



## **COG Operating LLC**

**Lea County, NM (NAD27 NME)**

**Gunner 8 Federal Com**

**604H**

**OH / 66564**

**Design: Surveys (McVay 8)**

## **Standard Survey Report**

**15 June, 2020**



<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	USA Compass

<b>Project</b>	Lea County, NM (NAD27 NME)		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	New Mexico East 3001		

<b>Site</b>	Gunner 8 Federal Com				
<b>Site Position:</b>		<b>Northing:</b>	393,259.80 usft	<b>Latitude:</b>	32° 4' 42.331178 N
<b>From:</b>	Map	<b>Easting:</b>	759,100.10 usft	<b>Longitude:</b>	103° 29' 48.524929 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.44 °

<b>Well</b>	604H					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	393,436.07 usft	<b>Latitude:</b>	32° 4' 44.108400 N
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	758,670.48 usft	<b>Longitude:</b>	103° 29' 53.502000 W
<b>Position Uncertainty</b>		1.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	3,333.40 usft

<b>Wellbore</b>	OH / 66564				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	User Defined	5/22/2020	6.55	59.68	47,607.40000000

<b>Design</b>	Surveys (McVay 8)				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	173.45	

<b>Survey Program</b>	<b>Date</b>	6/15/2020			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
100.00	11,900.00	SDI Gyro Surveys (OH / 66564)	Scientific Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
11,900.00	23,020.00	Gordon MWD Surveys - Corrected (OH / 6	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.53	196.11	100.00	-0.44	-0.13	0.43	0.53	0.53	0.00	
125.00	0.65	186.29	125.00	-0.70	-0.18	0.67	0.63	0.48	-39.28	
150.00	0.55	181.96	150.00	-0.96	-0.20	0.93	0.44	-0.40	-17.32	
175.00	0.50	196.00	174.99	-1.18	-0.23	1.15	0.55	-0.20	56.16	
200.00	0.58	198.53	199.99	-1.41	-0.30	1.36	0.33	0.32	10.12	
225.00	0.60	196.41	224.99	-1.65	-0.38	1.60	0.12	0.08	-8.48	
250.00	0.71	197.92	249.99	-1.93	-0.46	1.86	0.45	0.44	6.04	
275.00	0.69	193.27	274.99	-2.22	-0.54	2.14	0.24	-0.08	-18.60	
300.00	0.63	187.87	299.99	-2.50	-0.60	2.42	0.35	-0.24	-21.60	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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	0.47	187.24	324.99	-2.74	-0.63	2.65	0.64	-0.64	-2.52	
350.00	0.62	196.51	349.98	-2.97	-0.68	2.87	0.69	0.60	37.08	
375.00	0.61	177.03	374.98	-3.23	-0.71	3.13	0.83	-0.04	-77.92	
400.00	0.58	185.71	399.98	-3.49	-0.72	3.39	0.38	-0.12	34.72	
425.00	0.54	180.83	424.98	-3.74	-0.73	3.63	0.25	-0.16	-19.52	
450.00	0.53	189.90	449.98	-3.97	-0.75	3.86	0.34	-0.04	36.28	
475.00	0.46	187.90	474.98	-4.18	-0.79	4.06	0.29	-0.28	-8.00	
500.00	0.42	197.25	499.98	-4.37	-0.83	4.25	0.33	-0.16	37.40	
525.00	0.69	198.41	524.98	-4.60	-0.90	4.47	1.08	1.08	4.64	
550.00	0.38	204.21	549.98	-4.82	-0.98	4.67	1.26	-1.24	23.20	
575.00	0.72	204.96	574.97	-5.03	-1.08	4.88	1.36	1.36	3.00	
600.00	0.66	197.05	599.97	-5.32	-1.19	5.14	0.45	-0.24	-31.64	
625.00	0.20	184.97	624.97	-5.50	-1.24	5.32	1.87	-1.84	-48.32	
650.00	0.33	203.40	649.97	-5.61	-1.27	5.42	0.62	0.52	73.72	
675.00	0.26	218.95	674.97	-5.72	-1.34	5.53	0.42	-0.28	62.20	
700.00	0.32	197.42	699.97	-5.83	-1.39	5.63	0.49	0.24	-86.12	
725.00	0.14	198.63	724.97	-5.92	-1.42	5.72	0.72	-0.72	4.84	
750.00	0.21	228.96	749.97	-5.98	-1.47	5.77	0.46	0.28	121.32	
775.00	0.26	222.61	774.97	-6.05	-1.54	5.84	0.23	0.20	-25.40	
800.00	0.17	212.54	799.97	-6.13	-1.60	5.90	0.39	-0.36	-40.28	
825.00	0.33	196.00	824.97	-6.23	-1.64	6.00	0.70	0.64	-66.16	
850.00	0.31	167.23	849.97	-6.36	-1.64	6.13	0.64	-0.08	-115.08	
875.00	0.15	78.11	874.97	-6.42	-1.60	6.20	1.37	-0.64	-356.48	
900.00	0.10	130.63	899.97	-6.43	-1.55	6.21	0.48	-0.20	210.08	
925.00	0.35	112.41	924.97	-6.47	-1.46	6.26	1.03	1.00	-72.88	
950.00	0.39	101.55	949.97	-6.52	-1.31	6.33	0.32	0.16	-43.44	
975.00	0.42	94.31	974.97	-6.54	-1.13	6.37	0.24	0.12	-28.96	
1,000.00	0.28	131.79	999.97	-6.59	-1.00	6.43	1.04	-0.56	149.92	
1,025.00	0.33	119.95	1,024.97	-6.67	-0.89	6.52	0.32	0.20	-47.36	
1,050.00	0.39	121.51	1,049.97	-6.75	-0.75	6.62	0.24	0.24	6.24	
1,075.00	0.45	99.73	1,074.97	-6.81	-0.58	6.70	0.68	0.24	-87.12	
1,100.00	0.42	97.09	1,099.97	-6.84	-0.40	6.75	0.14	-0.12	-10.56	
1,125.00	0.32	129.15	1,124.97	-6.89	-0.25	6.82	0.90	-0.40	128.24	
1,150.00	0.41	95.34	1,149.96	-6.94	-0.11	6.89	0.92	0.36	-135.24	
1,175.00	0.27	109.93	1,174.96	-6.97	0.04	6.93	0.65	-0.56	58.36	
1,200.00	0.29	117.06	1,199.96	-7.02	0.15	6.99	0.16	0.08	28.52	
1,225.00	0.34	122.35	1,224.96	-7.09	0.27	7.07	0.23	0.20	21.16	
1,250.00	0.39	98.10	1,249.96	-7.14	0.41	7.14	0.64	0.20	-97.00	
1,275.00	0.30	117.62	1,274.96	-7.18	0.56	7.20	0.59	-0.36	78.08	
1,300.00	0.35	114.21	1,299.96	-7.24	0.68	7.28	0.21	0.20	-13.64	
1,325.00	0.46	115.41	1,324.96	-7.32	0.85	7.37	0.44	0.44	4.80	
1,350.00	0.49	101.13	1,349.96	-7.38	1.04	7.45	0.49	0.12	-57.12	
1,375.00	0.49	92.66	1,374.96	-7.41	1.25	7.50	0.29	0.00	-33.88	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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	0.35	102.11	1,399.96	-7.43	1.43	7.54	0.62	-0.56	37.80	
1,425.00	0.38	126.05	1,424.96	-7.49	1.58	7.62	0.62	0.12	95.76	
1,450.00	0.40	121.78	1,449.96	-7.59	1.72	7.74	0.14	0.08	-17.08	
1,475.00	0.51	106.91	1,474.96	-7.67	1.90	7.83	0.64	0.44	-59.48	
1,500.00	0.53	94.98	1,499.96	-7.71	2.12	7.90	0.44	0.08	-47.72	
1,525.00	0.48	93.26	1,524.96	-7.73	2.34	7.94	0.21	-0.20	-6.88	
1,550.00	0.45	87.17	1,549.95	-7.73	2.54	7.97	0.23	-0.12	-24.36	
1,575.00	0.30	116.13	1,574.95	-7.75	2.70	8.01	0.95	-0.60	115.84	
1,600.00	0.35	82.07	1,599.95	-7.77	2.83	8.04	0.79	0.20	-136.24	
1,625.00	0.42	100.81	1,624.95	-7.78	3.00	8.07	0.57	0.28	74.96	
1,650.00	0.52	92.07	1,649.95	-7.80	3.20	8.11	0.49	0.40	-34.96	
1,675.00	0.59	66.71	1,674.95	-7.75	3.43	8.09	1.01	0.28	-101.44	
1,700.00	0.61	60.91	1,699.95	-7.63	3.67	8.00	0.26	0.08	-23.20	
1,725.00	0.53	68.49	1,724.95	-7.53	3.89	7.92	0.44	-0.32	30.32	
1,750.00	0.66	65.73	1,749.95	-7.43	4.13	7.85	0.53	0.52	-11.04	
1,775.00	0.69	51.04	1,774.95	-7.27	4.38	7.72	0.70	0.12	-58.76	
1,800.00	0.68	54.11	1,799.94	-7.09	4.62	7.57	0.15	-0.04	12.28	
1,825.00	0.61	56.88	1,824.94	-6.93	4.85	7.44	0.31	-0.28	11.08	
1,850.00	0.84	44.04	1,849.94	-6.73	5.09	7.26	1.12	0.92	-51.36	
1,875.00	0.70	38.74	1,874.94	-6.48	5.31	7.04	0.63	-0.56	-21.20	
1,900.00	0.72	37.79	1,899.94	-6.23	5.50	6.82	0.09	0.08	-3.80	
1,925.00	0.84	40.21	1,924.93	-5.97	5.72	6.58	0.50	0.48	9.68	
1,950.00	0.84	34.43	1,949.93	-5.68	5.94	6.32	0.34	0.00	-23.12	
1,975.00	0.79	33.03	1,974.93	-5.38	6.14	6.05	0.22	-0.20	-5.60	
2,000.00	0.81	37.88	1,999.93	-5.10	6.34	5.79	0.28	0.08	19.40	
