



COG Operating LLC

Lea County, NM (NAD27 NME)

Baseball Cap Federal Com

608H

OH / 64772

Design: Surveys (McVay 8)

Standard Survey Report

08 September, 2019



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

Project	Lea 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	Baseball Cap Federal Com		
Site Position:		Northing:	431,112.90 usft
From:	Map	Easting:	782,226.20 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 10' 55.044304 N
		Longitude:	103° 25' 16.037016 W
		Grid Convergence:	0.49 °

Well	608H		
Well Position	+N/-S	0.00 usft	Northing: 431,112.70 usft
	+E/-W	0.00 usft	Easting: 779,901.20 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 10' 55.236626 N
		Longitude:	103° 25' 43.087656 W
		Ground Level:	3,423.80 usft

Wellbore	OH / 64772		
Magnetics	Model Name	Sample Date	Declination (°)
	MVHD	7/13/2019	6.60
			Dip Angle (°)
			59.81
			Field Strength (nT)
			47,796.22572842

Design	Surveys (McVay 8)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			355.95

Survey Program	Date	9/8/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	11,875.00	Scientific Gyro Surveys (OH / 64772)	Scientific Gyro	Scientific Drilling Intl. Standard Wireline Keeper
11,875.00	22,630.00	Gordon MWD Surveys (OH / 64772)	MWD+HRGM	OWSG MWD + HRGM

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	0.71	181.69	100.00	-0.62	-0.02	-0.62	0.71	0.71	0.00	
125.00	0.61	189.67	125.00	-0.91	-0.05	-0.90	0.54	-0.40	31.92	
150.00	0.71	168.57	149.99	-1.19	-0.04	-1.18	1.04	0.40	-84.40	
175.00	0.63	170.13	174.99	-1.48	0.02	-1.47	0.33	-0.32	6.24	
200.00	0.52	174.93	199.99	-1.72	0.05	-1.72	0.48	-0.44	19.20	
225.00	0.55	174.54	224.99	-1.96	0.07	-1.96	0.12	0.12	-1.56	
250.00	0.41	183.13	249.99	-2.17	0.08	-2.17	0.63	-0.56	34.36	
275.00	0.49	177.00	274.99	-2.36	0.08	-2.36	0.37	0.32	-24.52	
300.00	0.45	181.07	299.99	-2.57	0.08	-2.57	0.21	-0.16	16.28	

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Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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	0.43	178.90	324.99	-2.76	0.08	-2.76	0.10	-0.08	-8.68
350.00	0.41	169.20	349.99	-2.94	0.10	-2.94	0.30	-0.08	-38.80
375.00	0.31	169.55	374.99	-3.09	0.13	-3.10	0.40	-0.40	1.40
400.00	0.41	149.94	399.99	-3.24	0.19	-3.24	0.63	0.40	-78.44
425.00	0.37	148.33	424.98	-3.38	0.28	-3.40	0.17	-0.16	-6.44
450.00	0.26	150.33	449.98	-3.50	0.35	-3.52	0.44	-0.44	8.00
475.00	0.28	154.05	474.98	-3.61	0.40	-3.63	0.11	0.08	14.88
500.00	0.25	146.98	499.98	-3.71	0.46	-3.73	0.18	-0.12	-28.28
525.00	0.25	148.92	524.98	-3.80	0.51	-3.83	0.03	0.00	7.76
550.00	0.26	149.22	549.98	-3.89	0.57	-3.93	0.04	0.04	1.20
575.00	0.26	148.57	574.98	-3.99	0.63	-4.03	0.01	0.00	-2.60
600.00	0.23	155.66	599.98	-4.09	0.68	-4.12	0.17	-0.12	28.36
625.00	0.31	169.48	624.98	-4.20	0.71	-4.24	0.41	0.32	55.28
650.00	0.32	186.60	649.98	-4.33	0.72	-4.37	0.38	0.04	68.48
675.00	0.32	191.70	674.98	-4.47	0.70	-4.51	0.11	0.00	20.40
700.00	0.35	182.89	699.98	-4.62	0.68	-4.65	0.24	0.12	-35.24
725.00	0.30	190.22	724.98	-4.76	0.66	-4.79	0.26	-0.20	29.32
750.00	0.31	195.08	749.98	-4.89	0.63	-4.92	0.11	0.04	19.44
775.00	0.33	193.10	774.98	-5.02	0.60	-5.05	0.09	0.08	-7.92
800.00	0.29	218.49	799.98	-5.14	0.54	-5.17	0.57	-0.16	101.56
825.00	0.33	214.86	824.98	-5.25	0.46	-5.27	0.18	0.16	-14.52
850.00	0.34	213.31	849.98	-5.37	0.38	-5.39	0.05	0.04	-6.20
875.00	0.35	219.26	874.98	-5.49	0.29	-5.50	0.15	0.04	23.80
900.00	0.48	189.48	899.98	-5.66	0.23	-5.66	0.99	0.52	-119.12
925.00	0.39	212.06	924.98	-5.83	0.16	-5.83	0.77	-0.36	90.32
950.00	0.44	225.57	949.98	-5.97	0.05	-5.96	0.44	0.20	54.04
975.00	0.47	246.32	974.98	-6.08	-0.11	-6.06	0.67	0.12	83.00
1,000.00	0.52	222.79	999.97	-6.20	-0.28	-6.17	0.83	0.20	-94.12
1,025.00	0.55	221.13	1,024.97	-6.38	-0.44	-6.33	0.14	0.12	-6.64
1,050.00	0.59	226.04	1,049.97	-6.56	-0.61	-6.50	0.25	0.16	19.64
1,075.00	0.59	211.53	1,074.97	-6.76	-0.77	-6.68	0.60	0.00	-58.04
1,100.00	0.64	213.87	1,099.97	-6.98	-0.92	-6.90	0.22	0.20	9.36
1,125.00	0.68	208.37	1,124.97	-7.23	-1.06	-7.13	0.30	0.16	-22.00
1,150.00	0.71	203.27	1,149.97	-7.50	-1.20	-7.40	0.27	0.12	-20.40
1,175.00	0.88	191.04	1,174.96	-7.83	-1.29	-7.72	0.96	0.68	-48.92
1,200.00	0.98	186.19	1,199.96	-8.23	-1.35	-8.12	0.51	0.40	-19.40
1,225.00	0.97	187.46	1,224.96	-8.65	-1.40	-8.53	0.10	-0.04	5.08
1,250.00	0.94	187.74	1,249.95	-9.07	-1.46	-8.94	0.12	-0.12	1.12
1,275.00	0.93	180.41	1,274.95	-9.47	-1.49	-9.34	0.48	-0.04	-29.32
1,300.00	0.94	178.69	1,299.95	-9.88	-1.48	-9.75	0.12	0.04	-6.88
1,325.00	0.95	178.89	1,324.94	-10.29	-1.48	-10.16	0.04	0.04	0.80
1,350.00	1.03	174.15	1,349.94	-10.72	-1.45	-10.59	0.46	0.32	-18.96
1,375.00	1.08	168.28	1,374.94	-11.18	-1.38	-11.05	0.48	0.20	-23.48

