

HOBBS
FEB 20 2020

COG

BASEBAL CAP FEDERAL COM #607H

MCVAY #8

6/30/2019

This survey is correct to the best of my knowledge and is supported by actual field data.

JAKE ELGER

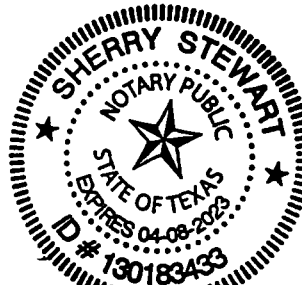
Notarized this date 03 of JULY, 2019.

Sherry Stewart

Notary Signature

County of Midland

State of Texas



Scientific Drilling

The Midland Permian In Wellbore Placement

SURVEY REPORT

BASEBAL CAP FEDERAL COM #607H

DEFINITIVE KEEPER GYRO SURVEY

CUSTOMER
PROJECT
FIELD

COG
Baseball Cap Federal Com #607H
Baseball Cap Federal Com #607H

SDI JOB NO.
SDI DISTRICT
SDI KIT/UNIT

OP019588
Midland

SITE INFORMATION

Site Name
Lat/Long
Northing
Easting

Baseball Cap Federal Com #607H
32.1819568° N , 103.4211214° W
431,112.9 ft
782,226.2 ft

Section
Township
Range

MAP INFORMATION

North Reference
Grid Correction
System
Datum
Map Zone

Grid North
-0.49 deg
US State Plane 1927
North American Datum 1927 (Clarke 1866)
New Mexico East: 3001

**WELL INFORMATION**

Lat/Long
Northing
Easting
UWI

32.1820071° N , 103.4284416° W
431,112.1 ft
779,961.2 ft
30-025-45786

DEPTH AND ELEVATION REFERENCE

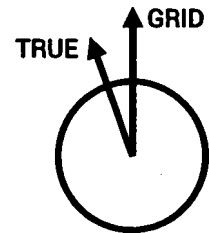
Ground Level
Level
Reference Datum
Reference Height
Reference Elevation

3422.6 ft above Mean Sea
Level
KB
26 ft above G.L.
3448.6 ft

VERTICAL SECTION REFERENCE

+N/-S
+E/-W
Proposal Direction
Calculation Method

0 ft
0 ft
359.37°
Minimum Curvature

**LOCAL GRAVITY REFERENCE INFORMATION**

Local Gravity
True to Grid

998.495 mG [computed]
subtract 0.49°

WELL NOTES

Keeper Gyro Survey to 11,922'

OPERATORS

C. Booher

SDI Operator Name (Printed)

SIGNATURE

DATE

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
100.00	0.26	46.61	100.00	0.15	0.16	0.16	0.26	0.23	46.61
125.00	0.27	114.95	125.00	0.17	0.17	0.26	1.20	0.31	56.93
150.00	0.24	81.78	150.00	0.15	0.15	0.36	0.60	0.39	67.49
175.00	0.30	49.29	175.00	0.20	0.20	0.47	0.65	0.51	66.62
200.00	0.29	49.17	200.00	0.28	0.29	0.56	0.06	0.63	63.13
225.00	0.27	56.40	225.00	0.35	0.36	0.66	0.16	0.75	61.46
250.00	0.25	51.49	250.00	0.42	0.42	0.75	0.11	0.86	60.49
275.00	0.27	54.97	275.00	0.48	0.49	0.84	0.10	0.98	59.65
300.00	0.29	57.51	300.00	0.55	0.56	0.94	0.09	1.10	59.28
325.00	0.25	38.92	325.00	0.62	0.64	1.03	0.38	1.21	58.31
350.00	0.25	41.81	350.00	0.71	0.72	1.10	0.06	1.31	56.85
375.00	0.26	43.99	375.00	0.79	0.80	1.17	0.04	1.42	55.77
400.00	0.24	47.69	400.00	0.86	0.87	1.25	0.09	1.53	55.07
425.00	0.25	53.16	425.00	0.93	0.94	1.33	0.10	1.63	54.77
450.00	0.20	42.19	450.00	0.99	1.01	1.41	0.27	1.73	54.41
475.00	0.22	38.44	475.00	1.06	1.08	1.47	0.12	1.82	53.70
500.00	0.21	34.13	500.00	1.14	1.15	1.52	0.10	1.91	52.86
525.00	0.19	71.03	525.00	1.19	1.20	1.59	0.50	1.99	52.82
550.00	0.20	33.42	550.00	1.24	1.25	1.65	0.51	2.07	52.76
575.00	0.16	31.73	575.00	1.30	1.32	1.69	0.17	2.15	52.03
600.00	0.17	30.46	600.00	1.36	1.38	1.73	0.04	2.21	51.36
625.00	0.24	19.70	625.00	1.44	1.46	1.77	0.31	2.29	50.34
650.00	0.27	23.93	649.99	1.55	1.57	1.81	0.15	2.39	49.08
675.00	0.26	24.29	674.99	1.65	1.67	1.86	0.04	2.50	47.95
700.00	0.30	19.04	699.99	1.77	1.79	1.90	0.17	2.61	46.77
725.00	0.33	22.22	724.99	1.89	1.91	1.95	0.14	2.73	45.52
750.00	0.20	33.92	749.99	1.99	2.02	2.00	0.54	2.84	44.77
775.00	0.39	18.83	774.99	2.11	2.13	2.05	0.81	2.96	43.88
800.00	0.36	27.81	799.99	2.26	2.28	2.12	0.27	3.11	42.82
825.00	0.38	18.56	824.99	2.41	2.43	2.18	0.25	3.26	41.88
850.00	0.43	21.58	849.99	2.57	2.59	2.24	0.24	3.43	40.79