2,025.00	1.75	53.00	2,024.92	-4.73	6.75	5.47	3.96	3.76	60.48	
2,050.00	2.51	61.16	2,049.90	-4.23	7.54	5.07	3.27	3.04	32.64	
2,075.00	3.00	59.44	2,074.87	-3.64	8.58	4.59	1.99	1.96	-6.88	
2,100.00	3.06	60.16	2,099.84	-2.97	9.72	4.06	0.28	0.24	2.88	
2,125.00	3.11	59.81	2,124.80	-2.30	10.89	3.53	0.21	0.20	-1.40	
2,150.00	3.20	62.01	2,149.76	-1.63	12.09	3.00	0.60	0.36	8.80	
2,175.00	3.37	63.48	2,174.72	-0.98	13.36	2.49	0.76	0.68	5.88	
2,200.00	3.33	61.21	2,199.68	-0.30	14.66	1.97	0.55	-0.16	-9.08	
2,225.00	3.22	62.90	2,224.64	0.37	15.92	1.45	0.59	-0.44	6.76	
2,250.00	3.44	63.53	2,249.60	1.03	17.21	0.94	0.89	0.88	2.52	
2,275.00	3.67	64.34	2,274.55	1.71	18.61	0.43	0.94	0.92	3.24	
2,300.00	4.01	66.79	2,299.49	2.40	20.13	-0.09	1.51	1.36	9.80	
2,325.00	5.07	74.71	2,324.41	3.03	22.00	-0.50	4.92	4.24	31.68	
2,350.00	5.81	77.45	2,349.30	3.60	24.30	-0.80	3.14	2.96	10.96	
2,375.00	6.21	78.97	2,374.16	4.13	26.86	-1.04	1.72	1.60	6.08	
2,400.00	6.31	77.68	2,399.02	4.69	29.53	-1.29	0.69	0.40	-5.16	
2,425.00	6.59	78.34	2,423.86	5.27	32.28	-1.55	1.16	1.12	2.64	
2,450.00	6.68	80.04	2,448.69	5.81	35.12	-1.77	0.86	0.36	6.80	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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)	
2,475.00	7.02	79.07	2,473.51	6.35	38.05	-1.97	1.44	1.36	-3.88	
2,500.00	6.96	80.99	2,498.33	6.88	41.04	-2.15	0.96	-0.24	7.68	
2,525.00	7.07	82.37	2,523.14	7.32	44.06	-2.24	0.81	0.44	5.52	
2,550.00	7.14	81.97	2,547.95	7.74	47.13	-2.31	0.34	0.28	-1.60	
2,575.00	7.33	81.55	2,572.75	8.19	50.24	-2.41	0.79	0.76	-1.68	
2,600.00	7.52	80.41	2,597.54	8.70	53.43	-2.55	0.96	0.76	-4.56	
2,625.00	7.63	80.35	2,622.32	9.25	56.68	-2.72	0.44	0.44	-0.24	
2,650.00	7.59	81.90	2,647.10	9.76	59.95	-2.86	0.84	-0.16	6.20	
2,675.00	7.93	80.11	2,671.87	10.29	63.29	-3.00	1.67	1.36	-7.16	
2,700.00	7.88	79.83	2,696.63	10.89	66.67	-3.21	0.25	-0.20	-1.12	
2,725.00	8.13	79.59	2,721.39	11.51	70.10	-3.44	1.01	1.00	-0.96	
2,750.00	8.14	80.37	2,746.14	12.13	73.58	-3.65	0.44	0.04	3.12	
2,775.00	8.17	78.66	2,770.88	12.77	77.07	-3.90	0.98	0.12	-6.84	
2,800.00	8.26	78.27	2,795.63	13.49	80.57	-4.21	0.42	0.36	-1.56	
2,825.00	8.56	78.08	2,820.36	14.23	84.15	-4.54	1.21	1.20	-0.76	
2,850.00	8.74	77.87	2,845.07	15.02	87.83	-4.90	0.73	0.72	-0.84	
2,875.00	8.91	78.10	2,869.78	15.82	91.58	-5.27	0.69	0.68	0.92	
2,900.00	8.93	77.59	2,894.48	16.63	95.37	-5.65	0.33	0.08	-2.04	
2,925.00	9.00	77.85	2,919.17	17.46	99.17	-6.03	0.32	0.28	1.04	
2,950.00	9.01	77.76	2,943.86	18.29	103.00	-6.42	0.07	0.04	-0.36	
2,975.00	8.55	76.01	2,968.57	19.15	106.71	-6.85	2.13	-1.84	-7.00	
3,000.00	8.58	75.30	2,993.29	20.07	110.32	-7.36	0.44	0.12	-2.84	
3,025.00	8.59	76.06	3,018.01	21.00	113.94	-7.86	0.46	0.04	3.04	
3,050.00	8.44	76.11	3,042.74	21.89	117.53	-8.34	0.60	-0.60	0.20	
3,075.00	8.60	76.20	3,067.46	22.77	121.13	-8.81	0.64	0.64	0.36	
3,100.00	8.74	75.43	3,092.17	23.70	124.78	-9.31	0.73	0.56	-3.08	
3,125.00	8.54	76.59	3,116.89	24.61	128.42	-9.80	1.06	-0.80	4.64	
3,150.00	9.15	74.63	3,141.59	25.56	132.15	-10.32	2.72	2.44	-7.84	
3,175.00	9.49	74.23	3,166.26	26.65	136.05	-10.96	1.38	1.36	-1.60	
3,200.00	9.96	73.52	3,190.90	27.82	140.10	-11.66	1.94	1.88	-2.84	
3,225.00	10.03	75.58	3,215.52	28.98	144.29	-12.33	1.46	0.28	8.24	
3,250.00	10.24	74.93	3,240.13	30.10	148.54	-12.96	0.96	0.84	-2.60	
3,275.00	10.33	74.94	3,264.73	31.26	152.85	-13.62	0.36	0.36	0.04	
3,300.00	10.26	76.23	3,289.33	32.37	157.18	-14.23	0.96	-0.28	5.16	
3,325.00	10.27	76.45	3,313.93	33.42	161.51	-14.78	0.16	0.04	0.88	
3,350.00	10.39	76.38	3,338.52	34.48	165.86	-15.33	0.48	0.48	-0.28	
3,375.00	10.29	76.18	3,363.12	35.54	170.22	-15.89	0.42	-0.40	-0.80	
3,400.00	9.64	76.51	3,387.74	36.56	174.43	-16.43	2.61	-2.60	1.32	
3,425.00	9.51	75.08	3,412.39	37.58	178.46	-16.98	1.08	-0.52	-5.72	
3,450.00	9.32	74.22	3,437.06	38.66	182.40	-17.61	0.95	-0.76	-3.44	
3,475.00	9.36	74.97	3,461.72	39.74	186.31	-18.23	0.51	0.16	3.00	
3,500.00	9.38	74.56	3,486.39	40.81	190.24	-18.85	0.28	0.08	-1.64	
3,525.00	9.51	74.41	3,511.05	41.91	194.19	-19.48	0.53	0.52	-0.60	
3,550.00	9.57	73.81	3,535.71	43.04	198.18	-20.16	0.46	0.24	-2.40	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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	9.66	73.64	3,560.36	44.21	202.19	-20.86	0.38	0.36	-0.68	
3,600.00	9.59	73.58	3,585.00	45.39	206.20	-21.58	0.28	-0.28	-0.24	
3,625.00	9.50	73.82	3,609.66	46.56	210.17	-22.28	0.39	-0.36	0.96	
3,650.00	8.48	74.02	3,634.35	47.64	213.93	-22.93	4.08	-4.08	0.80	
3,675.00	7.65	73.30	3,659.10	48.63	217.29	-23.52	3.34	-3.32	-2.88	
3,700.00	7.22	72.11	3,683.89	49.59	220.38	-24.12	1.83	-1.72	-4.76	
3,725.00	7.21	71.74	3,708.69	50.56	223.37	-24.75	0.19	-0.04	-1.48	
3,750.00	7.18	71.50	3,733.50	51.55	226.34	-25.39	0.17	-0.12	-0.96	
3,775.00	7.10	70.38	3,758.30	52.56	229.28	-26.07	0.64	-0.32	-4.48	
3,800.00	6.99	70.07	3,783.11	53.60	232.16	-26.77	0.47	-0.44	-1.24	
3,825.00	6.93	71.13	3,807.93	54.61	235.02	-27.44	0.57	-0.24	4.24	
3,850.00	6.99	71.63	3,832.75	55.57	237.89	-28.07	0.34	0.24	2.00	
3,875.00	6.90	69.90	3,857.56	56.57	240.74	-28.74	0.91	-0.36	-6.92	
3,900.00	6.79	68.88	3,882.38	57.62	243.53	-29.46	0.66	-0.44	-4.08	
3,925.00	6.52	68.82	3,907.22	58.66	246.23	-30.19	1.08	-1.08	-0.24	
3,950.00	6.39	66.60	3,932.06	59.73	248.83	-30.95	1.13	-0.52	-8.88	
3,975.00	6.27	65.11	3,956.91	60.85	251.35	-31.79	0.81	-0.48	-5.96	
4,000.00	6.09	64.12	3,981.76	62.01	253.78	-32.65	0.84	-0.72	-3.96	
4,025.00	6.04	61.79	4,006.62	63.21	256.13	-33.58	1.00	-0.20	-9.32	
4,050.00	6.13	59.98	4,031.48	64.50	258.45	-34.60	0.85	0.36	-7.24	
4,075.00	6.14	58.94	4,056.34	65.86	260.75	-35.68	0.45	0.04	-4.16	
4,100.00	6.15	60.88	4,081.19	67.20	263.06	-36.75	0.83	0.04	7.76	
4,125.00	6.68	58.66	4,106.04	68.61	265.48	-37.87	2.34	2.12	-8.88	
4,150.00	7.02	57.84	4,130.86	70.17	268.01	-39.14	1.42	1.36	-3.28	
4,175.00	7.00	58.63	4,155.67	71.78	270.61	-40.44	0.39	-0.08	3.16	
4,200.00	7.08	58.61	4,180.48	73.38	273.22	-41.73	0.32	0.32	-0.08	
4,225.00	7.12	59.92	4,205.29	74.96	275.88	-43.00	0.67	0.16	5.24	
4,250.00	6.94	61.86	4,230.10	76.44	278.55	-44.17	1.19	-0.72	7.76	
4,275.00	7.04	61.86	4,254.92	77.88	281.23	-45.29	0.40	0.40	0.00	
4,300.00	7.27	61.02	4,279.72	79.37	283.97	-46.46	1.01	0.92	-3.36	
4,325.00	6.95	62.25	4,304.53	80.84	286.69	-47.61	1.42	-1.28	4.92	
4,350.00	6.98	61.13	4,329.35	82.28	289.36	-48.73	0.56	0.12	-4.48	
4,375.00	7.06	62.00	4,354.16	83.73	292.05	-49.87	0.53	0.32	3.48	
4,400.00	6.86	64.63	4,378.97	85.09	294.75	-50.91	1.50	-0.80	10.52	
4,425.00	6.51	69.42	4,403.80	86.23	297.43	-51.74	2.63	-1.40	19.16	
4,450.00	6.31	70.25	4,428.65	87.19	300.05	-52.40	0.88	-0.80	3.32	
