.02	1.00	1.28
6,075.00	9.98	278.94	6,050.22	67.28	-322.90	164.96	6.35	6.08	11.48
6,100.00	10.46	279.64	6,074.82	68.00	-327.27	167.34	1.98	1.92	2.80
6,125.00	10.28	279.33	6,099.41	68.74	-331.71	169.75	0.75	-0.72	-1.24
6,150.00	9.99	279.12	6,124.02	69.44	-336.05	172.11	1.17	-1.16	-0.84
6,175.00	9.58	279.01	6,148.66	70.11	-340.25	174.41	1.64	-1.64	-0.44
6,200.00	9.28	279.05	6,173.32	70.76	-344.30	176.63	1.20	-1.20	0.16
6,225.00	8.59	278.90	6,198.02	71.36	-348.13	178.73	2.76	-2.76	-0.60
6,250.00	8.02	278.53	6,222.76	71.91	-351.70	180.70	2.29	-2.28	-1.48
6,275.00	7.46	278.35	6,247.53	72.40	-355.03	182.55	2.24	-2.24	-0.72
6,300.00	7.02	278.99	6,272.33	72.88	-358.14	184.27	1.79	-1.76	2.56
6,325.00	6.73	279.89	6,297.15	73.37	-361.10	185.87	1.24	-1.16	3.60
6,350.00	6.77	281.02	6,321.98	73.90	-363.99	187.40	0.55	0.16	4.52
6,375.00	6.76	280.39	6,346.80	74.45	-366.88	188.92	0.30	-0.04	-2.52
6,400.00	6.40	279.43	6,371.64	74.94	-369.70	190.43	1.51	-1.44	-3.84
6,425.00	6.49	278.22	6,396.48	75.37	-372.47	191.96	0.65	0.36	-4.84
6,450.00	6.97	277.07	6,421.31	75.76	-375.38	193.60	1.99	1.92	-4.60
6,475.00	7.66	275.46	6,446.10	76.11	-378.54	195.45	2.88	2.76	-6.44
6,500.00	7.78	275.61	6,470.88	76.43	-381.89	197.44	0.49	0.48	0.60
6,525.00	7.32	275.31	6,495.66	76.74	-385.15	199.38	1.85	-1.84	-1.20
6,550.00	6.90	276.00	6,520.47	77.05	-388.23	201.21	1.71	-1.68	2.76
6,575.00	6.41	277.13	6,545.30	77.38	-391.11	202.88	2.03	-1.96	4.52
6,600.00	6.17	279.85	6,570.15	77.78	-393.82	204.38	1.53	-0.96	10.88
6,625.00	6.31	285.18	6,595.00	78.37	-396.47	205.71	2.38	0.56	21.32
6,650.00	6.45	294.07	6,619.85	79.30	-399.08	206.75	3.99	0.56	35.56
6,675.00	5.94	297.31	6,644.70	80.47	-401.51	207.50	2.47	-2.04	12.96
6,700.00	5.16	301.61	6,669.58	81.65	-403.62	208.02	3.53	-3.12	17.20
6,725.00	4.15	307.82	6,694.50	82.80	-405.29	208.29	4.51	-4.04	24.84
6,750.00	3.69	313.48	6,719.44	83.91	-406.59	208.32	2.40	-1.84	22.64
6,775.00	3.72	311.35	6,744.39	84.99	-407.78	208.31	0.56	0.12	-8.52
6,800.00	4.25	304.15	6,769.33	86.05	-409.16	208.44	2.91	2.12	-28.80

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 505H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Well:	505H	North Reference:	Grid
Wellbore:	OH \ 66036	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

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)
6,825.00	5.72	293.41	6,794.23	87.07	-411.07	208.95	6.94	5.88	-42.96
6,850.00	6.72	289.89	6,819.09	88.06	-413.58	209.89	4.28	4.00	-14.08
6,875.00	6.68	289.04	6,843.92	89.03	-416.33	211.00	0.43	-0.16	-3.40
6,900.00	6.96	286.63	6,868.74	89.94	-419.16	212.20	1.60	1.12	-9.64
6,925.00	7.62	285.19	6,893.54	90.81	-422.21	213.59	2.74	2.64	-5.76
6,950.00	7.92	284.13	6,918.31	91.66	-425.48	215.13	1.33	1.20	-4.24
6,975.00	7.76	284.67	6,943.07	92.51	-428.78	216.70	0.70	-0.64	2.16
7,000.00	7.23	284.78	6,967.86	93.34	-431.94	218.18	2.12	-2.12	0.44