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
875.00	0.46	17.88	874.99	2.75	2.78	2.30	0.18	3.61	39.67
900.00	0.49	21.02	899.99	2.95	2.97	2.37	0.14	3.81	38.59
925.00	0.50	19.51	924.99	3.15	3.18	2.45	0.07	4.01	37.63
950.00	0.51	19.93	949.99	3.35	3.38	2.52	0.06	4.22	36.71
975.00	0.52	22.90	974.99	3.56	3.59	2.60	0.12	4.44	35.94
1000.00	0.46	23.38	999.99	3.76	3.79	2.69	0.24	4.65	35.35
1025.00	0.47	21.69	1024.99	3.95	3.98	2.77	0.06	4.85	34.82
1050.00	0.45	21.26	1049.98	4.13	4.17	2.84	0.05	5.04	34.29
1075.00	0.41	30.62	1074.98	4.30	4.34	2.92	0.33	5.23	33.98
1100.00	0.41	29.89	1099.98	4.46	4.49	3.01	0.02	5.41	33.86
1125.00	0.35	37.07	1124.98	4.60	4.63	3.10	0.30	5.58	33.84
1150.00	0.35	32.59	1149.98	4.72	4.76	3.19	0.11	5.73	33.87
1175.00	0.32	39.64	1174.98	4.84	4.87	3.28	0.21	5.87	33.92
1200.00	0.27	56.61	1199.98	4.92	4.96	3.37	0.40	6.00	34.20
1225.00	0.28	56.30	1224.98	4.99	5.03	3.47	0.06	6.11	34.63
1250.00	0.29	56.99	1249.98	5.06	5.10	3.58	0.03	6.23	35.06
1275.00	0.28	44.47	1274.98	5.13	5.18	3.67	0.25	6.35	35.37
1300.00	0.18	70.99	1299.98	5.19	5.23	3.75	0.60	6.44	35.65
1325.00	0.15	84.00	1324.98	5.21	5.25	3.82	0.17	6.49	36.07
1350.00	0.14	66.26	1349.98	5.22	5.26	3.89	0.19	6.54	36.43
1375.00	0.16	37.60	1374.98	5.26	5.30	3.94	0.31	6.61	36.57
1400.00	0.08	74.14	1399.98	5.29	5.34	3.97	0.42	6.65	36.67
1425.00	0.03	49.47	1424.98	5.30	5.35	4.00	0.22	6.68	36.78
1450.00	0.04	332.05	1449.98	5.31	5.36	4.00	0.18	6.69	36.73
1475.00	0.04	41.47	1474.98	5.33	5.37	4.00	0.17	6.70	36.67
1500.00	0.05	136.94	1499.98	5.33	5.37	4.01	0.27	6.70	36.77
1525.00	0.12	129.15	1524.98	5.30	5.35	4.04	0.26	6.70	37.08
1550.00	0.06	86.81	1549.98	5.29	5.33	4.07	0.33	6.71	37.38
1575.00	0.03	15.52	1574.98	5.29	5.34	4.09	0.22	6.72	37.44
1600.00	0.04	341.60	1599.98	5.31	5.35	4.09	0.09	6.73	37.36
1625.00	0.05	2.00	1624.98	5.33	5.37	4.08	0.08	6.75	37.25
1650.00	0.03	106.25	1649.98	5.34	5.38	4.09	0.25	6.76	37.24