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1,400.00	1.03	171.85	1,399.93	-11.63	-1.30	-11.51	0.33	-0.20	14.28
1,425.00	1.04	172.98	1,424.93	-12.08	-1.24	-11.96	0.09	0.04	4.52
1,450.00	1.04	172.67	1,449.92	-12.53	-1.18	-12.41	0.02	0.00	-1.24
1,475.00	1.02	172.62	1,474.92	-12.97	-1.12	-12.86	0.08	-0.08	-0.20
1,500.00	1.05	171.39	1,499.91	-13.42	-1.06	-13.31	0.15	0.12	-4.92
1,525.00	0.94	169.18	1,524.91	-13.85	-0.99	-13.75	0.47	-0.44	-8.84
1,550.00	0.75	169.70	1,549.91	-14.21	-0.92	-14.11	0.76	-0.76	2.08
1,575.00	0.59	162.56	1,574.91	-14.50	-0.85	-14.40	0.72	-0.64	-28.56
1,600.00	0.39	157.63	1,599.91	-14.70	-0.78	-14.61	0.82	-0.80	-19.72
1,625.00	0.29	156.56	1,624.91	-14.83	-0.73	-14.75	0.40	-0.40	-4.28
1,650.00	0.21	158.61	1,649.91	-14.94	-0.68	-14.85	0.32	-0.32	8.20
1,675.00	0.13	162.35	1,674.91	-15.00	-0.66	-14.92	0.32	-0.32	14.96
1,700.00	0.14	161.11	1,699.90	-15.06	-0.64	-14.98	0.04	0.04	-4.96
1,725.00	0.11	151.19	1,724.90	-15.11	-0.62	-15.03	0.15	-0.12	-39.68
1,750.00	0.11	134.04	1,749.90	-15.15	-0.59	-15.07	0.13	0.00	-68.60
1,775.00	0.14	106.32	1,774.90	-15.17	-0.54	-15.10	0.27	0.12	-110.88
1,800.00	0.19	102.60	1,799.90	-15.19	-0.47	-15.12	0.20	0.20	-14.88
1,825.00	0.27	111.84	1,824.90	-15.22	-0.38	-15.16	0.35	0.32	36.96
1,850.00	0.23	111.62	1,849.90	-15.26	-0.28	-15.20	0.16	-0.16	-0.88
1,875.00	0.17	92.97	1,874.90	-15.28	-0.19	-15.23	0.35	-0.24	-74.60
1,900.00	0.23	117.92	1,899.90	-15.31	-0.11	-15.26	0.42	0.24	99.80
1,925.00	0.12	141.16	1,924.90	-15.35	-0.05	-15.31	0.52	-0.44	92.96
1,950.00	0.16	134.91	1,949.90	-15.40	-0.01	-15.36	0.17	0.16	-25.00
1,975.00	0.08	250.92	1,974.90	-15.43	0.00	-15.39	0.83	-0.32	464.04
2,000.00	0.21	258.97	1,999.90	-15.44	-0.06	-15.40	0.53	0.52	32.20
2,025.00	0.50	265.99	2,024.90	-15.46	-0.22	-15.40	1.17	1.16	28.08
2,050.00	0.68	260.91	2,049.90	-15.49	-0.47	-15.42	0.75	0.72	-20.32
2,075.00	0.91	270.93	2,074.90	-15.51	-0.82	-15.41	1.07	0.92	40.08
2,100.00	0.91	266.76	2,099.90	-15.52	-1.21	-15.39	0.26	0.00	-16.68
2,125.00	0.83	266.70	2,124.89	-15.54	-1.59	-15.39	0.32	-0.32	-0.24
2,150.00	0.86	263.60	2,149.89	-15.57	-1.96	-15.39	0.22	0.12	-12.40
2,175.00	0.89	259.91	2,174.89	-15.63	-2.34	-15.42	0.26	0.12	-14.76
2,200.00	0.97	256.41	2,199.88	-15.71	-2.73	-15.48	0.39	0.32	-14.00
2,225.00	0.91	259.50	2,224.88	-15.80	-3.13	-15.53	0.31	-0.24	12.36
2,250.00	0.83	260.31	2,249.88	-15.86	-3.51	-15.57	0.32	-0.32	3.24
2,275.00	0.80	262.41	2,274.88	-15.92	-3.86	-15.60	0.17	-0.12	8.40
2,300.00	0.68	247.53	2,299.87	-16.00	-4.17	-15.66	0.90	-0.48	-59.52
2,325.00	0.80	249.33	2,324.87	-16.11	-4.47	-15.76	0.49	0.48	7.20
2,350.00	0.87	238.43	2,349.87	-16.27	-4.80	-15.90	0.69	0.28	-43.60
2,375.00	0.80	252.12	2,374.87	-16.43	-5.12	-16.02	0.84	-0.28	54.76
2,400.00	0.66	240.76	2,399.86	-16.55	-5.42	-16.13	0.80	-0.56	-45.44
2,425.00	0.72	239.61	2,424.86	-16.70	-5.68	-16.26	0.25	0.24	-4.60
2,450.00	0.85	250.18	2,449.86	-16.84	-5.99	-16.38	0.78	0.52	42.28

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2,475.00	0.96	261.25	2,474.86	-16.94	-6.37	-16.45	0.82	0.44	44.28	
2,500.00	1.02	261.32	2,499.85	-17.00	-6.79	-16.48	0.24	0.24	0.28	
2,525.00	1.00	252.55	2,524.85	-17.10	-7.22	-16.55	0.62	-0.08	-35.08	
2,550.00	1.05	239.79	2,549.85	-17.28	-7.63	-16.70	0.93	0.20	-51.04	
2,575.00	1.15	239.77	2,574.84	-17.53	-8.04	-16.91	0.40	0.40	-0.08	
2,600.00	1.20	241.73	2,599.84	-17.78	-8.49	-17.13	0.26	0.20	7.84	
2,625.00	1.13	245.21	2,624.83	-18.00	-8.95	-17.33	0.40	-0.28	13.92	
2,650.00	0.99	243.13	2,649.83	-18.20	-9.36	-17.50	0.58	-0.56	-8.32	
2,675.00	1.03	234.75	2,674.82	-18.43	-9.74	-17.70	0.61	0.16	-33.52	
2,700.00	1.08	232.50	2,699.82	-18.70	-10.11	-17.94	0.26	0.20	-9.00	
2,725.00	0.94	237.47	2,724.81	-18.96	-10.47	-18.17	0.66	-0.56	19.88	
2,750.00	0.82	234.22	2,749.81	-19.17	-10.79	-18.36	0.52	-0.48	-13.00	
2,775.00	0.85	228.49	2,774.81	-19.40	-11.07	-18.57	0.35	0.12	-22.92	
2,800.00	0.94	221.00	2,799.81	-19.68	-11.34	-18.83	0.59	0.36	-29.96	
2,825.00	0.95	222.60	2,824.80	-19.99	-11.62	-19.11	0.11	0.04	6.40	
2,850.00	0.80	226.17	2,849.80	-20.26	-11.88	-19.37	0.64	-0.60	14.28	
2,875.00	0.82	238.13	2,874.80	-20.47	-12.16	-19.56	0.68	0.08	47.84	
2,900.00	0.90	237.70	2,899.79	-20.67	-12.48	-19.74	0.32	0.32	-1.72	
2,925.00	1.03	229.18	2,924.79	-20.92	-12.82	-19.97	0.77	0.52	-34.08	
2,950.00	1.06	237.67	2,949.79	-21.20	-13.18	-20.21	0.63	0.12	33.96	
2,975.00	1.08	240.70	2,974.78	-21.43	-13.58	-20.42	0.24	0.08	12.12	
3,000.00	0.94	239.31	2,999.78	-21.65	-13.96	-20.61	0.57	-0.56	-5.56	
3,025.00	0.94	228.81	3,024.77	-21.89	-14.29	-20.83	0.69	0.00	-42.00	
3,050.00	1.00	232.23	3,049.77	-22.16	-14.62	-21.07	0.33	0.24	13.68	
3,075.00	0.97	229.45	3,074.77	-22.43	-14.95	-21.32	0.23	-0.12	-11.12	
3,100.00	0.82	225.86	3,099.76	-22.70	-15.24	-21.56	0.64	-0.60	-14.36	
3,125.00	0.77	218.45	3,124.76	-22.95	-15.48	-21.80	0.46	-0.20	-29.64	
3,150.00	0.84	217.56	3,149.76	-23.23	-15.69	-22.06	0.28	0.28	-3.56	
3,175.00	0.93	228.68	3,174.76	-23.51	-15.96	-22.32	0.77	0.36	44.48	
3,200.00	1.04	246.17	3,199.75	-23.73	-16.32	-22.52	1.27	0.44	69.96	
3,225.00	1.11	254.35	3,224.75	-23.89	-16.76	-22.65	0.67	0.28	32.72	
3,250.00	1.08	252.91	3,249.74	-24.03	-17.22	-22.75	0.16	-0.12	-5.76	
3,275.00	1.11	244.63	3,274.74	-24.20	-17.66	-22.89	0.64	0.12	-33.12	
3,300.00	1.17	250.25	3,299.73	-24.39	-18.12	-23.05	0.51	0.24	22.48	
3,325.00	1.01	249.29	3,324.73	-24.55	-18.57	-23.18	0.64	-0.64	-3.84	
3,350.00	0.85	236.38	3,349.73	-24.73	-18.93	-23.33	1.05	-0.64	-51.64	
3,375.00	0.98	237.95	3,374.72	-24.95	-19.26	-23.53	0.53	0.52	6.28	
3,400.00	0.91	242.10	3,399.72	-25.16	-19.62	-23.71	0.39	-0.28	16.60	
3,425.00	0.84	238.71	3,424.72	-25.34	-19.95	-23.87	0.35	-0.28	-13.56	
3,450.00	1.02	240.08	3,449.71	-25.55	-20.30	-24.05	0.73	0.72	5.48	
3,475.00	1.20	261.57	3,474.71	-25.70	-20.75	-24.17	1.80	0.72	85.96	
3,500.00	1.18	261.14	3,499.70	-25.78	-21.26	-24.21	0.09	-0.08	-1.72	
3,525.00	1.26	258.56	3,524.70	-25.87	-21.79	-24.27	0.39	0.32	-10.32	
3,550.00	1.26	265.68	3,549.69	-25.95	-22.33	-24.30	0.63	0.00	28.48	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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	1.13	268.09	3,574.69	-25.98	-22.85	-24.30	0.56	-0.52	9.64
3,600.00	0.99	265.05	3,599.68	-26.00	-23.31	-24.29	0.60	-0.56	-12.16
3,625.00	0.99	271.43	3,624.68	-26.02	-23.75	-24.27	0.44	0.00	25.52
3,650.00	0.88	282.11	3,649.68	-25.97	-24.15	-24.20	0.82	-0.44	42.72
3,675.00	0.75	279.10	3,674.67	-25.90	-24.50	-24.11	0.55	-0.52	-12.04
3,700.00	0.79	269.29	3,699.67	-25.88	-24.83	-24.06	0.55	0.16	-39.24
3,725.00	1.06	272.94	3,724.67	-25.87	-25.24	-24.02	1.10	1.08	14.60
3,750.00	1.39	272.55	3,749.66	-25.85	-25.77	-23.96	1.32	1.32	-1.56
3,775.00	1.67	273.52	3,774.65	-25.81	-26.44	-23.88	1.12	1.12	3.88
3,800.00	1.68	272.42	3,799.64	-25.77	-27.17	-23.79	0.13	0.04	-4.40
3,825.00	1.73	270.51	3,824.63	-25.75	-27.91	-23.72	0.30	0.20	-7.64
3,850.00	1.54	258.79	3,849.62	-25.81	-28.62	-23.73	1.53	-0.76	-46.88
3,875.00	1.51	256.96	3,874.61	-25.95	-29.27	-23.82	0.23	-0.12	-7.32
3,900.00	1.53	266.99	3,899.60	-26.05	-29.92	-23.87	1.07	0.08	40.12
3,925.00	1.30	260.66	3,924.60	-26.11	-30.53	-23.89	1.11	-0.92	-25.32
3,950.00	1.25	254.16	3,949.59	-26.23	-31.08	-23.97	0.61	-0.20	-26.00
3,975.00	1.36	253.45	3,974.58	-26.39	-31.62	-24.09	0.44	0.44	-2.84
4,000.00	1.41	255.04	3,999.58	-26.55	-32.20	-24.21	0.25	0.20	6.36
4,025.00	1.53	257.45	4,024.57	-26.70	-32.83	-24.32	0.54	0.48	9.64
4,050.00	2.02	265.22	4,049.56	-26.81	-33.59	-24.37	2.18	1.96	31.08
4,075.00	1.98	264.27	4,074.54	-26.89	-34.46	-24.39	0.21	-0.16	-3.80
4,100.00	1.91	263.89	4,099.53	-26.98	-35.30	-24.42	0.28	-0.28	-1.52
4,125.00	1.89	261.27	4,124.51	-27.09	-36.13	-24.47	0.36	-0.08	-10.48
4,150.00	1.95	261.52	4,149.50	-27.21	-36.95	-24.54	0.24	0.24	1.00
4,175.00	1.92	262.27	4,174.48	-27.33	-37.79	-24.60	0.16	-0.12	3.00
4,200.00	1.69	264.09	4,199.47	-27.43	-38.57	-24.63	0.95	-0.92	7.28
4,225.00	1.56	259.72	4,224.46	-27.53	-39.27	-24.68	0.72	-0.52	-17.48
4,250.00	1.58	260.20	4,249.45	-27.65	-39.95	-24.75	0.10	0.08	1.92
4,275.00	1.49	257.85	4,274.44	-27.77	-40.61	-24.83	0.44	-0.36	-9.40
4,300.00	1.49	257.32	4,299.43	-27.91	-41.24	-24.93	0.06	0.00	-2.12
4,325.00	1.40	260.60	4,324.43	-28.03	-41.86	-25.01	0.49	-0.36	13.12
4,350.00	1.40	259.22	4,349.42	-28.14	-42.46	-25.07	0.13	0.00	-5.52
4,375.00	1.38	260.06	4,374.41	-28.25	-43.06	-25.14	0.11	-0.08	3.36
4,400.00	1.14	258.85	4,399.41	-28.35	-43.60	-25.20	0.97	-0.96	-4.84
4,425.00	0.94	259.50	4,424.40	-28.43	-44.04	-25.25	0.80	-0.80	2.60
4,450.00	0.83	241.94	4,449.40	-28.56	-44.40	-25.35	1.16	-0.44	-70.24
4,475.00	0.85	231.19	4,474.40	-28.76	-44.71	-25.53	0.63	0.08	-43.00
4,500.00	0.67	241.53	4,499.39	-28.94	-44.98	-25.70	0.90	-0.72	41.36
4,525.00	0.41	189.51	4,524.39	-29.10	-45.12	-25.84	2.11	-1.04	-208.08
4,550.00	0.80	145.24	4,549.39	-29.33	-45.04	-26.08	2.33	1.56	-177.08
4,575.00	1.00	137.19	4,574.39	-29.64	-44.79	-26.40	0.94	0.80	-32.20
4,600.00	1.26	122.79	4,599.38	-29.95	-44.41	-26.73	1.53	1.04	-57.60
4,625.00	1.69	122.45	4,624.37	-30.29	-43.87	-27.12	1.72	1.72	-1.36