4,475.00	6.16	70.59	4,453.50	88.10	302.60	-53.01	0.62	-0.60	1.36	
4,500.00	6.04	69.06	4,478.36	89.02	305.10	-53.63	0.81	-0.48	-6.12	
4,525.00	5.84	68.91	4,503.22	89.95	307.51	-54.28	0.80	-0.80	-0.60	
4,550.00	5.69	68.14	4,528.10	90.87	309.85	-54.93	0.68	-0.60	-3.08	
4,575.00	5.82	65.72	4,552.97	91.85	312.16	-55.64	1.10	0.52	-9.68	
4,600.00	5.78	66.04	4,577.84	92.88	314.46	-56.40	0.21	-0.16	1.28	
4,625.00	5.87	65.74	4,602.71	93.92	316.78	-57.17	0.38	0.36	-1.20	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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	5.86	66.14	4,627.58	94.96	319.11	-57.94	0.17	-0.04	1.60	
4,675.00	5.94	66.47	4,652.45	95.99	321.46	-58.70	0.35	0.32	1.32	
4,700.00	5.60	69.28	4,677.32	96.94	323.79	-59.37	1.77	-1.36	11.24	
4,725.00	5.18	74.08	4,702.21	97.68	326.02	-59.85	2.46	-1.68	19.20	
4,750.00	5.10	75.67	4,727.11	98.26	328.18	-60.19	0.65	-0.32	6.36	
4,775.00	4.74	75.90	4,752.02	98.79	330.26	-60.47	1.44	-1.44	0.92	
4,800.00	4.71	78.10	4,776.94	99.25	332.26	-60.71	0.73	-0.12	8.80	
4,825.00	4.92	77.29	4,801.85	99.70	334.31	-60.92	0.88	0.84	-3.24	
4,850.00	4.89	76.13	4,826.76	100.19	336.39	-61.17	0.41	-0.12	-4.64	
4,875.00	4.81	76.30	4,851.67	100.70	338.45	-61.43	0.33	-0.32	0.68	
4,900.00	4.92	77.23	4,876.58	101.18	340.51	-61.68	0.54	0.44	3.72	
4,925.00	4.85	83.40	4,901.49	101.54	342.61	-61.80	2.12	-0.28	24.68	
4,950.00	4.85	85.15	4,926.40	101.75	344.71	-61.77	0.59	0.00	7.00	
4,975.00	4.84	89.54	4,951.31	101.85	346.82	-61.62	1.48	-0.04	17.56	
5,000.00	4.92	91.60	4,976.22	101.83	348.94	-61.36	0.77	0.32	8.24	
5,025.00	4.95	91.34	5,001.12	101.77	351.09	-61.06	0.15	0.12	-1.04	
5,050.00	5.01	89.94	5,026.03	101.75	353.26	-60.79	0.54	0.24	-5.60	
5,075.00	4.85	89.58	5,050.94	101.76	355.41	-60.55	0.65	-0.64	-1.44	
5,100.00	4.64	89.29	5,075.85	101.78	357.48	-60.34	0.85	-0.84	-1.16	
5,125.00	4.36	87.72	5,100.77	101.83	359.44	-60.16	1.22	-1.12	-6.28	
5,150.00	4.21	87.74	5,125.71	101.90	361.31	-60.02	0.60	-0.60	0.08	
5,175.00	4.13	86.93	5,150.64	101.99	363.12	-59.90	0.40	-0.32	-3.24	
5,200.00	4.00	87.03	5,175.58	102.08	364.89	-59.79	0.52	-0.52	0.40	
5,225.00	3.82	88.08	5,200.52	102.15	366.59	-59.67	0.77	-0.72	4.20	
5,250.00	3.62	86.50	5,225.47	102.23	368.21	-59.56	0.90	-0.80	-6.32	
5,275.00	3.49	85.83	5,250.42	102.33	369.76	-59.49	0.55	-0.52	-2.68	
5,300.00	3.29	85.70	5,275.37	102.44	371.24	-59.43	0.80	-0.80	-0.52	
5,325.00	3.29	84.69	5,300.33	102.56	372.67	-59.38	0.23	0.00	-4.04	
5,350.00	3.27	84.87	5,325.29	102.69	374.09	-59.35	0.09	-0.08	0.72	
5,375.00	3.20	84.88	5,350.25	102.82	375.49	-59.31	0.28	-0.28	0.04	
5,400.00	3.25	85.49	5,375.21	102.94	376.90	-59.27	0.24	0.20	2.44	
5,425.00	3.27	84.01	5,400.17	103.07	378.31	-59.24	0.35	0.08	-5.92	
5,450.00	3.12	83.40	5,425.13	103.22	379.70	-59.23	0.62	-0.60	-2.44	
5,475.00	3.03	82.87	5,450.10	103.38	381.03	-59.24	0.38	-0.36	-2.12	
5,500.00	3.02	82.72	5,475.06	103.54	382.34	-59.26	0.05	-0.04	-0.60	
5,525.00	3.05	83.28	5,500.03	103.71	383.65	-59.27	0.17	0.12	2.24	
5,550.00	3.07	85.57	5,524.99	103.84	384.98	-59.24	0.50	0.08	9.16	
5,575.00	2.97	84.56	5,549.96	103.95	386.29	-59.21	0.45	-0.40	-4.04	
5,600.00	2.89	81.11	5,574.92	104.11	387.56	-59.22	0.77	-0.32	-13.80	
5,625.00	2.98	79.41	5,599.89	104.32	388.82	-59.29	0.50	0.36	-6.80	
5,650.00	2.72	82.25	5,624.86	104.52	390.05	-59.35	1.18	-1.04	11.36	
5,675.00	2.81	80.31	5,649.83	104.71	391.24	-59.39	0.52	0.36	-7.76	
5,700.00	2.72	88.91	5,674.80	104.82	392.44	-59.37	1.70	-0.36	34.40	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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	2.76	88.26	5,699.77	104.85	393.63	-59.26	0.20	0.16	-2.60	
5,750.00	2.83	87.33	5,724.74	104.90	394.85	-59.17	0.33	0.28	-3.72	
5,775.00	2.80	84.98	5,749.71	104.98	396.07	-59.11	0.48	-0.12	-9.40	
5,800.00	2.68	81.83	5,774.68	105.12	397.26	-59.11	0.77	-0.48	-12.60	
5,825.00	2.68	81.97	5,799.66	105.28	398.42	-59.15	0.03	0.00	0.56	
5,850.00	2.61	78.42	5,824.63	105.48	399.55	-59.21	0.71	-0.28	-14.20	
5,875.00	2.53	76.05	5,849.61	105.72	400.65	-59.33	0.53	-0.32	-9.48	
5,900.00	2.40	77.02	5,874.58	105.97	401.69	-59.46	0.55	-0.52	3.88	
5,925.00	2.44	73.89	5,899.56	106.24	402.71	-59.61	0.55	0.16	-12.52	
5,950.00	2.36	75.69	5,924.54	106.52	403.72	-59.77	0.44	-0.32	7.20	
5,975.00	2.24	76.18	5,949.52	106.76	404.70	-59.90	0.49	-0.48	1.96	
6,000.00	2.17	76.24	5,974.50	106.99	405.63	-60.02	0.28	-0.28	0.24	
6,025.00	2.25	77.13	5,999.48	107.21	406.57	-60.13	0.35	0.32	3.56	
6,050.00	2.35	78.97	6,024.46	107.42	407.55	-60.23	0.50	0.40	7.36	
6,075.00	2.39	74.33	6,049.44	107.66	408.56	-60.35	0.78	0.16	-18.56	
6,100.00	2.32	71.99	6,074.42	107.95	409.54	-60.53	0.48	-0.28	-9.36	
6,125.00	2.24	74.36	6,099.40	108.24	410.49	-60.71	0.49	-0.32	9.48	
6,150.00	2.24	72.88	6,124.38	108.52	411.43	-60.88	0.23	0.00	-5.92	
6,175.00	2.37	72.04	6,149.36	108.82	412.39	-61.07	0.54	0.52	-3.36	
6,200.00	2.22	77.94	6,174.34	109.08	413.35	-61.22	1.12	-0.60	23.60	
6,225.00	2.17	84.74	6,199.32	109.23	414.30	-61.25	1.06	-0.20	27.20	
6,250.00	2.31	83.15	6,224.30	109.33	415.27	-61.25	0.61	0.56	-6.36	
6,275.00	2.20	82.22	6,249.28	109.45	416.24	-61.26	0.46	-0.44	-3.72	
6,300.00	2.19	85.85	6,274.26	109.55	417.20	-61.25	0.56	-0.04	14.52	
6,325.00	2.31	86.10	6,299.24	109.62	418.17	-61.21	0.48	0.48	1.00	
6,350.00	2.30	82.39	6,324.22	109.72	419.17	-61.19	0.60	-0.04	-14.84	
6,375.00	2.18	85.23	6,349.21	109.83	420.15	-61.19	0.65	-0.48	11.36	
6,400.00	2.47	91.60	6,374.18	109.85	421.16	-61.10	1.55	1.16	25.48	
6,425.00	2.55	90.81	6,399.16	109.83	422.25	-60.95	0.35	0.32	-3.16	
6,450.00	2.47	91.27	6,424.14	109.81	423.35	-60.80	0.33	-0.32	1.84	
6,475.00	2.41	92.60	6,449.11	109.78	424.41	-60.65	0.33	-0.24	5.32	
6,500.00	2.50	93.86	6,474.09	109.71	425.48	-60.46	0.42	0.36	5.04	
6,525.00	2.61	93.95	6,499.07	109.64	426.59	-60.26	0.44	0.44	0.36	
6,550.00	2.58	92.04	6,524.04	109.58	427.72	-60.07	0.37	-0.12	-7.64	
6,575.00	2.61	89.53	6,549.02	109.56	428.85	-59.93	0.47	0.12	-10.04	
6,600.00	2.56	91.73	6,573.99	109.55	429.98	-59.79	0.44	-0.20	8.80	
6,625.00	2.49	89.84	6,598.97	109.54	431.08	-59.65	0.44	-0.28	-7.56	
6,650.00	2.47	88.32	6,623.94	109.55	432.16	-59.54	0.27	-0.08	-6.08	
6,675.00	2.33	89.23	6,648.92	109.58	433.21	-59.44	0.58	-0.56	3.64	
6,700.00	2.45	85.54	6,673.90	109.62	434.25	-59.37	0.78	0.48	-14.76	
6,725.00	2.36	76.36	6,698.88	109.79	435.28	-59.42	1.58	-0.36	-36.72	
6,750.00	2.31	72.44	6,723.86	110.06	436.26	-59.58	0.67	-0.20	-15.68	
6,775.00	2.27	72.54	6,748.84	110.36	437.22	-59.77	0.16	-0.16	0.40	
6,800.00	2.24	74.82	6,773.82	110.64	438.16	-59.94	0.38	-0.12	9.12	