7,025.00	6.79	285.45	6,992.67	94.13	-434.88	219.55	1.79	-1.76	2.68
7,037.00	6.57	282.62	7,004.59	94.47	-436.24	220.20	3.30	-1.83	-23.58
Tie In									
7,079.00	5.66	277.19	7,046.35	95.26	-440.64	222.55	2.57	-2.17	-12.93
First Phoenix MWD Survey									
7,126.00	5.00	275.30	7,093.15	95.73	-444.98	225.08	1.45	-1.40	-4.02
7,189.00	4.96	255.38	7,155.92	95.30	-450.35	228.98	2.73	-0.06	-31.62
7,236.00	8.01	220.33	7,202.63	92.29	-454.43	233.95	10.35	6.49	-74.57
7,284.00	10.73	200.02	7,249.99	85.54	-458.13	241.45	8.84	5.67	-42.31
7,331.00	14.39	193.52	7,295.86	75.75	-460.99	250.66	8.34	7.79	-13.83
7,379.00	16.20	198.04	7,342.16	63.58	-464.46	262.04	4.51	3.77	9.42
7,426.00	19.78	202.39	7,386.86	49.99	-469.52	275.55	8.13	7.62	9.26
7,474.00	22.45	202.82	7,431.63	34.03	-476.17	291.88	5.57	5.56	0.90
7,521.00	26.41	203.08	7,474.42	16.13	-483.75	310.28	8.43	8.43	0.55
7,569.00	30.31	204.45	7,516.65	-4.72	-492.96	331.96	8.24	8.13	2.85
7,616.00	36.25	205.77	7,555.92	-28.05	-503.92	356.66	12.73	12.64	2.81
7,663.00	37.20	204.12	7,593.60	-53.54	-515.76	383.56	2.91	2.02	-3.51
7,710.00	40.95	205.54	7,630.08	-80.41	-528.21	411.89	8.20	7.98	3.02
7,758.00	41.87	204.62	7,666.08	-109.17	-541.67	442.30	2.30	1.92	-1.92
7,790.00	43.42	205.96	7,689.61	-128.77	-550.93	463.09	5.61	4.84	4.19
7,821.00	44.94	205.32	7,711.85	-148.24	-560.28	483.84	5.11	4.90	-2.06
7,853.00	46.96	204.93	7,734.09	-169.07	-570.04	505.87	6.37	6.31	-1.22
7,884.00	49.29	205.25	7,754.79	-189.97	-579.83	527.98	7.56	7.52	1.03
7,916.00	52.45	205.02	7,774.98	-212.44	-590.37	551.76	9.89	9.88	-0.72
7,948.00	55.26	203.95	7,793.85	-235.95	-601.08	576.43	9.19	8.78	-3.34
8,005.00	59.84	201.05	7,824.43	-280.39	-619.45	621.80	9.11	8.04	-5.09
8,037.00	64.55	200.52	7,839.35	-306.84	-629.49	648.22	14.79	14.72	-1.66
8,068.00	70.27	200.18	7,851.26	-333.67	-639.44	674.85	18.48	18.45	-1.10
8,100.00	75.25	199.97	7,860.74	-362.36	-649.92	703.24	15.58	15.56	-0.66
8,131.00	81.13	200.78	7,867.08	-390.79	-660.48	731.48	19.14	18.97	2.61
8,148.00	83.42	201.96	7,869.37	-406.48	-666.62	747.26	15.12	13.47	6.94
8,235.00	91.87	202.34	7,872.94	-486.92	-699.37	829.07	9.72	9.71	0.44
8,330.00	91.26	200.49	7,870.34	-575.32	-734.04	918.09	2.05	-0.64	-1.95
8,424.00	91.26	198.31	7,868.27	-663.96	-765.25	1,004.98	2.32	0.00	-2.32
8,519.00	90.55	196.14	7,866.77	-754.68	-793.38	1,091.38	2.40	-0.75	-2.28

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 505H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Well:	505H	North Reference:	Grid
Wellbore:	OH \ 66036	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

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)
8,614.00	90.36	194.40	7,866.02	-846.32	-818.40	1,176.38	1.84	-0.20	-1.83
8,708.00	90.63	192.99	7,865.21	-937.64	-840.65	1,259.31	1.53	0.29	-1.50
8,803.00	88.29	188.23	7,866.10	-1,030.98	-858.14	1,340.56	5.58	-2.46	-5.01