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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	1.84	121.18	4,649.36	-30.70	-43.22	-27.57	0.62	0.60	-5.08	
4,675.00	1.84	116.36	4,674.35	-31.08	-42.51	-28.00	0.62	0.00	-19.28	
4,700.00	1.67	124.11	4,699.34	-31.47	-41.85	-28.43	1.17	-0.68	31.00	
4,725.00	1.44	130.57	4,724.33	-31.88	-41.31	-28.88	1.16	-0.92	25.84	
4,750.00	1.30	140.83	4,749.32	-32.30	-40.89	-29.33	1.13	-0.56	41.04	
4,775.00	0.95	153.96	4,774.32	-32.71	-40.62	-29.76	1.73	-1.40	52.52	
4,800.00	0.99	195.72	4,799.31	-33.10	-40.59	-30.15	2.77	0.16	167.04	
4,825.00	1.54	221.66	4,824.31	-33.56	-40.87	-30.59	3.12	2.20	103.76	
4,850.00	1.59	228.56	4,849.30	-34.04	-41.36	-31.03	0.78	0.20	27.60	
4,875.00	1.71	227.20	4,874.29	-34.52	-41.89	-31.48	0.50	0.48	-5.44	
4,900.00	1.53	215.85	4,899.28	-35.05	-42.36	-31.97	1.47	-0.72	-45.40	
4,925.00	1.58	199.99	4,924.27	-35.64	-42.67	-32.54	1.73	0.20	-63.44	
4,950.00	1.57	187.03	4,949.26	-36.30	-42.83	-33.19	1.42	-0.04	-51.84	
4,975.00	1.80	181.24	4,974.25	-37.04	-42.88	-33.92	1.14	0.92	-23.16	
5,000.00	1.87	201.25	4,999.24	-37.81	-43.04	-34.68	2.56	0.28	80.04	
5,025.00	1.97	224.48	5,024.22	-38.50	-43.49	-35.33	3.12	0.40	92.92	
5,050.00	2.12	230.13	5,049.21	-39.10	-44.14	-35.88	1.00	0.60	22.60	
5,075.00	2.25	235.13	5,074.19	-39.68	-44.90	-36.41	0.92	0.52	20.00	
5,100.00	3.17	246.38	5,099.16	-40.23	-45.94	-36.89	4.23	3.68	45.00	
5,125.00	3.74	251.94	5,124.12	-40.76	-47.35	-37.32	2.64	2.28	22.24	
5,150.00	3.99	252.95	5,149.06	-41.27	-48.95	-37.71	1.04	1.00	4.04	
5,175.00	4.07	252.42	5,174.00	-41.79	-50.63	-38.11	0.35	0.32	-2.12	
5,200.00	4.09	253.03	5,198.93	-42.32	-52.33	-38.52	0.19	0.08	2.44	
5,225.00	4.95	255.46	5,223.86	-42.85	-54.23	-38.92	3.52	3.44	9.72	
5,250.00	5.02	257.56	5,248.76	-43.36	-56.34	-39.27	0.78	0.28	8.40	
5,275.00	5.10	256.56	5,273.66	-43.85	-58.49	-39.61	0.48	0.32	-4.00	
5,300.00	5.01	258.50	5,298.57	-44.33	-60.64	-39.94	0.77	-0.36	7.76	
5,325.00	4.88	257.27	5,323.47	-44.78	-62.74	-40.24	0.67	-0.52	-4.92	
5,350.00	4.91	259.42	5,348.38	-45.21	-64.83	-40.52	0.74	0.12	8.60	
5,375.00	4.67	257.02	5,373.29	-45.64	-66.88	-40.80	1.25	-0.96	-9.60	
5,400.00	4.63	258.61	5,398.21	-46.07	-68.86	-41.09	0.54	-0.16	6.36	
5,425.00	4.51	257.34	5,423.13	-46.48	-70.80	-41.36	0.63	-0.48	-5.08	
5,450.00	4.80	257.81	5,448.05	-46.92	-72.79	-41.66	1.17	1.16	1.88	
5,475.00	5.10	259.36	5,472.96	-47.34	-74.90	-41.93	1.31	1.20	6.20	
5,500.00	5.16	258.43	5,497.86	-47.77	-77.09	-42.21	0.41	0.24	-3.72	
5,525.00	5.18	259.77	5,522.76	-48.20	-79.31	-42.48	0.49	0.08	5.36	
5,550.00	5.25	258.46	5,547.65	-48.63	-81.54	-42.75	0.55	0.28	-5.24	
5,575.00	5.23	258.77	5,572.55	-49.08	-83.78	-43.04	0.14	-0.08	1.24	
5,600.00	5.05	259.92	5,597.45	-49.49	-85.98	-43.30	0.83	-0.72	4.60	
5,625.00	4.99	257.82	5,622.35	-49.92	-88.12	-43.57	0.77	-0.24	-8.40	
5,650.00	4.98	259.49	5,647.26	-50.34	-90.25	-43.84	0.58	-0.04	6.68	
5,675.00	4.83	258.35	5,672.16	-50.75	-92.35	-44.10	0.72	-0.60	-4.56	
5,700.00	5.01	257.47	5,697.07	-51.20	-94.45	-44.40	0.78	0.72	-3.52	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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	5.19	258.38	5,721.97	-51.67	-96.62	-44.71	0.79	0.72	3.64
5,750.00	5.62	254.53	5,746.86	-52.22	-98.91	-45.11	2.25	1.72	-15.40
5,775.00	6.15	253.87	5,771.73	-52.92	-101.37	-45.63	2.14	2.12	-2.64
5,800.00	6.15	252.28	5,796.59	-53.70	-103.94	-46.23	0.68	0.00	-6.36
5,825.00	6.18	252.22	5,821.44	-54.52	-106.49	-46.86	0.12	0.12	-0.24
5,850.00	5.95	252.63	5,846.30	-55.32	-109.01	-47.48	0.94	-0.92	1.64
5,875.00	6.05	251.22	5,871.17	-56.13	-111.49	-48.11	0.71	0.40	-5.64
5,900.00	5.89	251.96	5,896.03	-56.95	-113.96	-48.76	0.71	-0.64	2.96
5,925.00	5.84	250.36	5,920.90	-57.77	-116.38	-49.41	0.68	-0.20	-6.40
5,950.00	5.93	250.13	5,945.77	-58.64	-118.79	-50.10	0.37	0.36	-0.92
5,975.00	5.91	250.95	5,970.63	-59.50	-121.22	-50.79	0.35	-0.08	3.28
6,000.00	5.53	249.44	5,995.51	-60.34	-123.57	-51.46	1.63	-1.52	-6.04
6,025.00	5.48	249.93	6,020.39	-61.17	-125.82	-52.14	0.27	-0.20	1.96
6,050.00	5.27	249.48	6,045.28	-61.99	-128.01	-52.79	0.86	-0.84	-1.80
6,075.00	5.46	249.17	6,070.17	-62.81	-130.20	-53.46	0.77	0.76	-1.24
6,100.00	5.26	249.84	6,095.07	-63.63	-132.39	-54.12	0.84	-0.80	2.68
6,125.00	5.32	249.83	6,119.96	-64.42	-134.55	-54.76	0.24	0.24	-0.04
6,150.00	5.13	249.77	6,144.85	-65.21	-136.69	-55.39	0.76	-0.76	-0.24
6,175.00	5.16	248.12	6,169.75	-66.02	-138.78	-56.05	0.60	0.12	-6.60
6,200.00	5.35	250.46	6,194.65	-66.82	-140.92	-56.70	1.15	0.76	9.36
6,225.00	5.49	251.17	6,219.54	-67.60	-143.15	-57.32	0.62	0.56	2.84
6,250.00	6.17	253.56	6,244.41	-68.37	-145.57	-57.91	2.89	2.72	9.56
6,275.00	6.16	253.76	6,269.26	-69.12	-148.15	-58.49	0.09	-0.04	0.80
6,300.00	6.39	253.55	6,294.11	-69.89	-150.77	-59.07	0.92	0.92	-0.84
6,325.00	6.15	253.78	6,318.96	-70.66	-153.39	-59.65	0.97	-0.96	0.92
6,350.00	6.30	253.54	6,343.82	-71.42	-155.99	-60.23	0.61	0.60	-0.96
6,375.00	5.96	254.18	6,368.67	-72.16	-158.56	-60.79	1.39	-1.36	2.56
6,400.00	5.90	252.70	6,393.54	-72.90	-161.03	-61.35	0.66	-0.24	-5.92
6,425.00	5.73	253.14	6,418.41	-73.64	-163.45	-61.92	0.70	-0.68	1.76
6,450.00	5.85	252.35	6,443.28	-74.39	-165.86	-62.49	0.58	0.48	-3.16
6,475.00	5.87	252.73	6,468.15	-75.16	-168.30	-63.08	0.17	0.08	1.52
6,500.00	5.91	253.05	6,493.02	-75.91	-170.75	-63.66	0.21	0.16	1.28
6,525.00	6.27	249.14	6,517.88	-76.77	-173.25	-64.35	2.20	1.44	-15.64
6,550.00	6.25	250.50	6,542.73	-77.71	-175.81	-65.10	0.60	-0.08	5.44
6,575.00	6.15	249.56	6,567.58	-78.64	-178.35	-65.84	0.57	-0.40	-3.76
6,600.00	6.66	246.87	6,592.43	-79.67	-180.94	-66.70	2.37	2.04	-10.76
6,625.00	7.41	240.24	6,617.24	-81.04	-183.67	-67.87	4.42	3.00	-26.52
6,650.00	8.01	238.15	6,642.01	-82.76	-186.55	-69.38	2.65	2.40	-8.36
6,675.00	8.30	236.97	6,666.76	-84.67	-189.54	-71.07	1.34	1.16	-4.72
6,700.00	8.29	237.02	6,691.50	-86.63	-192.57	-72.81	0.05	-0.04	0.20
6,725.00	8.30	236.75	6,716.24	-88.60	-195.59	-74.57	0.16	0.04	-1.08
6,750.00	8.24	236.50	6,740.98	-90.58	-198.59	-76.33	0.28	-0.24	-1.00
6,775.00	7.89	236.30	6,765.73	-92.52	-201.51	-78.06	1.40	-1.40	-0.80
6,800.00	7.89	236.17	6,790.49	-94.43	-204.37	-79.76	0.07	0.00	-0.52