<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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	2.23	74.99	6,798.80	110.89	439.10	-60.08	0.05	-0.04	0.68	
6,850.00	2.26	77.73	6,823.78	111.12	440.05	-60.20	0.45	0.12	10.96	
6,875.00	2.28	77.44	6,848.76	111.34	441.02	-60.30	0.09	0.08	-1.16	
6,900.00	2.33	74.89	6,873.74	111.58	442.00	-60.43	0.46	0.20	-10.20	
6,925.00	2.30	76.27	6,898.72	111.83	442.97	-60.57	0.25	-0.12	5.52	
6,950.00	2.32	72.78	6,923.70	112.10	443.95	-60.72	0.57	0.08	-13.96	
6,975.00	2.32	73.56	6,948.68	112.39	444.91	-60.90	0.13	0.00	3.12	
7,000.00	2.24	71.04	6,973.66	112.69	445.86	-61.10	0.51	-0.32	-10.08	
7,025.00	2.17	70.38	6,998.64	113.01	446.77	-61.31	0.30	-0.28	-2.64	
7,050.00	2.10	70.51	7,023.62	113.32	447.65	-61.52	0.28	-0.28	0.52	
7,075.00	2.07	71.26	7,048.60	113.62	448.51	-61.72	0.16	-0.12	3.00	
7,100.00	2.10	71.01	7,073.59	113.91	449.37	-61.91	0.13	0.12	-1.00	
7,125.00	2.13	71.53	7,098.57	114.21	450.24	-62.10	0.14	0.12	2.08	
7,150.00	2.09	73.55	7,123.55	114.49	451.12	-62.28	0.34	-0.16	8.08	
7,175.00	2.11	69.70	7,148.54	114.77	451.99	-62.47	0.57	0.08	-15.40	
7,200.00	2.15	68.60	7,173.52	115.11	452.86	-62.70	0.23	0.16	-4.40	
7,225.00	2.13	67.89	7,198.50	115.45	453.72	-62.94	0.13	-0.08	-2.84	
7,250.00	2.11	65.77	7,223.49	115.81	454.57	-63.21	0.32	-0.08	-8.48	
7,275.00	2.01	66.22	7,248.47	116.18	455.39	-63.48	0.41	-0.40	1.80	
7,300.00	2.10	64.38	7,273.45	116.56	456.21	-63.75	0.45	0.36	-7.36	
7,325.00	2.02	60.39	7,298.44	116.97	457.00	-64.08	0.66	-0.32	-15.96	
7,350.00	1.93	59.38	7,323.42	117.40	457.75	-64.42	0.39	-0.36	-4.04	
7,375.00	1.93	59.20	7,348.41	117.83	458.47	-64.77	0.02	0.00	-0.72	
7,400.00	1.93	61.65	7,373.39	118.25	459.21	-65.10	0.33	0.00	9.80	
7,425.00	2.08	60.07	7,398.38	118.68	459.97	-65.43	0.64	0.60	-6.32	
7,450.00	2.10	59.58	7,423.36	119.13	460.76	-65.80	0.11	0.08	-1.96	
7,475.00	2.03	58.76	7,448.35	119.59	461.53	-66.17	0.30	-0.28	-3.28	
7,500.00	2.00	55.61	7,473.33	120.07	462.27	-66.56	0.46	-0.12	-12.60	
7,525.00	1.82	59.53	7,498.32	120.52	462.97	-66.92	0.89	-0.72	15.68	
7,550.00	1.76	60.94	7,523.30	120.91	463.65	-67.23	0.30	-0.24	5.64	
7,575.00	1.85	60.92	7,548.29	121.29	464.34	-67.53	0.36	0.36	-0.08	
7,600.00	1.82	59.59	7,573.28	121.69	465.03	-67.85	0.21	-0.12	-5.32	
7,625.00	1.81	59.43	7,598.27	122.09	465.71	-68.17	0.04	-0.04	-0.64	
7,650.00	1.88	66.11	7,623.25	122.45	466.43	-68.45	0.90	0.28	26.72	
7,675.00	3.18	77.09	7,648.23	122.78	467.48	-68.65	5.53	5.20	43.92	
7,700.00	3.85	78.60	7,673.18	123.10	468.98	-68.80	2.71	2.68	6.04	
7,725.00	3.95	78.97	7,698.12	123.43	470.65	-68.93	0.41	0.40	1.48	
7,750.00	3.93	79.44	7,723.06	123.75	472.33	-69.06	0.15	-0.08	1.88	
7,775.00	3.87	77.95	7,748.01	124.08	474.00	-69.20	0.47	-0.24	-5.96	
7,800.00	3.88	78.22	7,772.95	124.43	475.65	-69.36	0.08	0.04	1.08	
7,825.00	3.84	79.37	7,797.89	124.76	477.31	-69.50	0.35	-0.16	4.60	
7,850.00	3.96	79.33	7,822.84	125.07	478.98	-69.62	0.48	0.48	-0.16	
7,875.00	3.86	78.73	7,847.78	125.40	480.65	-69.75	0.43	-0.40	-2.40	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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)	
7,900.00	3.67	80.13	7,872.72	125.70	482.26	-69.87	0.84	-0.76	5.60	
7,925.00	3.60	79.29	7,897.67	125.98	483.82	-69.97	0.35	-0.28	-3.36	
7,950.00	3.52	79.42	7,922.62	126.27	485.35	-70.08	0.32	-0.32	0.52	
7,975.00	3.31	81.14	7,947.58	126.52	486.82	-70.16	0.93	-0.84	6.88	
8,000.00	3.17	80.62	7,972.54	126.74	488.21	-70.23	0.57	-0.56	-2.08	
8,025.00	3.16	81.17	7,997.50	126.96	489.57	-70.29	0.13	-0.04	2.20	
8,050.00	3.09	80.10	8,022.46	127.18	490.92	-70.35	0.36	-0.28	-4.28	
8,075.00	2.90	79.38	8,047.43	127.42	492.20	-70.44	0.77	-0.76	-2.88	
8,100.00	2.72	81.56	8,072.40	127.62	493.41	-70.50	0.84	-0.72	8.72	
8,125.00	2.55	84.21	8,097.37	127.76	494.55	-70.52	0.84	-0.68	10.60	
8,150.00	2.51	84.60	8,122.35	127.87	495.65	-70.50	0.17	-0.16	1.56	
8,175.00	2.23	83.63	8,147.33	127.98	496.68	-70.48	1.13	-1.12	-3.88	
8,200.00	2.12	86.47	8,172.31	128.06	497.62	-70.46	0.62	-0.44	11.36	
8,225.00	2.08	91.59	8,197.29	128.07	498.54	-70.37	0.77	-0.16	20.48	
8,250.00	2.02	89.93	8,222.28	128.06	499.43	-70.26	0.34	-0.24	-6.64	
8,275.00	1.92	87.90	8,247.26	128.08	500.29	-70.17	0.49	-0.40	-8.12	
8,300.00	1.75	90.38	8,272.25	128.09	501.09	-70.10	0.75	-0.68	9.92	
8,325.00	1.76	96.84	8,297.24	128.04	501.86	-69.96	0.79	0.04	25.84	
8,350.00	1.73	95.20	8,322.23	127.96	502.61	-69.79	0.23	-0.12	-6.56	
8,375.00	1.81	93.09	8,347.21	127.91	503.38	-69.65	0.41	0.32	-8.44	
8,400.00	1.86	92.31	8,372.20	127.87	504.18	-69.52	0.22	0.20	-3.12	
8,425.00	1.82	91.71	8,397.19	127.84	504.98	-69.40	0.18	-0.16	-2.40	
8,450.00	1.72	89.29	8,422.18	127.83	505.76	-69.31	0.50	-0.40	-9.68	
8,475.00	1.81	91.82	8,447.17	127.83	506.53	-69.21	0.48	0.36	10.12	
8,500.00	2.88	95.01	8,472.14	127.76	507.55	-69.03	4.31	4.28	12.76	
8,525.00	4.05	96.95	8,497.10	127.60	509.05	-68.70	4.70	4.68	7.76	
8,550.00	4.29	97.55	8,522.03	127.37	510.85	-68.26	0.98	0.96	2.40	
8,575.00	4.34	97.80	8,546.96	127.12	512.72	-67.80	0.21	0.20	1.00	
8,600.00	4.37	97.11	8,571.89	126.87	514.60	-67.34	0.24	0.12	-2.76	
8,625.00	4.31	96.09	8,596.82	126.65	516.48	-66.91	0.39	-0.24	-4.08	
8,650.00	4.20	97.47	8,621.75	126.43	518.32	-66.48	0.60	-0.44	5.52	
8,675.00	4.09	99.02	8,646.68	126.18	520.11	-66.02	0.63	-0.44	6.20	
8,700.00	4.12	99.30	8,671.62	125.89	521.87	-65.54	0.14	0.12	1.12	
8,725.00	3.91	99.25	8,696.56	125.61	523.60	-65.06	0.84	-0.84	-0.20	
8,750.00	3.85	100.85	8,721.50	125.31	525.27	-64.58	0.50	-0.24	6.40	
8,775.00	3.81	100.07	8,746.44	125.01	526.91	-64.09	0.26	-0.16	-3.12	
8,800.00	3.81	100.30	8,771.39	124.72	528.54	-63.61	0.06	0.00	0.92	
8,825.00	3.78	100.75	8,796.33	124.41	530.17	-63.13	0.17	-0.12	1.80	
8,850.00	3.95	93.30	8,821.28	124.21	531.84	-62.73	2.12	0.68	-29.80	
8,875.00	4.94	74.38	8,846.20	124.45	533.74	-62.76	7.03	3.96	-75.68	
8,900.00	5.03	73.36	8,871.11	125.05	535.82	-63.12	0.51	0.36	-4.08	
8,925.00	5.00	74.20	8,896.01	125.67	537.92	-63.48	0.32	-0.12	3.36	
8,950.00	4.98	74.18	8,920.92	126.26	540.01	-63.83	0.08	-0.08	-0.08	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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)	
8,975.00	4.89	73.81	8,945.83	126.85	542.08	-64.19	0.38	-0.36	-1.48	