8,898.00	89.37	188.61	7,868.04	-1,124.94	-872.04	1,419.89	1.21	1.14	0.40
8,993.00	88.21	185.60	7,870.05	-1,219.17	-883.79	1,497.99	3.39	-1.22	-3.17
9,088.00	88.00	184.21	7,873.19	-1,313.77	-891.91	1,573.95	1.48	-0.22	-1.46
9,183.00	89.18	182.05	7,875.53	-1,408.59	-897.09	1,648.11	2.59	1.24	-2.27
9,278.00	90.65	181.67	7,875.67	-1,503.54	-900.18	1,720.97	1.60	1.55	-0.40
9,372.00	91.53	181.52	7,873.88	-1,597.48	-902.79	1,792.77	0.95	0.94	-0.16
9,467.00	92.46	181.78	7,870.57	-1,692.39	-905.53	1,865.36	1.02	0.98	0.27
9,562.00	90.37	182.17	7,868.23	-1,787.30	-908.80	1,938.32	2.24	-2.20	0.41
9,657.00	90.30	182.44	7,867.67	-1,882.22	-912.62	2,011.65	0.29	-0.07	0.28
9,752.00	91.04	182.68	7,866.56	-1,977.12	-916.86	2,085.24	0.82	0.78	0.25
9,847.00	91.23	182.35	7,864.68	-2,072.01	-921.03	2,158.78	0.40	0.20	-0.35
9,941.00	89.91	181.63	7,863.75	-2,165.94	-924.29	2,231.00	1.60	-1.40	-0.77
10,036.00	89.02	180.59	7,864.63	-2,260.92	-926.13	2,303.06	1.44	-0.94	-1.09
10,131.00	89.30	180.89	7,866.03	-2,355.90	-927.36	2,374.70	0.43	0.29	0.32
10,226.00	90.75	181.54	7,865.98	-2,450.87	-929.38	2,446.87	1.67	1.53	0.68
10,321.00	90.78	181.14	7,864.72	-2,545.84	-931.60	2,519.17	0.42	0.03	-0.42
10,416.00	91.25	181.10	7,863.03	-2,640.81	-933.45	2,591.22	0.50	0.49	-0.04
10,511.00	92.38	180.88	7,860.02	-2,735.74	-935.09	2,663.11	1.21	1.19	-0.23
10,606.00	92.00	179.42	7,856.39	-2,830.67	-935.34	2,734.07	1.59	-0.40	-1.54
10,701.00	91.44	177.66	7,853.54	-2,925.59	-932.92	2,803.24	1.94	-0.59	-1.85
10,796.00	90.69	179.06	7,851.78	-3,020.53	-930.21	2,872.23	1.67	-0.79	1.47
10,890.00	89.03	179.49	7,852.01	-3,114.52	-929.02	2,941.52	1.82	-1.77	0.46
10,985.00	86.74	179.22	7,855.51	-3,209.45	-927.95	3,011.60	2.43	-2.41	-0.28
11,080.00	86.79	178.84	7,860.87	-3,304.28	-926.34	3,081.25	0.40	0.05	-0.40
11,175.00	86.84	178.43	7,866.15	-3,399.11	-924.08	3,150.46	0.43	0.05	-0.43
11,270.00	86.77	178.18	7,871.45	-3,493.92	-921.28	3,219.29	0.27	-0.07	-0.26
11,365.00	86.79	178.07	7,876.78	-3,588.72	-918.17	3,287.92	0.12	0.02	-0.12
11,460.00	89.35	178.17	7,879.98	-3,683.60	-915.06	3,356.60	2.70	2.69	0.11
11,554.00	90.24	178.43	7,880.32	-3,777.56	-912.27	3,424.81	0.99	0.95	0.28
11,649.00	90.86	177.64	7,879.41	-3,872.50	-909.01	3,493.43	1.06	0.65	-0.83
11,744.00	91.38	176.61	7,877.55	-3,967.36	-904.25	3,561.00	1.21	0.55	-1.08
11,839.00	88.51	176.77	7,877.64	-4,062.19	-898.76	3,628.06	3.03	-3.02	0.17
11,934.00	88.19	177.29	7,880.38	-4,157.02	-893.84	3,695.50	0.64	-0.34	0.55
12,028.00	88.33	177.28	7,883.23	-4,250.88	-889.39	3,762.52	0.15	0.15	-0.01
12,123.00	89.20	179.38	7,885.28	-4,345.81	-886.63	3,831.47	2.39	0.92	2.21
12,218.00	89.84	179.36	7,886.07	-4,440.80	-885.58	3,901.61	0.67	0.67	-0.02
12,313.00	90.47	179.27	7,885.82	-4,535.79	-884.45	3,971.69	0.67	0.66	-0.09
12,408.00	91.68	179.83	7,884.03	-4,630.77	-883.70	4,042.02	1.40	1.27	0.59