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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	7.77	235.70	6,815.26	-96.33	-207.19	-81.46	0.54	-0.48	-1.88
6,850.00	7.71	235.49	6,840.03	-98.24	-209.97	-83.16	0.27	-0.24	-0.84
6,875.00	7.68	236.08	6,864.81	-100.12	-212.73	-84.84	0.34	-0.12	2.36
6,900.00	7.67	236.21	6,889.58	-101.98	-215.51	-86.50	0.08	-0.04	0.52
6,925.00	7.53	235.56	6,914.37	-103.83	-218.24	-88.16	0.66	-0.56	-2.60
6,950.00	7.48	236.13	6,939.15	-105.67	-220.95	-89.80	0.36	-0.20	2.28
6,975.00	7.33	235.42	6,963.94	-107.48	-223.61	-91.42	0.70	-0.60	-2.84
7,000.00	7.37	235.94	6,988.74	-109.28	-226.25	-93.03	0.31	0.16	2.08
7,025.00	7.22	235.13	7,013.53	-111.08	-228.87	-94.64	0.73	-0.60	-3.24
7,050.00	7.21	235.94	7,038.34	-112.86	-231.46	-96.23	0.41	-0.04	3.24
7,075.00	7.10	234.68	7,063.14	-114.63	-234.02	-97.81	0.77	-0.44	-5.04
7,100.00	7.03	235.42	7,087.95	-116.39	-236.54	-99.39	0.46	-0.28	2.96
7,125.00	6.97	234.75	7,112.77	-118.13	-239.04	-100.96	0.41	-0.24	-2.68
7,150.00	6.82	235.55	7,137.59	-119.85	-241.50	-102.49	0.71	-0.60	3.20
7,175.00	6.61	233.99	7,162.41	-121.53	-243.89	-104.00	1.11	-0.84	-6.24
7,200.00	6.71	235.34	7,187.25	-123.21	-246.25	-105.51	0.74	0.40	5.40
7,225.00	6.48	234.65	7,212.08	-124.86	-248.60	-106.99	0.97	-0.92	-2.76
7,250.00	6.49	234.61	7,236.92	-126.49	-250.91	-108.45	0.04	0.04	-0.16
7,275.00	6.34	234.32	7,261.76	-128.11	-253.18	-109.91	0.61	-0.60	-1.16
7,300.00	6.35	234.48	7,286.61	-129.72	-255.43	-111.36	0.08	0.04	0.64
7,325.00	6.08	235.00	7,311.46	-131.29	-257.64	-112.76	1.10	-1.08	2.08
7,350.00	6.13	234.46	7,336.32	-132.82	-259.81	-114.14	0.30	0.20	-2.16
7,375.00	5.90	235.83	7,361.18	-134.32	-261.96	-115.48	1.08	-0.92	5.48
7,400.00	5.80	233.77	7,386.05	-135.79	-264.04	-116.80	0.93	-0.40	-8.24
7,425.00	5.85	235.19	7,410.92	-137.26	-266.10	-118.12	0.61	0.20	5.68
7,450.00	5.54	234.73	7,435.80	-138.68	-268.13	-119.40	1.25	-1.24	-1.84
7,475.00	5.52	233.20	7,460.68	-140.10	-270.08	-120.68	0.60	-0.08	-6.12
7,500.00	5.50	234.05	7,485.57	-141.53	-272.01	-121.96	0.34	-0.08	3.40
7,525.00	5.53	234.65	7,510.45	-142.93	-273.97	-123.22	0.26	0.12	2.40
7,550.00	5.34	233.82	7,535.34	-144.31	-275.89	-124.46	0.82	-0.76	-3.32
7,575.00	5.19	233.42	7,560.24	-145.67	-277.74	-125.69	0.62	-0.60	-1.60
7,600.00	5.13	232.28	7,585.13	-147.03	-279.53	-126.92	0.48	-0.24	-4.56
7,625.00	5.20	234.59	7,610.03	-148.37	-281.34	-128.13	0.88	0.28	9.24
7,650.00	5.03	232.82	7,634.93	-149.69	-283.13	-129.32	0.93	-0.68	-7.08
7,675.00	5.04	233.98	7,659.84	-150.99	-284.89	-130.50	0.41	0.04	4.64
7,700.00	4.88	232.68	7,684.74	-152.29	-286.63	-131.66	0.78	-0.64	-5.20
7,725.00	4.89	233.76	7,709.65	-153.56	-288.33	-132.81	0.37	0.04	4.32
7,750.00	4.65	232.72	7,734.57	-154.80	-290.00	-133.94	1.02	-0.96	-4.16
7,775.00	4.68	233.77	7,759.48	-156.02	-291.63	-135.03	0.36	0.12	4.20
7,800.00	4.57	232.75	7,784.40	-157.23	-293.24	-136.12	0.55	-0.44	-4.08
7,825.00	4.54	233.96	7,809.32	-158.41	-294.84	-137.19	0.40	-0.12	4.84
7,850.00	4.41	233.65	7,834.25	-159.56	-296.41	-138.23	0.53	-0.52	-1.24
7,875.00	4.41	233.79	7,859.17	-160.70	-297.96	-139.25	0.04	0.00	0.56