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
1675.00	0.03	15.19	1674.98	5.34	5.38	4.10	0.16	6.77	37.27
1700.00	0.05	159.95	1699.98	5.33	5.38	4.10	0.30	6.77	37.33
1725.00	0.02	137.44	1724.98	5.32	5.37	4.11	0.12	6.76	37.46
1750.00	0.05	104.36	1749.98	5.31	5.36	4.12	0.12	6.76	37.58
1775.00	0.07	129.67	1774.98	5.30	5.35	4.15	0.14	6.77	37.79
1800.00	0.06	8.50	1799.98	5.30	5.35	4.16	0.47	6.78	37.87
1825.00	0.03	254.17	1824.98	5.32	5.36	4.16	0.32	6.78	37.78
1850.00	0.03	3.97	1849.98	5.32	5.37	4.15	0.20	6.79	37.71
1875.00	0.01	6.54	1874.98	5.33	5.38	4.15	0.07	6.79	37.67
1900.00	0.05	110.19	1899.98	5.33	5.38	4.16	0.24	6.80	37.75
1925.00	0.05	98.38	1924.98	5.33	5.37	4.18	0.05	6.81	37.92
1950.00	0.05	106.48	1949.98	5.32	5.37	4.21	0.03	6.82	38.08
1975.00	0.04	118.51	1974.98	5.31	5.36	4.22	0.05	6.82	38.24
2000.00	0.02	191.02	1999.98	5.30	5.35	4.23	0.16	6.82	38.33
2025.00	0.03	335.77	2024.98	5.31	5.35	4.23	0.19	6.82	38.30
2050.00	0.07	309.20	2049.98	5.32	5.37	4.21	0.19	6.82	38.12
2075.00	0.02	353.42	2074.98	5.34	5.38	4.20	0.23	6.83	37.95
2100.00	0.02	279.10	2099.98	5.34	5.39	4.19	0.12	6.83	37.88
2125.00	0.07	154.91	2124.98	5.33	5.38	4.20	0.34	6.82	37.96
2150.00	0.03	127.29	2149.98	5.31	5.36	4.21	0.19	6.81	38.12
2175.00	0.03	3.23	2174.98	5.32	5.36	4.21	0.19	6.82	38.15
2200.00	0.05	83.91	2199.98	5.32	5.37	4.22	0.21	6.83	38.19
2225.00	0.05	6.85	2224.98	5.33	5.38	4.23	0.25	6.85	38.20
2250.00	0.00	209.67	2249.98	5.34	5.39	4.24	0.22	6.86	38.15
2275.00	0.03	25.95	2274.98	5.35	5.40	4.24	0.12	6.86	38.14
2300.00	0.03	92.28	2299.98	5.35	5.40	4.25	0.14	6.87	38.18
2325.00	0.01	105.31	2324.98	5.35	5.40	4.26	0.09	6.88	38.26
2350.00	0.08	155.35	2349.98	5.34	5.38	4.27	0.28	6.87	38.41
2375.00	0.04	68.70	2374.98	5.32	5.37	4.28	0.34	6.87	38.57
2400.00	0.03	346.26	2399.98	5.33	5.38	4.29	0.18	6.88	38.56
2425.00	0.01	151.90	2424.98	5.34	5.39	4.29	0.15	6.89	38.54
2450.00	0.02	23.51	2449.98	5.34	5.39	4.29	0.10	6.89	38.54