12,503.00	92.20	179.65	7,880.82	-4,725.71	-883.27	4,112.54	0.58	0.55	-0.19
12,598.00	91.59	178.82	7,877.68	-4,820.65	-882.00	4,182.49	1.08	-0.64	-0.87
12,693.00	88.96	180.97	7,877.22	-4,915.64	-881.83	4,253.21	3.58	-2.77	2.26

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 505H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Well:	505H	North Reference:	Grid
Wellbore:	OH \ 66036	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

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)
12,788.00	89.70	181.16	7,878.33	-5,010.61	-883.59	4,325.21	0.80	0.78	0.20
12,883.00	90.19	181.13	7,878.42	-5,105.59	-885.49	4,397.30	0.52	0.52	-0.03
12,977.00	90.90	181.76	7,877.53	-5,199.56	-887.86	4,468.95	1.01	0.76	0.67
13,072.00	91.60	181.98	7,875.46	-5,294.48	-890.96	4,541.81	0.77	0.74	0.23
13,167.00	92.50	182.34	7,872.06	-5,389.35	-894.54	4,614.94	1.02	0.95	0.38
13,262.00	90.59	182.27	7,869.50	-5,484.24	-898.36	4,688.24	2.01	-2.01	-0.07
13,357.00	91.06	182.37	7,868.13	-5,579.15	-902.20	4,761.58	0.51	0.49	0.11
13,451.00	89.19	181.94	7,867.92	-5,673.08	-905.74	4,833.98	2.04	-1.99	-0.46
13,546.00	89.72	181.72	7,868.83	-5,768.03	-908.77	4,906.80	0.60	0.56	-0.23
13,640.00	90.81	182.26	7,868.39	-5,861.97	-912.04	4,979.03	1.29	1.16	0.57
13,735.00	91.41	182.62	7,866.55	-5,956.86	-916.08	5,052.49	0.74	0.63	0.38
13,830.00	92.07	182.91	7,863.67	-6,051.71	-920.66	5,126.27	0.76	0.69	0.31
13,925.00	89.57	182.02	7,862.31	-6,146.60	-924.74	5,199.76	2.79	-2.63	-0.94
14,020.00	88.89	181.46	7,863.58	-6,241.55	-927.63	5,272.48	0.93	-0.72	-0.59
14,115.00	89.34	181.59	7,865.05	-6,336.50	-930.16	5,344.97	0.49	0.47	0.14
14,209.00	90.21	181.74	7,865.42	-6,430.46	-932.89	5,416.86	0.94	0.93	0.16
14,304.00	90.23	181.79	7,865.06	-6,525.42	-935.81	5,489.62	0.06	0.02	0.05
14,399.00	89.19	180.24	7,865.54	-6,620.39	-937.50	5,561.57	1.96	-1.09	-1.63
14,494.00	88.91	179.51	7,867.11	-6,715.38	-937.29	5,632.26	0.82	-0.29	-0.77
14,589.00	89.36	179.14	7,868.55	-6,810.36	-936.17	5,702.35	0.61	0.47	-0.39
14,684.00	89.98	179.14	7,869.09	-6,905.35	-934.74	5,772.23	0.65	0.65	0.00
14,779.00	90.53	178.88	7,868.67	-7,000.33	-933.10	5,841.97	0.64	0.58	-0.27
14,873.00	90.88	179.04	7,867.51	-7,094.31	-931.40	5,910.91	0.41	0.37	0.17
14,968.00	91.57	179.05	7,865.48	-7,189.28	-929.81	5,980.68	0.73	0.73	0.01
15,063.00	91.54	178.71	7,862.90	-7,284.22	-927.96	6,050.24	0.36	-0.03	-0.36
15,158.00	89.29	177.78	7,862.22	-7,379.17	-925.05	6,119.11	2.56	-2.37	-0.98
15,253.00	89.94	177.68	7,862.86	-7,474.09	-921.29	6,187.39	0.69	0.68	-0.11
15,347.00	90.69	177.94	7,862.34	-7,568.02	-917.69	6,255.04	0.84	0.80	0.28
15,442.00	91.68	178.10	7,860.37	-7,662.94	-914.41	6,323.64	1.06	1.04	0.17
15,537.00	89.67	177.96	7,859.25	-7,757.88	-911.15	6,392.25	2.12	-2.12	-0.15
15,631.00	88.68	178.12	7,860.61	-7,851.81	-907.93	6,460.16	1.07	-1.05	0.17