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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)	
7,900.00	4.28	233.21	7,884.10	-161.83	-299.48	-140.27	0.55	-0.52	-2.32	
7,925.00	4.14	233.68	7,909.03	-162.92	-300.96	-141.26	0.58	-0.56	1.88	
7,950.00	4.09	233.92	7,933.97	-163.98	-302.40	-142.21	0.21	-0.20	0.96	
7,975.00	4.07	232.30	7,958.91	-165.05	-303.83	-143.18	0.47	-0.08	-6.48	
8,000.00	3.93	233.42	7,983.84	-166.10	-305.22	-144.13	0.64	-0.56	4.48	
8,025.00	4.12	232.36	8,008.78	-167.16	-306.62	-145.09	0.82	0.76	-4.24	
8,050.00	4.00	232.89	8,033.72	-168.23	-308.02	-146.06	0.50	-0.48	2.12	
8,075.00	3.98	232.62	8,058.66	-169.29	-309.41	-147.01	0.11	-0.08	-1.08	
8,100.00	3.90	231.25	8,083.60	-170.35	-310.76	-147.97	0.49	-0.32	-5.48	
8,125.00	3.97	233.59	8,108.54	-171.39	-312.12	-148.92	0.70	0.28	9.36	
8,150.00	3.81	231.97	8,133.48	-172.42	-313.47	-149.85	0.78	-0.64	-6.48	
8,175.00	3.84	234.63	8,158.43	-173.41	-314.81	-150.75	0.72	0.12	10.64	
8,200.00	3.77	234.09	8,183.37	-174.38	-316.15	-151.61	0.31	-0.28	-2.16	
8,225.00	3.68	246.79	8,208.32	-175.18	-317.56	-152.31	3.31	-0.36	50.80	
8,250.00	3.93	261.24	8,233.27	-175.62	-319.14	-152.65	3.95	1.00	57.80	
8,275.00	3.96	265.34	8,258.21	-175.82	-320.85	-152.73	1.13	0.12	16.40	
8,300.00	4.06	265.53	8,283.15	-175.96	-322.59	-152.74	0.40	0.40	0.76	
8,325.00	4.11	264.49	8,308.08	-176.12	-324.37	-152.77	0.36	0.20	-4.16	
8,350.00	4.09	265.84	8,333.02	-176.27	-326.15	-152.79	0.39	-0.08	5.40	
8,375.00	4.17	265.18	8,357.95	-176.41	-327.94	-152.81	0.37	0.32	-2.64	
8,400.00	4.08	265.08	8,382.89	-176.56	-329.73	-152.83	0.36	-0.36	-0.40	
8,425.00	4.39	261.04	8,407.82	-176.79	-331.56	-152.93	1.72	1.24	-16.16	
8,450.00	4.24	260.13	8,432.75	-177.10	-333.42	-153.11	0.66	-0.60	-3.64	
8,475.00	4.46	259.97	8,457.68	-177.42	-335.29	-153.30	0.88	0.88	-0.64	
8,500.00	4.35	260.00	8,482.60	-177.76	-337.18	-153.50	0.44	-0.44	0.12	
8,525.00	4.38	259.49	8,507.53	-178.10	-339.05	-153.71	0.20	0.12	-2.04	
8,550.00	4.21	259.47	8,532.46	-178.44	-340.89	-153.92	0.68	-0.68	-0.08	
8,575.00	4.31	259.68	8,557.39	-178.77	-342.72	-154.12	0.40	0.40	0.84	
8,600.00	4.19	258.90	8,582.32	-179.12	-344.54	-154.34	0.53	-0.48	-3.12	
8,625.00	4.31	259.70	8,607.25	-179.46	-346.36	-154.55	0.54	0.48	3.20	
8,650.00	4.32	258.13	8,632.18	-179.82	-348.20	-154.78	0.47	0.04	-6.28	
8,675.00	4.37	260.43	8,657.11	-180.18	-350.07	-155.00	0.73	0.20	9.20	
8,700.00	5.17	255.28	8,682.02	-180.62	-352.09	-155.30	3.63	3.20	-20.60	
8,725.00	5.73	255.14	8,706.91	-181.23	-354.39	-155.74	2.24	2.24	-0.56	
8,750.00	5.84	253.42	8,731.78	-181.91	-356.82	-156.25	0.82	0.44	-6.88	
8,775.00	5.77	254.35	8,756.66	-182.61	-359.24	-156.78	0.47	-0.28	3.72	
8,800.00	5.95	254.08	8,781.53	-183.31	-361.70	-157.30	0.73	0.72	-1.08	
8,825.00	5.69	254.82	8,806.40	-183.99	-364.14	-157.81	1.08	-1.04	2.96	
8,850.00	5.65	254.69	8,831.27	-184.64	-366.53	-158.29	0.17	-0.16	-0.52	
8,875.00	5.67	254.62	8,856.15	-185.29	-368.90	-158.77	0.08	0.08	-0.28	
8,900.00	5.95	250.28	8,881.02	-186.05	-371.31	-159.36	2.08	1.12	-17.36	
8,925.00	6.22	251.18	8,905.88	-186.93	-373.82	-160.06	1.15	1.08	3.60	
8,950.00	6.08	250.33	8,930.74	-187.81	-376.34	-160.76	0.67	-0.56	-3.40	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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)	
8,975.00	6.03	250.81	8,955.60	-188.69	-378.83	-161.46	0.28	-0.20	1.92	
9,000.00	5.88	251.49	8,980.46	-189.52	-381.29	-162.12	0.66	-0.60	2.72	
9,025.00	5.84	252.81	9,005.33	-190.31	-383.71	-162.73	0.56	-0.16	5.28	
9,050.00	5.54	253.71	9,030.21	-191.02	-386.09	-163.28	1.25	-1.20	3.60	
9,075.00	5.75	252.99	9,055.09	-191.73	-388.44	-163.81	0.89	0.84	-2.88	
9,100.00	5.58	254.57	9,079.97	-192.42	-390.81	-164.33	0.92	-0.68	6.32	
9,125.00	5.49	253.45	9,104.85	-193.08	-393.13	-164.83	0.56	-0.36	-4.48	
9,150.00	5.66	252.84	9,129.73	-193.78	-395.46	-165.37	0.72	0.68	-2.44	
9,175.00	6.02	245.31	9,154.60	-194.70	-397.82	-166.11	3.38	1.44	-30.12	
9,200.00	6.60	236.60	9,179.45	-196.03	-400.22	-167.28	4.47	2.32	-34.84	
9,225.00	6.80	236.99	9,204.28	-197.63	-402.66	-168.70	0.82	0.80	1.56	
9,250.00	6.81	237.17	9,229.11	-199.24	-405.14	-170.13	0.09	0.04	0.72	
9,275.00	6.66	237.74	9,253.93	-200.82	-407.61	-171.53	0.66	-0.60	2.28	
9,300.00	6.54	239.04	9,278.77	-202.33	-410.06	-172.86	0.77	-0.48	5.20	
9,325.00	6.25	240.23	9,303.61	-203.73	-412.46	-174.09	1.28	-1.16	4.76	
9,350.00	6.02	241.12	9,328.47	-205.04	-414.79	-175.23	1.00	-0.92	3.56	
9,375.00	5.98	242.16	9,353.33	-206.28	-417.09	-176.31	0.46	-0.16	4.16	
9,400.00	5.89	244.57	9,378.20	-207.44	-419.40	-177.30	1.06	-0.36	9.64	
9,425.00	5.91	246.52	9,403.07	-208.51	-421.74	-178.20	0.81	0.08	7.80	
9,450.00	5.88	248.34	9,427.93	-209.49	-424.11	-179.01	0.76	-0.12	7.28	
9,475.00	5.81	249.60	9,452.80	-210.41	-426.49	-179.76	0.58	-0.28	5.04	
9,500.00	5.78	251.34	9,477.68	-211.25	-428.87	-180.43	0.71	-0.12	6.96	