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
2475.00	0.04	159.36	2474.98	5.34	5.38	4.30	0.23	6.89	38.60
2500.00	0.06	166.09	2499.98	5.31	5.36	4.30	0.07	6.87	38.76
2525.00	0.03	55.22	2524.98	5.30	5.35	4.31	0.31	6.87	38.86
2550.00	0.07	132.58	2549.98	5.30	5.35	4.33	0.27	6.88	39.00
2575.00	0.03	46.12	2574.98	5.29	5.34	4.34	0.28	6.88	39.12
2600.00	0.08	10.62	2599.98	5.31	5.36	4.35	0.22	6.90	39.06
2625.00	0.01	109.79	2624.98	5.33	5.38	4.36	0.31	6.92	39.01
2650.00	0.02	261.79	2649.98	5.33	5.37	4.35	0.13	6.92	39.00
2675.00	0.01	100.62	2674.98	5.33	5.37	4.35	0.15	6.91	39.00
2700.00	0.01	261.38	2699.98	5.32	5.37	4.35	0.09	6.91	39.01
2725.00	0.08	166.49	2724.98	5.31	5.35	4.35	0.34	6.90	39.12
2750.00	0.07	161.13	2749.98	5.27	5.32	4.36	0.06	6.88	39.35
2775.00	0.08	116.24	2774.98	5.25	5.30	4.38	0.23	6.88	39.59
2800.00	0.05	96.66	2799.98	5.24	5.29	4.41	0.13	6.89	39.81
2825.00	0.05	24.54	2824.98	5.25	5.30	4.43	0.24	6.91	39.87
2850.00	0.05	358.52	2849.98	5.27	5.32	4.43	0.09	6.92	39.78
2875.00	0.02	357.89	2874.98	5.29	5.34	4.43	0.14	6.94	39.70
2900.00	0.04	22.23	2899.98	5.30	5.35	4.43	0.10	6.95	39.65
2925.00	0.05	171.15	2924.98	5.30	5.35	4.44	0.35	6.95	39.70
2950.00	0.05	154.04	2949.98	5.28	5.32	4.45	0.06	6.94	39.86
2975.00	0.09	143.63	2974.98	5.25	5.30	4.46	0.14	6.93	40.10
3000.00	0.10	167.40	2999.98	5.21	5.26	4.48	0.15	6.91	40.39
3025.00	0.06	135.61	3024.98	5.18	5.23	4.49	0.22	6.90	40.64
3050.00	0.08	125.39	3049.98	5.16	5.21	4.51	0.10	6.90	40.89
3075.00	0.09	113.56	3074.98	5.15	5.20	4.55	0.07	6.90	41.19
3100.00	0.07	110.21	3099.98	5.13	5.18	4.58	0.05	6.92	41.46
3125.00	0.04	123.09	3124.98	5.12	5.17	4.60	0.14	6.92	41.66
3150.00	0.03	66.50	3149.98	5.12	5.17	4.62	0.14	6.93	41.76
3175.00	0.07	26.46	3174.98	5.13	5.18	4.63	0.19	6.95	41.75
3200.00	0.02	261.02	3199.98	5.15	5.20	4.63	0.32	6.96	41.69
3225.00	0.02	78.13	3224.98	5.15	5.20	4.63	0.17	6.96	41.69
3250.00	0.04	156.45	3249.98	5.14	5.19	4.64	0.16	6.96	41.77