9,000.00	4.76	73.15	8,970.74	127.45	544.10	-64.55	0.57	-0.52	-2.64	
9,025.00	4.62	73.87	8,995.65	128.03	546.06	-64.90	0.61	-0.56	2.88	
9,050.00	4.48	74.71	9,020.57	128.57	547.97	-65.22	0.62	-0.56	3.36	
9,075.00	4.32	74.69	9,045.50	129.07	549.82	-65.51	0.64	-0.64	-0.08	
9,100.00	4.06	75.75	9,070.43	129.54	551.58	-65.77	1.09	-1.04	4.24	
9,125.00	3.99	74.93	9,095.37	129.98	553.28	-66.02	0.36	-0.28	-3.28	
9,150.00	3.95	75.11	9,120.31	130.43	554.95	-66.27	0.17	-0.16	0.72	
9,175.00	3.98	73.94	9,145.25	130.89	556.62	-66.54	0.35	0.12	-4.68	
9,200.00	4.02	73.02	9,170.19	131.39	558.29	-66.85	0.30	0.16	-3.68	
9,225.00	4.41	73.36	9,195.12	131.92	560.05	-67.17	1.56	1.56	1.36	
9,250.00	5.76	76.50	9,220.02	132.49	562.19	-67.49	5.51	5.40	12.56	
9,275.00	6.01	77.87	9,244.89	133.05	564.69	-67.77	1.15	1.00	5.48	
9,300.00	6.13	77.65	9,269.75	133.61	567.27	-68.03	0.49	0.48	-0.88	
9,325.00	6.13	77.94	9,294.61	134.18	569.88	-68.30	0.12	0.00	1.16	
9,350.00	5.86	78.40	9,319.47	134.71	572.44	-68.54	1.10	-1.08	1.84	
9,375.00	5.70	78.19	9,344.35	135.23	574.90	-68.76	0.65	-0.64	-0.84	
9,400.00	5.34	78.05	9,369.23	135.72	577.26	-68.99	1.44	-1.44	-0.56	
9,425.00	5.18	76.87	9,394.12	136.22	579.49	-69.23	0.77	-0.64	-4.72	
9,450.00	4.96	76.46	9,419.03	136.73	581.64	-69.49	0.89	-0.88	-1.64	
9,475.00	4.69	75.62	9,443.94	137.23	583.68	-69.76	1.12	-1.08	-3.36	
9,500.00	4.39	76.79	9,468.86	137.71	585.61	-70.01	1.26	-1.20	4.68	
9,525.00	4.15	76.34	9,493.79	138.14	587.42	-70.23	0.97	-0.96	-1.80	
9,550.00	4.02	75.49	9,518.73	138.57	589.14	-70.46	0.57	-0.52	-3.40	
9,575.00	3.92	76.29	9,543.67	138.99	590.82	-70.69	0.46	-0.40	3.20	
9,600.00	4.03	76.26	9,568.61	139.41	592.51	-70.91	0.44	0.44	-0.12	
9,625.00	4.37	80.38	9,593.54	139.77	594.30	-71.07	1.82	1.36	16.48	
9,650.00	4.44	84.12	9,618.47	140.03	596.20	-71.11	1.18	0.28	14.96	
9,675.00	4.52	84.74	9,643.39	140.22	598.14	-71.08	0.37	0.32	2.48	
9,700.00	4.15	81.63	9,668.32	140.44	600.02	-71.08	1.75	-1.48	-12.44	
9,725.00	3.87	81.75	9,693.26	140.70	601.75	-71.14	1.12	-1.12	0.48	
9,750.00	3.45	78.56	9,718.21	140.97	603.32	-71.22	1.87	-1.68	-12.76	
9,775.00	3.11	79.38	9,743.16	141.24	604.73	-71.34	1.37	-1.36	3.28	
9,800.00	3.05	76.18	9,768.13	141.52	606.04	-71.47	0.73	-0.24	-12.80	
9,825.00	3.05	77.03	9,793.09	141.83	607.33	-71.63	0.18	0.00	3.40	
9,850.00	2.98	74.42	9,818.06	142.16	608.61	-71.80	0.62	-0.28	-10.44	
9,875.00	3.05	75.36	9,843.02	142.50	609.88	-72.00	0.34	0.28	3.76	
9,900.00	3.85	78.02	9,867.98	142.84	611.34	-72.17	3.26	3.20	10.64	
9,925.00	4.53	81.07	9,892.91	143.17	613.14	-72.29	2.86	2.72	12.20	
9,950.00	4.54	82.18	9,917.83	143.46	615.09	-72.36	0.35	0.04	4.44	
9,975.00	4.69	82.81	9,942.75	143.72	617.09	-72.39	0.63	0.60	2.52	
10,000.00	4.50	81.68	9,967.67	143.99	619.07	-72.43	0.84	-0.76	-4.52	
10,025.00	4.19	80.62	9,992.60	144.28	620.94	-72.51	1.28	-1.24	-4.24	
10,050.00	3.79	78.57	10,017.54	144.59	622.65	-72.62	1.70	-1.60	-8.20	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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)	
10,075.00	3.49	78.58	10,042.49	144.91	624.21	-72.76	1.20	-1.20	0.04	
10,100.00	3.32	77.67	10,067.44	145.21	625.66	-72.89	0.71	-0.68	-3.64	
10,125.00	2.93	77.40	10,092.41	145.51	626.99	-73.03	1.56	-1.56	-1.08	
10,150.00	3.03	75.13	10,117.37	145.81	628.25	-73.20	0.62	0.40	-9.08	
10,175.00	3.17	76.09	10,142.34	146.15	629.56	-73.38	0.60	0.56	3.84	
10,200.00	4.25	87.33	10,167.28	146.36	631.16	-73.41	5.19	4.32	44.96	
10,225.00	4.60	87.78	10,192.21	146.44	633.09	-73.27	1.41	1.40	1.80	
10,250.00	4.66	87.83	10,217.13	146.52	635.10	-73.12	0.24	0.24	0.20	
10,275.00	4.48	86.95	10,242.05	146.61	637.09	-72.98	0.77	-0.72	-3.52	
10,300.00	4.26	81.76	10,266.98	146.79	638.99	-72.95	1.81	-0.88	-20.76	
10,325.00	4.08	80.05	10,291.91	147.08	640.78	-73.03	0.88	-0.72	-6.84	
10,350.00	4.02	79.67	10,316.85	147.39	642.52	-73.14	0.26	-0.24	-1.52	
10,375.00	3.93	79.32	10,341.79	147.71	644.23	-73.26	0.37	-0.36	-1.40	
10,400.00	3.88	81.30	10,366.73	147.99	645.90	-73.35	0.58	-0.20	7.92	
10,425.00	3.88	81.65	10,391.67	148.24	647.58	-73.41	0.09	0.00	1.40	
10,450.00	3.97	83.34	10,416.61	148.47	649.27	-73.44	0.59	0.36	6.76	
10,475.00	5.32	87.71	10,441.53	148.61	651.29	-73.35	5.58	5.40	17.48	
10,500.00	6.75	91.16	10,466.39	148.63	653.92	-73.07	5.90	5.72	13.80	
10,525.00	6.98	91.84	10,491.21	148.55	656.90	-72.65	0.98	0.92	2.72	
10,550.00	6.97	91.82	10,516.03	148.46	659.94	-72.21	0.04	-0.04	-0.08	
10,575.00	6.97	91.92	10,540.84	148.36	662.97	-71.76	0.05	0.00	0.40	
10,600.00	6.94	90.42	10,565.66	148.30	666.00	-71.36	0.74	-0.12	-6.00	
10,625.00	6.72	90.98	10,590.48	148.26	668.97	-70.98	0.92	-0.88	2.24	
10,650.00	6.44	90.08	10,615.32	148.23	671.83	-70.63	1.19	-1.12	-3.60	
10,675.00	6.15	90.87	10,640.17	148.21	674.58	-70.29	1.21	-1.16	3.16	
10,700.00	5.95	91.04	10,665.03	148.17	677.21	-69.95	0.80	-0.80	0.68	
10,725.00	5.69	89.95	10,689.90	148.14	679.75	-69.64	1.13	-1.04	-4.36	
10,750.00	5.42	89.71	10,714.78	148.15	682.17	-69.37	1.08	-1.08	-0.96	
10,775.00	4.83	89.63	10,739.68	148.16	684.40	-69.13	2.36	-2.36	-0.32	
10,800.00	4.56	89.79	10,764.60	148.17	686.44	-68.90	1.08	-1.08	0.64	
10,825.00	4.44	88.88	10,789.52	148.20	688.41	-68.70	0.56	-0.48	-3.64	
10,850.00	4.01	86.88	10,814.45	148.26	690.25	-68.56	1.82	-1.72	-8.00	
10,875.00	3.52	86.99	10,839.40	148.35	691.89	-68.46	1.96	-1.96	0.44	
10,900.00	3.23	85.69	10,864.35	148.44	693.35	-68.38	1.20	-1.16	-5.20	
10,925.00	3.22	87.80	10,889.31	148.52	694.76	-68.30	0.48	-0.04	8.44	
10,950.00	4.14	84.04	10,914.26	148.64	696.36	-68.24	3.80	3.68	-15.04	
10,975.00	4.66	82.57	10,939.19	148.87	698.26	-68.25	2.13	2.08	-5.88	
11,000.00	4.50	83.57	10,964.11	149.11	700.24	-68.26	0.72	-0.64	4.00	
11,025.00	4.49	84.89	10,989.03	149.31	702.19	-68.23	0.42	-0.04	5.28	
11,050.00	4.31	83.40	11,013.96	149.50	704.10	-68.21	0.85	-0.72	-5.96	
11,075.00	4.09	83.37	11,038.89	149.71	705.92	-68.21	0.88	-0.88	-0.12	
11,100.00	3.82	84.91	11,063.83	149.89	707.63	-68.19	1.16	-1.08	6.16	
11,125.00	3.68	83.56	11,088.78	150.05	709.26	-68.17	0.66	-0.56	-5.40	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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)	
11,150.00	3.50	84.78	11,113.73	150.21	710.82	-68.15	0.78	-0.72	4.88	
11,175.00	3.59	84.18	11,138.68	150.36	712.36	-68.12	0.39	0.36	-2.40	