9,525.00	5.58	253.04	9,502.55	-212.01	-431.22	-181.02	1.05	-0.80	6.80	
9,550.00	5.49	253.74	9,527.44	-212.70	-433.53	-181.55	0.45	-0.36	2.80	
9,575.00	5.38	256.16	9,552.32	-213.31	-435.82	-182.00	1.02	-0.44	9.68	
9,600.00	5.29	256.57	9,577.22	-213.86	-438.08	-182.38	0.39	-0.36	1.64	
9,625.00	5.28	258.14	9,602.11	-214.36	-440.32	-182.73	0.58	-0.04	6.28	
9,650.00	5.34	258.70	9,627.00	-214.83	-442.59	-183.03	0.32	0.24	2.24	
9,675.00	5.30	259.24	9,651.89	-215.27	-444.87	-183.31	0.26	-0.16	2.16	
9,700.00	5.22	259.71	9,676.79	-215.69	-447.12	-183.57	0.36	-0.32	1.88	
9,725.00	5.26	260.01	9,701.68	-216.09	-449.37	-183.81	0.19	0.16	1.20	
9,750.00	5.26	260.26	9,726.58	-216.48	-451.62	-184.05	0.09	0.00	1.00	
9,775.00	5.17	261.14	9,751.48	-216.85	-453.87	-184.25	0.48	-0.36	3.52	
9,800.00	5.21	261.46	9,776.37	-217.19	-456.10	-184.44	0.20	0.16	1.28	
9,825.00	5.23	261.04	9,801.27	-217.54	-458.35	-184.62	0.17	0.08	-1.68	
9,850.00	5.10	261.53	9,826.17	-217.88	-460.57	-184.81	0.55	-0.52	1.96	
9,875.00	5.27	262.15	9,851.07	-218.20	-462.81	-184.97	0.72	0.68	2.48	
9,900.00	5.14	262.33	9,875.96	-218.51	-465.06	-185.12	0.52	-0.52	0.72	
9,925.00	5.09	263.89	9,900.86	-218.78	-467.27	-185.23	0.59	-0.20	6.24	
9,950.00	5.15	264.81	9,925.76	-218.99	-469.49	-185.29	0.41	0.24	3.68	
9,975.00	5.33	266.54	9,950.66	-219.17	-471.77	-185.30	0.96	0.72	6.92	
10,000.00	5.34	267.16	9,975.55	-219.29	-474.09	-185.26	0.23	0.04	2.48	
10,025.00	5.30	266.94	10,000.44	-219.41	-476.40	-185.22	0.18	-0.16	-0.88	
10,050.00	5.29	267.77	10,025.34	-219.52	-478.71	-185.16	0.31	-0.04	3.32	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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)
10,075.00	5.30	269.15	10,050.23	-219.58	-481.01	-185.06	0.51	0.04	5.52
10,100.00	5.44	268.81	10,075.12	-219.62	-483.35	-184.94	0.57	0.56	-1.36
10,125.00	5.25	268.07	10,100.01	-219.69	-485.68	-184.84	0.81	-0.76	-2.96
10,150.00	5.07	269.16	10,124.91	-219.74	-487.93	-184.73	0.82	-0.72	4.36
10,175.00	5.22	269.99	10,149.81	-219.76	-490.17	-184.59	0.67	0.60	3.32
10,200.00	5.10	268.54	10,174.71	-219.79	-492.42	-184.46	0.71	-0.48	-5.80
10,225.00	5.12	269.69	10,199.61	-219.82	-494.64	-184.34	0.42	0.08	4.60
10,250.00	5.23	269.60	10,224.51	-219.83	-496.90	-184.19	0.44	0.44	-0.36
10,275.00	5.17	269.22	10,249.40	-219.86	-499.17	-184.05	0.28	-0.24	-1.52
10,300.00	5.25	270.44	10,274.30	-219.86	-501.44	-183.90	0.55	0.32	4.88
10,325.00	5.15	270.60	10,299.20	-219.84	-503.70	-183.72	0.40	-0.40	0.64
10,350.00	5.15	272.89	10,324.10	-219.78	-505.94	-183.49	0.82	0.00	9.16
10,375.00	5.10	272.83	10,349.00	-219.66	-508.17	-183.22	0.20	-0.20	-0.24
10,400.00	4.92	274.68	10,373.90	-219.52	-510.35	-182.93	0.97	-0.72	7.40
10,425.00	4.94	274.53	10,398.81	-219.35	-512.49	-182.61	0.10	0.08	-0.60
10,450.00	4.90	275.78	10,423.72	-219.16	-514.63	-182.26	0.46	-0.16	5.00
10,475.00	4.96	274.66	10,448.62	-218.96	-516.77	-181.92	0.45	0.24	-4.48
10,500.00	4.67	275.75	10,473.54	-218.77	-518.86	-181.58	1.22	-1.16	4.36
10,525.00	4.72	276.36	10,498.45	-218.56	-520.89	-181.22	0.28	0.20	2.44
10,550.00	4.52	273.42	10,523.37	-218.38	-522.90	-180.91	1.24	-0.80	-11.76
10,575.00	4.24	273.60	10,548.30	-218.27	-524.80	-180.66	1.12	-1.12	0.72
10,600.00	4.05	267.06	10,573.23	-218.25	-526.61	-180.52	2.04	-0.76	-26.16
10,625.00	3.75	264.19	10,598.17	-218.38	-528.30	-180.52	1.43	-1.20	-11.48
10,650.00	3.47	259.40	10,623.13	-218.60	-529.86	-180.64	1.65	-1.12	-19.16
10,675.00	3.32	257.69	10,648.08	-218.90	-531.31	-180.83	0.72	-0.60	-6.84
10,700.00	3.05	256.67	10,673.04	-219.20	-532.67	-181.04	1.10	-1.08	-4.08
10,725.00	3.22	254.95	10,698.01	-219.54	-533.99	-181.28	0.78	0.68	-6.88
10,750.00	3.15	258.04	10,722.97	-219.86	-535.34	-181.51	0.74	-0.28	12.36
10,775.00	3.04	256.84	10,747.93	-220.16	-536.66	-181.71	0.51	-0.44	-4.80
10,800.00	3.07	259.56	10,772.89	-220.43	-537.96	-181.89	0.59	0.12	10.88
10,825.00	2.95	262.40	10,797.86	-220.64	-539.26	-182.00	0.77	-0.48	11.36
10,850.00	3.05	264.64	10,822.83	-220.78	-540.56	-182.05	0.62	0.40	8.96
10,875.00	2.92	267.18	10,847.79	-220.88	-541.86	-182.06	0.74	-0.52	10.16
10,900.00	2.56	267.76	10,872.76	-220.93	-543.05	-182.02	1.44	-1.44	2.32
10,925.00	2.72	267.67	10,897.74	-220.98	-544.20	-181.99	0.64	0.64	-0.36
10,950.00	2.65	270.61	10,922.71	-220.99	-545.37	-181.92	0.62	-0.28	11.76
10,975.00	2.45	270.26	10,947.68	-220.99	-546.48	-181.84	0.80	-0.80	-1.40
11,000.00	2.47	271.30	10,972.66	-220.97	-547.56	-181.75	0.20	0.08	4.16
11,025.00	2.38	274.75	10,997.64	-220.92	-548.61	-181.62	0.69	-0.36	13.80
11,050.00	2.26	274.53	11,022.62	-220.83	-549.62	-181.46	0.48	-0.48	-0.88
11,075.00	2.33	271.36	11,047.60	-220.78	-550.62	-181.34	0.58	0.28	-12.68
11,100.00	2.30	274.90	11,072.58	-220.73	-551.63	-181.22	0.58	-0.12	14.16
11,125.00	2.29	272.83	11,097.56	-220.66	-552.63	-181.08	0.33	-0.04	-8.28