15,726.00	89.31	178.25	7,862.27	-7,946.75	-904.92	6,528.95	0.68	0.66	0.14
15,821.00	89.31	177.83	7,863.42	-8,041.68	-901.68	6,597.58	0.44	0.00	-0.44
15,916.00	90.97	178.72	7,863.19	-8,136.64	-898.82	6,666.49	1.98	1.75	0.94
16,010.00	91.65	178.65	7,861.04	-8,230.59	-896.66	6,735.11	0.73	0.72	-0.07
16,105.00	92.60	178.58	7,857.51	-8,325.49	-894.36	6,804.35	1.00	1.00	-0.07
16,200.00	90.60	178.67	7,854.86	-8,420.42	-892.09	6,873.63	2.11	-2.11	0.09
16,295.00	89.94	179.51	7,854.41	-8,515.41	-890.58	6,943.45	1.12	-0.69	0.88
16,389.00	90.50	179.80	7,854.05	-8,609.41	-890.01	7,013.17	0.67	0.60	0.31
16,484.00	90.52	179.55	7,853.21	-8,704.40	-889.47	7,083.65	0.26	0.02	-0.26
16,579.00	90.93	180.03	7,852.01	-8,799.39	-889.12	7,154.26	0.66	0.43	0.51
16,674.00	89.56	181.07	7,851.60	-8,894.38	-890.04	7,225.70	1.81	-1.44	1.09
16,768.00	89.41	181.11	7,852.44	-8,988.36	-891.82	7,296.97	0.17	-0.16	0.04

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 505H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Well:	505H	North Reference:	Grid
Wellbore:	OH \ 66036	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 84)	Database:	USA Compass

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)
16,863.00	89.64	181.52	7,853.23	-9,083.33	-894.00	7,369.25	0.49	0.24	0.43
16,958.00	90.10	181.63	7,853.45	-9,178.30	-896.62	7,441.81	0.50	0.48	0.12
17,053.00	90.40	181.84	7,853.03	-9,273.25	-899.49	7,514.53	0.39	0.32	0.22
17,148.00	88.83	181.38	7,853.67	-9,368.21	-902.16	7,587.12	1.72	-1.65	-0.48
17,242.00	87.62	181.06	7,856.58	-9,462.14	-904.16	7,658.50	1.33	-1.29	-0.34
17,337.00	88.26	181.57	7,860.00	-9,557.05	-906.34	7,730.73	0.86	0.67	0.54
17,432.00	90.03	182.80	7,861.42	-9,651.97	-909.96	7,803.92	2.27	1.86	1.29
17,527.00	89.84	181.50	7,861.52	-9,746.90	-913.53	7,877.09	1.38	-0.20	-1.37
17,622.00	89.89	180.98	7,861.75	-9,841.88	-915.58	7,949.29	0.55	0.05	-0.55
17,716.00	89.52	179.94	7,862.23	-9,935.87	-916.34	8,019.88	1.17	-0.39	-1.11
17,811.00	89.36	178.84	7,863.16	-10,030.86	-915.32	8,090.04	1.17	-0.17	-1.16
17,906.00	89.92	179.24	7,863.76	-10,125.84	-913.73	8,159.81	0.72	0.59	0.42
18,001.00	90.72	179.65	7,863.23	-10,220.84	-912.81	8,230.04	0.95	0.84	0.43
18,064.00	91.01	179.73	7,862.28	-10,283.83	-912.47	8,276.79	0.48	0.46	0.13
Final Phoenix MWD Survey									
18,079.12	91.01	179.73	7,862.01	-10,298.95	-912.40	8,288.01	0.00	0.00	0.00
LTP: 18079.12' MD									
18,127.00	91.01	179.73	7,861.16	-10,346.82	-912.18	8,323.56	0.00	0.00	0.00
Projection to Bit									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,037.00	7,004.59	94.47	-436.24	Tie In
7,079.00	7,046.35	95.26	-440.64	First Phoenix MWD Survey
18,064.00	7,862.28	-10,283.83	-912.47	Final Phoenix MWD Survey
18,079.12	7,862.01	-10,298.95	-912.40	LTP: 18079.12' MD
18,127.00	7,861.16	-10,346.82	-912.18	Projection to Bit