11,200.00	3.77	82.82	11,163.63	150.54	713.95	-68.12	0.80	0.72	-5.44	
11,225.00	4.47	84.02	11,188.57	150.75	715.74	-68.12	2.82	2.80	4.80	
11,250.00	5.34	84.43	11,213.47	150.96	717.86	-68.09	3.48	3.48	1.64	
11,275.00	5.50	87.08	11,238.36	151.14	720.22	-68.00	1.19	0.64	10.60	
11,300.00	5.33	88.72	11,263.25	151.22	722.57	-67.81	0.92	-0.68	6.56	
11,325.00	5.28	90.99	11,288.14	151.23	724.89	-67.56	0.86	-0.20	9.08	
11,350.00	5.18	88.89	11,313.04	151.23	727.16	-67.30	0.86	-0.40	-8.40	
11,375.00	5.19	87.34	11,337.94	151.31	729.42	-67.11	0.56	0.04	-6.20	
11,400.00	5.13	86.84	11,362.84	151.42	731.67	-66.97	0.30	-0.24	-2.00	
11,425.00	5.12	83.99	11,387.74	151.60	733.89	-66.89	1.02	-0.04	-11.40	
11,450.00	5.15	83.11	11,412.64	151.85	736.12	-66.89	0.34	0.12	-3.52	
11,475.00	5.08	80.51	11,437.54	152.17	738.32	-66.95	0.97	-0.28	-10.40	
11,500.00	5.16	80.47	11,462.44	152.54	740.52	-67.07	0.32	0.32	-0.16	
11,525.00	5.15	77.16	11,487.33	152.97	742.72	-67.25	1.19	-0.04	-13.24	
11,550.00	5.00	76.88	11,512.24	153.47	744.88	-67.50	0.61	-0.60	-1.12	
11,575.00	5.03	73.24	11,537.14	154.03	746.99	-67.82	1.28	0.12	-14.56	
11,600.00	5.02	72.44	11,562.05	154.68	749.08	-68.22	0.28	-0.04	-3.20	
11,625.00	5.03	69.88	11,586.95	155.38	751.15	-68.69	0.90	0.04	-10.24	
11,650.00	4.75	67.61	11,611.86	156.16	753.14	-69.23	1.36	-1.12	-9.08	
11,675.00	4.85	65.08	11,636.77	157.00	755.06	-69.84	0.94	0.40	-10.12	
11,700.00	4.70	59.16	11,661.68	157.97	756.89	-70.60	2.06	-0.60	-23.68	
11,725.00	4.68	56.44	11,686.60	159.05	758.62	-71.48	0.89	-0.08	-10.88	
11,750.00	4.58	52.77	11,711.52	160.22	760.27	-72.45	1.25	-0.40	-14.68	
11,775.00	4.50	52.71	11,736.44	161.42	761.84	-73.46	0.32	-0.32	-0.24	
11,800.00	4.32	51.00	11,761.37	162.61	763.35	-74.47	0.89	-0.72	-6.84	
11,825.00	3.91	55.31	11,786.30	163.68	764.79	-75.38	2.05	-1.64	17.24	
11,850.00	3.80	54.94	11,811.25	164.65	766.17	-76.17	0.45	-0.44	-1.48	
11,875.00	3.85	48.51	11,836.19	165.68	767.47	-77.05	1.73	0.20	-25.72	
11,900.00	3.33	48.22	11,861.14	166.72	768.64	-77.95	2.08	-2.08	-1.16	
11,958.00	3.03	46.77	11,919.05	168.89	771.02	-79.84	0.54	-0.52	-2.50	
<b>First Gordon MWD Survey</b>										
12,063.00	2.32	55.46	12,023.94	172.00	774.79	-82.49	0.78	-0.68	8.28	
12,094.00	2.11	54.35	12,054.91	172.68	775.77	-83.06	0.69	-0.68	-3.58	
12,188.00	1.36	58.81	12,148.87	174.27	778.13	-84.37	0.81	-0.80	4.74	
12,283.00	2.22	129.00	12,243.83	173.70	780.52	-83.53	2.29	0.91	73.88	
12,314.00	6.93	153.96	12,274.73	171.64	781.81	-81.33	16.15	15.19	80.52	
12,345.00	12.37	159.14	12,305.28	166.85	783.82	-76.35	17.75	17.55	16.71	
12,377.00	17.50	158.32	12,336.19	159.17	786.82	-68.38	16.04	16.03	-2.56	
12,386.00	18.68	156.60	12,344.74	156.59	787.89	-65.69	14.43	13.15	-19.15	
<b>FTP: 12386' MD</b>										
12,408.00	21.63	153.16	12,365.39	149.74	791.12	-58.52	14.43	13.39	-15.62	
12,440.00	26.24	151.05	12,394.63	138.28	797.21	-46.44	14.65	14.41	-6.59	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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)
12,471.00	29.61	149.99	12,422.02	125.65	804.36	-33.07	10.99	10.87	-3.42
12,519.00	32.06	150.32	12,463.23	104.31	816.60	-10.48	5.12	5.10	0.69
12,566.00	35.38	152.56	12,502.32	81.39	829.05	13.72	7.54	7.06	4.77
12,614.00	40.47	153.15	12,540.17	55.14	842.50	41.33	10.63	10.60	1.23
12,661.00	43.56	156.54	12,575.09	26.66	855.84	71.14	8.15	6.57	7.21
12,708.00	46.38	158.42	12,608.34	-4.02	868.55	103.07	6.63	6.00	4.00
12,756.00	49.01	160.20	12,640.65	-37.23	881.08	137.49	6.13	5.48	3.71
12,803.00	52.88	161.05	12,670.25	-71.65	893.18	173.07	8.35	8.23	1.81
12,850.00	57.53	160.26	12,697.07	-108.06	905.97	210.70	9.99	9.89	-1.68
12,897.00	62.93	161.19	12,720.40	-146.56	919.42	250.48	11.62	11.49	1.98
12,944.00	68.08	164.46	12,739.88	-187.41	932.02	292.50	12.65	10.96	6.96
12,991.00	72.88	166.43	12,755.58	-230.27	943.14	336.35	10.95	10.21	4.19
13,039.00	80.28	165.29	12,766.71	-275.51	954.54	382.60	15.59	15.42	-2.38
13,087.00	90.33	164.88	12,770.64	-321.68	966.84	429.87	20.95	20.94	-0.85
13,142.00	91.50	164.77	12,769.76	-374.75	981.23	484.24	2.14	2.13	-0.20
13,237.00	92.02	165.06	12,766.84	-466.44	1,005.95	578.14	0.63	0.55	0.31
13,331.00	90.60	166.93	12,764.69	-557.61	1,028.69	671.31	2.50	-1.51	1.99
13,426.00	87.59	169.73	12,766.19	-650.62	1,047.90	765.90	4.33	-3.17	2.95
13,520.00	88.21	169.57	12,769.64	-743.02	1,064.77	859.63	0.68	0.66	-0.17
13,615.00	89.48	172.53	12,771.55	-836.84	1,079.55	954.52	3.39	1.34	3.12
13,709.00	90.65	173.20	12,771.45	-930.11	1,091.22	1,048.51	1.43	1.24	0.71
13,803.00	89.47	174.83	12,771.35	-1,023.59	1,101.02	1,142.50	2.14	-1.26	1.73
13,898.00	90.52	178.65	12,771.36	-1,118.42	1,106.43	1,237.33	4.17	1.11	4.02
13,993.00	88.98	177.95	12,771.77	-1,213.37	1,109.24	1,331.98	1.78	-1.62	-0.74
14,088.00	88.32	182.46	12,774.01	-1,308.32	1,108.90	1,426.27	4.80	-0.69	4.75
14,183.00	89.96	184.77	12,775.44	-1,403.11	1,102.92	1,519.76	2.98	1.73	2.43
14,277.00	86.05	180.06	12,778.71	-1,496.92	1,098.95	1,612.51	6.51	-4.16	-5.01
14,371.00	88.14	179.58	12,783.47	-1,590.80	1,099.25	1,705.80	2.28	2.22	-0.51
14,466.00	88.76	179.77	12,786.04	-1,685.76	1,099.79	1,800.21	0.68	0.65	0.20
14,561.00	89.04	181.00	12,787.87	-1,780.74	1,099.15	1,894.49	1.33	0.29	1.29
14,656.00	90.09	182.31	12,788.59	-1,875.69	1,096.41	1,988.52	1.77	1.11	1.38
14,751.00	86.91	179.04	12,791.08	-1,970.63	1,095.29	2,082.70	4.80	-3.35	-3.44
14,847.00	86.96	180.19	12,796.21	-2,066.49	1,095.93	2,178.01	1.20	0.05	1.20
14,942.00	87.43	180.44	12,800.86	-2,161.37	1,095.41	2,272.22	0.56	0.49	0.26
15,037.00	86.79	178.02	12,805.65	-2,256.23	1,096.68	2,366.61	2.63	-0.67	-2.55
15,131.00	89.43	179.79	12,808.75	-2,350.15	1,098.48	2,460.12	3.38	2.81	1.88
15,226.00	89.53	182.46	12,809.61	-2,445.12	1,096.61	2,554.25	2.81	0.11	2.81
15,320.00	89.56	182.31	12,810.36	-2,539.04	1,092.70	2,647.11	0.16	0.03	-0.16
15,415.00	86.69	175.26	12,813.47	-2,633.90	1,094.71	2,741.58	8.01	-3.02	-7.42
15,510.00	88.37	174.09	12,817.56	-2,728.39	1,103.52	2,836.46	2.15	1.77	-1.23
15,604.00	88.67	174.66	12,819.99	-2,821.91	1,112.73	2,930.42	0.69	0.32	0.61
15,699.00	88.97	176.23	12,821.95	-2,916.59	1,120.27	3,025.34	1.68	0.32	1.65
15,794.00	91.26	181.19	12,821.76	-3,011.53	1,122.41	3,119.90	5.75	2.41	5.22