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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)	
11,150.00	2.36	270.29	11,122.54	-220.63	-553.64	-180.98	0.50	0.28	-10.16	
11,175.00	2.39	268.16	11,147.52	-220.65	-554.68	-180.92	0.37	0.12	-8.52	
11,200.00	2.29	267.62	11,172.50	-220.69	-555.70	-180.89	0.41	-0.40	-2.16	
11,225.00	2.21	265.48	11,197.48	-220.74	-556.68	-180.88	0.46	-0.32	-8.56	
11,250.00	2.14	263.59	11,222.46	-220.83	-557.62	-180.90	0.40	-0.28	-7.56	
11,275.00	2.28	264.81	11,247.44	-220.93	-558.58	-180.93	0.59	0.56	4.88	
11,300.00	2.42	261.91	11,272.42	-221.05	-559.60	-180.98	0.73	0.56	-11.60	
11,325.00	2.39	263.46	11,297.40	-221.18	-560.64	-181.04	0.29	-0.12	6.20	
11,350.00	2.38	260.72	11,322.37	-221.33	-561.67	-181.11	0.46	-0.04	-10.96	
11,375.00	2.39	259.18	11,347.35	-221.51	-562.69	-181.21	0.26	0.04	-6.16	
11,400.00	2.38	254.22	11,372.33	-221.75	-563.70	-181.38	0.83	-0.04	-19.84	
11,425.00	2.26	251.53	11,397.31	-222.04	-564.67	-181.61	0.65	-0.48	-10.76	
11,450.00	2.28	251.01	11,422.29	-222.36	-565.61	-181.86	0.11	0.08	-2.08	
11,475.00	2.47	249.31	11,447.27	-222.72	-566.58	-182.14	0.81	0.76	-6.80	
11,500.00	2.40	250.77	11,472.25	-223.08	-567.58	-182.43	0.37	-0.28	5.84	
11,525.00	2.54	250.87	11,497.22	-223.43	-568.60	-182.72	0.56	0.56	0.40	
11,550.00	2.54	253.00	11,522.20	-223.78	-569.65	-182.98	0.38	0.00	8.52	
11,575.00	2.58	254.90	11,547.17	-224.08	-570.72	-183.22	0.38	0.16	7.60	
11,600.00	2.68	257.42	11,572.15	-224.36	-571.84	-183.41	0.61	0.40	10.08	
11,625.00	2.63	258.52	11,597.12	-224.60	-572.97	-183.57	0.29	-0.20	4.40	
11,650.00	2.74	256.43	11,622.09	-224.85	-574.11	-183.74	0.59	0.44	-8.36	
11,675.00	2.59	255.75	11,647.07	-225.13	-575.24	-183.94	0.61	-0.60	-2.72	
11,700.00	2.51	254.72	11,672.04	-225.42	-576.32	-184.15	0.37	-0.32	-4.12	
11,725.00	2.41	256.72	11,697.02	-225.68	-577.36	-184.34	0.53	-0.40	8.00	
11,750.00	2.50	256.70	11,722.00	-225.93	-578.40	-184.51	0.36	0.36	-0.08	
11,775.00	2.56	259.53	11,746.97	-226.15	-579.48	-184.66	0.55	0.24	11.32	
11,800.00	2.27	265.27	11,771.95	-226.30	-580.52	-184.73	1.51	-1.16	22.96	
11,825.00	2.74	260.54	11,796.93	-226.44	-581.60	-184.79	2.05	1.88	-18.92	
11,850.00	2.98	260.84	11,821.89	-226.64	-582.84	-184.91	0.96	0.96	1.20	
11,875.00	2.78	265.89	11,846.86	-226.78	-584.08	-184.97	1.29	-0.80	20.20	
Tie In										
12,014.00	1.72	258.70	11,985.75	-227.43	-589.49	-185.23	0.79	-0.76	-5.17	
First Gordon MWD Survey										
12,045.00	1.74	290.58	12,016.74	-227.36	-590.39	-185.10	3.07	0.06	102.84	
12,076.00	3.63	346.28	12,047.71	-226.24	-591.06	-183.93	9.72	6.10	179.68	
12,108.00	9.49	357.17	12,079.49	-222.62	-591.43	-180.29	18.64	18.31	34.03	
12,139.00	14.97	1.42	12,109.77	-216.06	-591.46	-173.75	17.90	17.68	13.71	
12,170.00	18.09	4.77	12,139.49	-207.26	-590.96	-165.00	10.52	10.06	10.81	
12,201.00	21.04	4.72	12,168.70	-196.91	-590.10	-154.74	9.52	9.52	-0.16	
12,233.00	25.04	5.19	12,198.14	-184.44	-589.01	-142.38	12.51	12.50	1.47	
12,264.00	28.00	5.60	12,225.87	-170.66	-587.71	-128.73	9.57	9.55	1.32	
12,296.00	29.89	5.62	12,253.87	-155.25	-586.20	-113.46	5.91	5.91	0.06	
12,327.00	31.51	5.83	12,280.53	-139.50	-584.62	-97.86	5.24	5.23	0.68	
12,358.00	34.01	3.99	12,306.60	-122.79	-583.19	-81.29	8.68	8.06	-5.94	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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)
12,390.00	38.80	2.22	12,332.34	-103.83	-582.18	-62.46	15.32	14.97	-5.53
12,421.00	43.76	1.08	12,355.63	-83.40	-581.60	-42.11	16.18	16.00	-3.68
12,453.00	45.34	0.93	12,378.44	-60.95	-581.21	-19.75	4.95	4.94	-0.47
12,484.00	46.39	0.05	12,400.02	-38.70	-581.02	2.43	3.95	3.39	-2.84
12,516.00	49.01	359.70	12,421.56	-15.04	-581.07	26.04	8.23	8.19	-1.09
12,528.90	50.44	359.97	12,429.90	-5.20	-581.10	35.86	11.21	11.09	2.09
FTP: 12528.90' MD / 12429.90' TVD									
12,547.00	52.45	0.33	12,441.18	8.96	-581.06	49.97	11.21	11.10	1.99
12,579.00	56.50	0.18	12,459.77	35.00	-580.95	75.94	12.66	12.66	-0.47
12,611.00	57.81	359.79	12,477.12	61.88	-580.95	102.76	4.22	4.09	-1.22
12,642.00	59.40	359.52	12,493.27	88.34	-581.11	129.16	5.18	5.13	-0.87
12,674.00	61.51	357.29	12,509.05	116.16	-581.90	156.97	8.96	6.59	-6.97
12,705.00	66.08	354.65	12,522.74	143.90	-583.86	184.77	16.60	14.74	-8.52
12,737.00	67.27	354.20	12,535.41	173.14	-586.72	214.15	3.94	3.72	-1.41
12,768.00	67.18	354.39	12,547.41	201.58	-589.56	242.72	0.64	-0.29	0.61
12,800.00	68.02	355.07	12,559.60	231.04	-592.27	272.30	3.28	2.63	2.13
12,831.00	69.28	355.04	12,570.89	259.81	-594.76	301.17	4.07	4.06	-0.10
12,863.00	70.90	355.08	12,581.79	289.78	-597.35	331.25	5.06	5.06	0.13
12,895.00	73.05	355.25	12,591.69	320.10	-599.92	361.67	6.74	6.72	0.53
12,926.00	75.15	355.36	12,600.18	349.81	-602.36	391.48	6.78	6.77	0.35
12,958.00	76.56	355.28	12,608.00	380.74	-604.89	422.51	4.41	4.41	-0.25
12,989.00	77.65	355.09	12,614.92	410.85	-607.43	452.73	3.57	3.52	-0.61
13,021.00	79.97	355.50	12,621.13	442.13	-610.00	484.11	7.36	7.25	1.28
13,051.00	82.86	355.57	12,625.61	471.71	-612.31	513.77	9.64	9.63	0.23
13,114.00	85.99	356.67	12,631.73	534.25	-616.55	576.47	5.26	4.97	1.75
13,146.00	86.89	356.45	12,633.71	566.14	-618.47	608.40	2.89	2.81	-0.69
13,240.00	90.67	358.38	12,635.71	660.00	-622.70	702.33	4.51	4.02	2.05
13,335.00	91.35	358.60	12,634.04	754.95	-625.21	797.22	0.75	0.72	0.23
13,429.00	90.08	357.68	12,632.87	848.89	-628.26	891.14	1.67	-1.35	-0.98
13,522.00	89.92	357.12	12,632.87	941.79	-632.48	984.11	0.63	-0.17	-0.60
13,617.00	90.64	357.17	12,632.40	1,036.67	-637.21	1,079.09	0.76	0.76	0.05
13,711.00	91.60	357.10	12,630.56	1,130.54	-641.91	1,173.05	1.02	1.02	-0.07
13,805.00	90.22	358.79	12,629.07	1,224.46	-645.28	1,266.97	2.32	-1.47	1.80
13,900.00	91.07	359.01	12,628.00	1,319.43	-647.10	1,361.84	0.92	0.89	0.23
13,994.00	89.97	359.23	12,627.15	1,413.42	-648.54	1,455.69	1.19	-1.17	0.23
14,088.00	90.92	3.11	12,626.42	1,507.38	-646.62	1,549.28	4.25	1.01	4.13
14,182.00	90.59	356.59	12,625.18	1,601.32	-646.87	1,643.00	6.94	-0.35	-6.94
14,277.00	89.27	355.37	12,625.29	1,696.08	-653.53	1,738.00	1.89	-1.39	-1.28
14,371.00	88.13	358.33	12,627.43	1,789.90	-658.69	1,831.95	3.37	-1.21	3.15
14,466.00	88.79	358.42	12,629.98	1,884.83	-661.39	1,926.83	0.70	0.69	0.09
14,560.00	88.35	0.61	12,632.33	1,978.79	-662.18	2,020.62	2.38	-0.47	2.33
14,653.00	89.64	359.84	12,633.96	2,071.77	-661.82	2,113.34	1.62	1.39	-0.83
14,748.00	90.11	1.43	12,634.17	2,166.76	-660.76	2,208.02	1.75	0.49	1.67

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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)	
14,844.00	88.69	0.18	12,635.17	2,262.74	-659.42	2,303.67	1.97	-1.48	-1.30	
14,938.00	92.16	359.95	12,634.47	2,356.73	-659.31	2,397.41	3.70	3.69	-0.24	
15,033.00	90.98	358.83	12,631.87	2,451.68	-660.32	2,492.20	1.71	-1.24	-1.18	
15,128.00	90.31	0.67	12,630.80	2,546.67	-660.73	2,586.98	2.06	-0.71	1.94	
15,223.00	92.41	2.60	12,628.55	2,641.59	-658.03	2,681.47	3.00	2.21	2.03	
15,317.00	93.93	1.17	12,623.35	2,735.40	-654.94	2,774.82	2.22	1.62	-1.52	
15,411.00	91.71	1.04	12,618.72	2,829.26	-653.13	2,868.32	2.37	-2.36	-0.14	
15,506.00	96.63	0.86	12,611.82	2,923.96	-651.56	2,962.68	5.18	5.18	-0.19	
15,601.00	89.22	359.35	12,606.97	3,018.77	-651.39	3,057.24	7.96	-7.80	-1.59	
15,696.00	90.28	358.63	12,607.39	3,113.75	-653.06	3,152.10	1.35	1.12	-0.76	
15,790.00	89.44	358.74	12,607.62	3,207.73	-655.22	3,245.99	0.90	-0.89	0.12	
15,885.00	84.19	354.58	12,612.90	3,302.37	-660.73	3,340.79	7.05	-5.53	-4.38	
15,979.00	83.96	356.39	12,622.60	3,395.57	-668.09	3,434.28	1.93	-0.24	1.93	
16,020.00	84.73	359.76	12,626.64	3,436.34	-669.46	3,475.04	8.39	1.88	8.22	
16,115.00	89.27	1.35	12,631.61	3,531.18	-668.54	3,569.58	5.06	4.78	1.67	
16,210.00	90.64	1.15	12,631.69	3,626.15	-666.47	3,664.17	1.46	1.44	-0.21	
16,305.00	92.97	0.79	12,628.69	3,721.09	-664.86	3,758.75	2.48	2.45	-0.38	
16,399.00	89.47	1.94	12,626.69	3,815.02	-662.62	3,852.29	3.92	-3.72	1.22	
16,494.00	90.95	1.52	12,626.35	3,909.98	-659.75	3,946.81	1.62	1.56	-0.44	
16,589.00	92.77	1.04	12,623.26	4,004.90	-657.63	4,041.34	1.98	1.92	-0.51	
16,684.00	89.52	0.13	12,621.36	4,099.86	-656.66	4,136.00	3.55	-3.42	-0.96	
16,779.00	90.78	359.35	12,621.12	4,194.86	-657.10	4,230.79	1.56	1.33	-0.82	
16,873.00	92.27	359.22	12,618.61	4,288.81	-658.27	4,324.59	1.59	1.59	-0.14	
16,968.00	93.36	359.21	12,613.95	4,383.69	-659.57	4,419.32	1.15	1.15	-0.01	
17,062.00	95.35	359.70	12,606.81	4,477.41	-660.46	4,512.87	2.18	2.12	0.52	
17,158.00	94.04	0.96	12,598.95	4,573.08	-659.91	4,608.27	1.89	-1.36	1.31	
17,253.00	94.54	0.69	12,591.85	4,667.80	-658.54	4,702.66	0.60	0.53	-0.28	
17,347.00	93.11	2.15	12,585.58	4,761.56	-656.22	4,796.02	2.17	-1.52	1.55	
17,442.00	93.76	1.68	12,579.88	4,856.34	-653.05	4,890.33	0.84	0.68	-0.49	
17,536.00	94.99	2.09	12,572.71	4,950.01	-649.97	4,983.55	1.38	1.31	0.44	
17,631.00	92.66	1.34	12,566.38	5,044.75	-647.13	5,077.85	2.58	-2.45	-0.79	
17,726.00	94.62	2.33	12,560.34	5,139.50	-644.10	5,172.16	2.31	2.06	1.04	
17,821.00	93.98	359.65	12,553.22	5,234.21	-642.46	5,266.51	2.89	-0.67	-2.82	
17,916.00	92.86	358.45	12,547.55	5,329.03	-644.03	5,361.20	1.73	-1.18	-1.26	
18,010.00	92.07	358.42	12,543.51	5,422.90	-646.60	5,455.03	0.84	-0.84	-0.03	
18,105.00	90.20	355.00	12,541.63	5,517.71	-652.05	5,549.98	4.10	-1.97	-3.60	
18,199.00	95.07	355.55	12,537.31	5,611.26	-659.78	5,643.85	5.21	5.18	0.59	
18,294.00	96.09	358.50	12,528.07	5,705.67	-664.69	5,738.37	3.27	1.07	3.11	
18,389.00	95.36	0.05	12,518.59	5,800.19	-665.89	5,832.73	1.80	-0.77	1.63	
18,484.00	94.26	0.65	12,510.63	5,894.85	-665.31	5,927.12	1.32	-1.16	0.63	
18,578.00	94.29	359.54	12,503.62	5,988.59	-665.15	6,020.61	1.18	0.03	-1.18	
18,672.00	95.30	359.39	12,495.76	6,082.25	-666.03	6,114.10	1.09	1.07	-0.16	
18,766.00	94.96	357.91	12,487.36	6,175.85	-668.23	6,207.62	1.61	-0.36	-1.57	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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)	
18,861.00	94.60	358.51	12,479.44	6,270.47	-671.19	6,302.21	0.73	-0.38	0.63	
18,955.00	94.12	359.34	12,472.29	6,364.18	-672.95	6,395.81	1.02	-0.51	0.88	
19,050.00	92.44	359.40	12,466.86	6,459.01	-673.99	6,490.49	1.77	-1.77	0.06	
19,145.00	92.35	1.42	12,462.89	6,553.92	-673.31	6,585.11	2.13	-0.09	2.13	
19,240.00	91.18	2.72	12,459.96	6,648.81	-669.88	6,679.52	1.84	-1.23	1.37	
19,335.00	91.37	0.41	12,457.85	6,743.75	-667.29	6,774.04	2.44	0.20	-2.43	
19,430.00	90.56	0.30	12,456.25	6,838.73	-666.70	6,868.74	0.86	-0.85	-0.12	
19,524.00	92.33	359.70	12,453.88	6,932.70	-666.70	6,962.47	1.99	1.88	-0.64	
19,618.00	94.06	359.65	12,448.64	7,026.55	-667.23	7,056.12	1.84	1.84	-0.05	
19,712.00	92.35	359.37	12,443.38	7,120.39	-668.03	7,149.79	1.84	-1.82	-0.30	
19,807.00	92.27	358.60	12,439.55	7,215.30	-669.72	7,244.58	0.81	-0.08	-0.81	
19,902.00	92.63	358.14	12,435.49	7,310.17	-672.42	7,339.41	0.61	0.38	-0.48	
19,997.00	92.24	357.11	12,431.46	7,405.01	-676.35	7,434.28	1.16	-0.41	-1.08	
20,091.00	93.28	358.77	12,426.93	7,498.83	-679.72	7,528.11	2.08	1.11	1.77	
20,184.00	93.19	358.41	12,421.68	7,591.65	-682.01	7,620.86	0.40	-0.10	-0.39	
20,279.00	92.63	358.44	12,416.86	7,686.50	-684.62	7,715.65	0.59	-0.59	0.03	
20,375.00	92.30	359.22	12,412.73	7,782.39	-686.57	7,811.44	0.88	-0.34	0.81	
20,469.00	93.75	358.99	12,407.77	7,876.24	-688.04	7,905.17	1.56	1.54	-0.24	
20,563.00	94.17	359.12	12,401.28	7,970.00	-689.59	7,998.80	0.47	0.45	0.14	
20,658.00	94.65	358.49	12,393.97	8,064.70	-691.56	8,093.40	0.83	0.51	-0.66	
20,751.00	93.03	0.51	12,387.74	8,157.48	-692.37	8,186.01	2.78	-1.74	2.17	
20,846.00	92.66	1.15	12,383.03	8,252.35	-691.00	8,280.55	0.78	-0.39	0.67	
20,940.00	92.41	1.11	12,378.87	8,346.24	-689.14	8,374.07	0.27	-0.27	-0.04	
21,035.00	88.43	359.59	12,378.17	8,441.22	-688.56	8,468.77	4.48	-4.19	-1.60	
21,128.00	89.05	359.66	12,380.22	8,534.19	-689.17	8,561.55	0.67	0.67	0.08	
21,223.00	89.83	358.80	12,381.15	8,629.18	-690.45	8,656.39	1.22	0.82	-0.91	
21,317.00	90.17	358.90	12,381.15	8,723.16	-692.34	8,750.27	0.38	0.36	0.11	
21,412.00	89.72	359.39	12,381.24	8,818.15	-693.75	8,845.12	0.70	-0.47	0.52	
21,505.00	89.83	359.50	12,381.60	8,911.14	-694.65	8,937.95	0.17	0.12	0.12	
21,600.00	90.56	358.37	12,381.28	9,006.12	-696.42	9,032.82	1.42	0.77	-1.19	
21,695.00	90.03	357.33	12,380.79	9,101.05	-699.98	9,127.76	1.23	-0.56	-1.09	
21,789.00	90.17	358.44	12,380.63	9,194.99	-703.45	9,221.71	1.19	0.15	1.18	
21,885.00	91.82	358.46	12,378.96	9,290.93	-706.05	9,317.60	1.72	1.72	0.02	
21,979.00	92.74	358.00	12,375.22	9,384.81	-708.95	9,411.45	1.09	0.98	-0.49	
22,074.00	91.15	359.18	12,372.00	9,479.73	-711.29	9,506.29	2.08	-1.67	1.24	
22,168.00	90.14	358.86	12,370.94	9,573.70	-712.89	9,600.15	1.13	-1.07	-0.34	
22,263.00	89.69	357.96	12,371.08	9,668.67	-715.53	9,695.06	1.06	-0.47	-0.95	
22,358.00	90.36	357.27	12,371.04	9,763.58	-719.48	9,790.02	1.01	0.71	-0.73	
22,452.00	89.61	355.93	12,371.06	9,857.41	-725.06	9,884.01	1.63	-0.80	-1.43	
22,494.46	88.72	355.60	12,371.68	9,899.75	-728.19	9,926.46	2.23	-2.09	-0.77	
LTP: 22494.46' MD / 12371.68' TVD										
22,547.00	87.62	355.20	12,373.36	9,952.10	-732.40	9,978.97	2.23	-2.09	-0.77	
22,569.00	87.82	355.06	12,374.23	9,974.00	-734.27	10,000.95	1.11	0.91	-0.64	
Final Gordon MWD Survey										

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 608H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3449.80usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3449.80usft (McVay 8)
Well:	608H	North Reference:	Grid
Wellbore:	OH / 64772	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	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)
22,630.00	87.82	355.06	12,376.55	10,034.73	-739.51	10,061.90	0.00	0.00	0.00
Projection to TD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,875.00	11,846.86	-226.78	-584.08	Tie In
12,014.00	11,985.75	-227.43	-589.49	First Gordon MWD Survey
12,528.90	12,429.90	-5.20	-581.10	FTP: 12528.90' MD / 12429.90' TVD
22,494.46	12,371.68	9,899.75	-728.19	LTP: 22494.46' MD / 12371.68' TVD
22,569.00	12,374.23	9,974.00	-734.27	Final Gordon MWD Survey
22,630.00	12,376.55	10,034.73	-739.51	Projection to TD