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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)	
15,889.00	88.80	178.08	12,821.71	-3,106.50	1,123.01	3,214.33	4.17	-2.59	-3.27	
15,984.00	87.78	175.39	12,824.54	-3,201.30	1,128.42	3,309.12	3.03	-1.07	-2.83	
16,079.00	89.13	178.41	12,827.10	-3,296.11	1,133.55	3,403.90	3.48	1.42	3.18	
16,173.00	90.18	179.97	12,827.67	-3,390.10	1,134.88	3,497.42	2.00	1.12	1.66	
16,268.00	88.62	178.98	12,828.67	-3,485.08	1,135.75	3,591.89	1.94	-1.64	-1.04	
16,364.00	91.34	180.45	12,828.70	-3,581.07	1,136.23	3,687.31	3.22	2.83	1.53	
16,458.00	88.51	177.02	12,828.82	-3,675.02	1,138.30	3,780.88	4.73	-3.01	-3.65	
16,553.00	88.94	177.06	12,830.94	-3,769.87	1,143.21	3,875.67	0.45	0.45	0.04	
16,647.00	92.29	180.56	12,829.93	-3,863.82	1,145.16	3,969.23	5.15	3.56	3.72	
16,741.00	95.37	180.93	12,823.65	-3,957.59	1,143.94	4,062.25	3.30	3.28	0.39	
16,836.00	94.79	180.44	12,815.24	-4,052.21	1,142.81	4,156.12	0.80	-0.61	-0.52	
16,931.00	93.98	179.92	12,807.97	-4,146.93	1,142.51	4,250.19	1.01	-0.85	-0.55	
17,025.00	92.67	179.07	12,802.52	-4,240.77	1,143.34	4,343.51	1.66	-1.39	-0.90	
17,121.00	89.72	182.81	12,800.52	-4,336.70	1,141.77	4,438.64	4.96	-3.07	3.90	
17,215.00	90.10	186.76	12,800.67	-4,430.36	1,133.93	4,530.79	4.22	0.40	4.20	
17,309.00	89.96	187.14	12,800.62	-4,523.67	1,122.55	4,622.19	0.43	-0.15	0.40	
17,356.00	89.92	188.09	12,800.67	-4,570.25	1,116.32	4,667.76	2.02	-0.09	2.02	
17,404.00	88.66	186.48	12,801.26	-4,617.86	1,110.24	4,714.36	4.26	-2.63	-3.35	
17,451.00	89.57	185.28	12,801.99	-4,664.60	1,105.42	4,760.25	3.20	1.94	-2.55	
17,499.00	90.89	183.65	12,801.79	-4,712.45	1,101.69	4,807.36	4.37	2.75	-3.40	
17,594.00	87.21	178.82	12,803.37	-4,807.38	1,099.64	4,901.43	6.39	-3.87	-5.08	
17,688.00	87.29	178.89	12,807.88	-4,901.25	1,101.51	4,994.91	0.11	0.09	0.07	
17,784.00	87.28	179.12	12,812.43	-4,997.13	1,103.18	5,090.35	0.24	-0.01	0.24	
17,879.00	87.39	178.85	12,816.84	-5,092.01	1,104.86	5,184.80	0.31	0.12	-0.28	
17,973.00	87.30	179.00	12,821.20	-5,185.89	1,106.62	5,278.27	0.19	-0.10	0.16	
18,067.00	88.49	177.77	12,824.65	-5,279.79	1,109.27	5,371.86	1.82	1.27	-1.31	
18,162.00	89.80	178.03	12,826.07	-5,374.71	1,112.75	5,466.56	1.41	1.38	0.27	
18,257.00	90.87	179.47	12,825.51	-5,469.68	1,114.82	5,561.15	1.89	1.13	1.52	
18,351.00	90.80	179.05	12,824.14	-5,563.66	1,116.04	5,654.65	0.45	-0.07	-0.45	
18,446.00	91.42	179.21	12,822.30	-5,658.63	1,117.48	5,749.17	0.67	0.65	0.17	
18,540.00	91.74	178.96	12,819.71	-5,752.59	1,118.98	5,842.68	0.43	0.34	-0.27	
18,635.00	91.10	180.10	12,817.36	-5,847.55	1,119.76	5,937.11	1.38	-0.67	1.20	
18,730.00	91.87	180.64	12,814.90	-5,942.52	1,119.15	6,031.39	0.99	0.81	0.57	
18,825.00	90.09	178.86	12,813.27	-6,037.49	1,119.56	6,125.79	2.65	-1.87	-1.87	
18,920.00	91.03	177.58	12,812.34	-6,132.44	1,122.51	6,220.46	1.67	0.99	-1.35	
19,015.00	91.37	177.45	12,810.35	-6,227.33	1,126.63	6,315.20	0.38	0.36	-0.14	
19,109.00	90.63	175.64	12,808.71	-6,321.14	1,132.29	6,409.04	2.08	-0.79	-1.93	
19,204.00	90.55	180.13	12,807.73	-6,416.05	1,135.80	6,503.73	4.73	-0.08	4.73	
19,299.00	89.99	181.99	12,807.29	-6,511.03	1,134.04	6,597.89	2.04	-0.59	1.96	
19,394.00	89.97	182.00	12,807.32	-6,605.97	1,130.73	6,691.83	0.02	-0.02	0.01	
19,488.00	90.01	183.68	12,807.33	-6,699.85	1,126.08	6,784.57	1.79	0.04	1.79	
19,583.00	90.07	184.00	12,807.27	-6,794.64	1,119.71	6,878.01	0.34	0.06	0.34	
19,678.00	89.45	182.69	12,807.67	-6,889.47	1,114.17	6,971.59	1.53	-0.65	-1.38	

<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	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)	
19,772.00	89.78	179.50	12,808.30	-6,983.44	1,112.37	7,064.74	3.41	0.35	-3.39	
19,867.00	89.35	176.86	12,809.02	-7,078.38	1,115.39	7,159.41	2.82	-0.45	-2.78	
19,962.00	87.98	173.03	12,811.23	-7,172.96	1,123.76	7,254.33	4.28	-1.44	-4.03	
20,057.00	87.98	172.31	12,814.58	-7,267.13	1,135.87	7,349.26	0.76	0.00	-0.76	
20,151.00	90.54	174.98	12,815.80	-7,360.53	1,146.27	7,443.24	3.93	2.72	2.84	
20,245.00	90.76	175.00	12,814.73	-7,454.16	1,154.48	7,537.20	0.24	0.23	0.02	
20,339.00	90.55	174.08	12,813.66	-7,547.73	1,163.42	7,631.17	1.00	-0.22	-0.98	
20,434.00	90.75	176.29	12,812.58	-7,642.38	1,171.40	7,726.12	2.34	0.21	2.33	
20,529.00	90.49	176.54	12,811.55	-7,737.19	1,177.34	7,820.99	0.38	-0.27	0.26	
20,624.00	89.66	175.67	12,811.43	-7,831.97	1,183.79	7,915.88	1.27	-0.87	-0.92	
20,720.00	89.45	176.16	12,812.17	-7,927.72	1,190.63	8,011.79	0.56	-0.22	0.51	
20,815.00	90.32	183.21	12,812.36	-8,022.66	1,191.15	8,106.17	7.48	0.92	7.42	
20,909.00	90.62	181.92	12,811.59	-8,116.56	1,186.94	8,198.98	1.41	0.32	-1.37	
21,004.00	89.56	179.19	12,811.44	-8,211.54	1,186.02	8,293.24	3.08	-1.12	-2.87	
21,098.00	90.11	181.99	12,811.71	-8,305.53	1,185.06	8,386.50	3.04	0.59	2.98	
21,193.00	89.46	179.77	12,812.07	-8,400.51	1,183.60	8,480.69	2.43	-0.68	-2.34	
21,288.00	90.61	181.68	12,812.01	-8,495.50	1,182.39	8,574.92	2.35	1.21	2.01	
21,382.00	89.80	180.62	12,811.67	-8,589.48	1,180.51	8,668.07	1.42	-0.86	-1.13	
21,477.00	90.25	181.16	12,811.63	-8,684.46	1,179.03	8,762.27	0.74	0.47	0.57	
21,572.00	89.41	179.82	12,811.91	-8,779.46	1,178.22	8,856.55	1.66	-0.88	-1.41	
21,666.00	90.00	180.05	12,812.40	-8,873.46	1,178.33	8,949.95	0.67	0.63	0.24	
21,761.00	89.46	179.22	12,812.85	-8,968.45	1,178.93	9,044.39	1.04	-0.57	-0.87	
21,856.00	89.77	179.39	12,813.48	-9,063.44	1,180.08	9,138.89	0.37	0.33	0.18	
21,950.00	89.76	179.11	12,813.87	-9,157.43	1,181.31	9,232.41	0.30	-0.01	-0.30	
22,045.00	89.27	177.35	12,814.67	-9,252.38	1,184.25	9,327.07	1.92	-0.52	-1.85	
22,140.00	91.69	179.12	12,813.88	-9,347.32	1,187.17	9,421.73	3.16	2.55	1.86	
22,234.00	91.08	178.70	12,811.61	-9,441.28	1,188.96	9,515.27	0.79	-0.65	-0.45	
22,329.00	90.56	178.37	12,810.25	-9,536.23	1,191.39	9,609.89	0.65	-0.55	-0.35	
22,423.00	91.13	178.94	12,808.86	-9,630.20	1,193.60	9,703.49	0.86	0.61	0.61	
22,518.00	87.46	176.14	12,810.03	-9,725.08	1,197.67	9,798.22	4.86	-3.86	-2.95	
22,612.00	89.50	181.66	12,812.53	-9,818.99	1,199.47	9,891.72	6.26	2.17	5.87	
22,707.00	89.82	182.06	12,813.09	-9,913.93	1,196.39	9,985.69	0.54	0.34	0.42	
22,801.00	89.54	182.31	12,813.61	-10,007.86	1,192.81	10,078.60	0.40	-0.30	0.27	
22,896.00	89.75	183.90	12,814.20	-10,102.72	1,187.66	10,172.25	1.69	0.22	1.67	
22,961.00	88.40	185.26	12,815.25	-10,167.50	1,182.47	10,236.02	2.95	-2.08	2.09	
<b>Final Gordon MWD Survey</b>										
22,997.00	88.40	185.26	12,816.26	-10,203.33	1,179.17	10,271.24	0.00	0.00	0.00	
<b>LTP: 22997' MD</b>										
23,020.00	88.40	185.26	12,816.90	-10,226.23	1,177.06	10,293.75	0.00	0.00	0.00	
<b>Projection to TD</b>										



<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Well 604H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Site:</b>	Gunner 8 Federal Com	<b>MD Reference:</b>	RKB @ 3359.40usft (McVay 8)
<b>Well:</b>	604H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH / 66564	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (McVay 8)	<b>Database:</b>	USA Compass

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,958.00	11,919.05	168.89	771.02	First Gordon MWD Survey
12,386.00	12,344.74	156.59	787.89	FTP: 12386' MD
22,961.00	12,815.25	-10,167.50	1,182.47	Final Gordon MWD Survey
22,997.00	12,816.26	-10,203.33	1,179.17	LTP: 22997' MD
23,020.00	12,816.90	-10,226.23	1,177.06	Projection to TD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_