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
3275.00	0.03	108.25	3274.98	5.13	5.18	4.65	0.12	6.96	41.89
3300.00	0.05	135.25	3299.98	5.12	5.17	4.66	0.10	6.96	42.02
3325.00	0.07	120.96	3324.98	5.10	5.16	4.68	0.10	6.96	42.23
3350.00	0.08	96.89	3349.98	5.09	5.15	4.71	0.13	6.97	42.46
3375.00	0.09	95.52	3374.98	5.09	5.14	4.74	0.03	7.00	42.70
3400.00	0.06	41.85	3399.98	5.10	5.15	4.77	0.28	7.02	42.82
3425.00	0.07	107.93	3424.98	5.10	5.16	4.79	0.28	7.04	42.93
3450.00	0.04	107.91	3449.98	5.09	5.15	4.82	0.10	7.05	43.10
3475.00	0.02	47.90	3474.98	5.09	5.15	4.83	0.15	7.06	43.17
3500.00	0.01	267.77	3499.98	5.10	5.15	4.83	0.10	7.06	43.17
3525.00	0.01	332.15	3524.98	5.10	5.15	4.83	0.03	7.06	43.15
3550.00	0.05	113.35	3549.98	5.10	5.15	4.84	0.24	7.07	43.23
3575.00	0.02	124.85	3574.98	5.09	5.14	4.85	0.14	7.07	43.35
3600.00	0.07	160.01	3599.98	5.07	5.12	4.86	0.22	7.06	43.49
3625.00	0.04	119.60	3624.98	5.05	5.11	4.88	0.19	7.06	43.68
3650.00	0.07	166.64	3649.98	5.03	5.09	4.89	0.19	7.05	43.85
3675.00	0.06	118.63	3674.98	5.01	5.07	4.90	0.21	7.05	44.05
3700.00	0.03	26.47	3699.98	5.01	5.07	4.92	0.29	7.06	44.14
3725.00	0.02	101.56	3724.98	5.02	5.07	4.92	0.14	7.07	44.15
3750.00	0.01	187.90	3749.98	5.02	5.07	4.93	0.09	7.07	44.19
3775.00	0.02	84.97	3774.98	5.01	5.07	4.93	0.08	7.07	44.22
3800.00	0.07	87.64	3799.98	5.01	5.07	4.95	0.20	7.09	44.32
3825.00	0.03	70.04	3824.98	5.02	5.07	4.97	0.16	7.10	44.42
3850.00	0.09	351.46	3849.98	5.04	5.09	4.97	0.34	7.12	44.32
3875.00	0.01	222.16	3874.98	5.05	5.11	4.97	0.38	7.13	44.20
3900.00	0.02	106.65	3899.98	5.05	5.11	4.97	0.13	7.13	44.24
3925.00	0.06	33.77	3924.98	5.06	5.11	4.98	0.23	7.14	44.26
3950.00	0.13	8.76	3949.98	5.10	5.15	5.00	0.30	7.18	44.11
3975.00	0.13	11.18	3974.98	5.15	5.21	5.01	0.04	7.22	43.86
4000.00	0.08	19.42	3999.98	5.20	5.25	5.02	0.23	7.26	43.68
4025.00	0.07	135.28	4024.98	5.20	5.26	5.03	0.51	7.28	43.75
4050.00	0.08	174.03	4049.98	5.17	5.23	5.05	0.20	7.27	43.98

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
4075.00	0.06	262.07	4074.98	5.16	5.21	5.04	0.39	7.25	44.02
4100.00	0.10	304.68	4099.98	5.17	5.22	5.01	0.29	7.23	43.78
4125.00	0.05	208.35	4124.98	5.17	5.23	4.98	0.49	7.22	43.63
4150.00	0.03	266.11	4149.98	5.16	5.21	4.97	0.18	7.20	43.62
4175.00	0.06	177.63	4174.98	5.15	5.20	4.96	0.27	7.19	43.67
4200.00	0.06	130.82	4199.98	5.12	5.18	4.97	0.19	7.18	43.85
4225.00	0.04	148.07	4224.98	5.11	5.16	4.99	0.10	7.18	44.00
4250.00	0.03	105.27	4249.98	5.10	5.16	5.00	0.10	7.18	44.11
4275.00	0.03	156.14	4274.98	5.09	5.15	5.01	0.10	7.18	44.21
4300.00	0.04	96.75	4299.98	5.09	5.14	5.02	0.13	7.18	44.30
4325.00	0.08	252.41	4324.98	5.08	5.14	5.01	0.46	7.17	44.29
4350.00	0.02	167.94	4349.98	5.07	5.12	4.99	0.32	7.16	44.26
4375.00	0.06	182.28	4374.98	5.05	5.11	4.99	0.14	7.14	44.37
4400.00	0.04	167.67	4399.98	5.03	5.09	5.00	0.10	7.13	44.49
4425.00	0.04	78.10	4424.98	5.02	5.08	5.01	0.22	7.13	44.59
4450.00	0.02	86.31	4449.98	5.03	5.08	5.02	0.08	7.14	44.65
4475.00	0.14	124.85	4474.98	5.01	5.06	5.05	0.48	7.15	44.90
4500.00	0.07	112.95	4499.98	4.99	5.04	5.08	0.29	7.16	45.24
4525.00	0.15	124.02	4524.98	4.96	5.02	5.12	0.33	7.17	45.60
4550.00	0.20	141.53	4549.98	4.91	4.97	5.18	0.30	7.17	46.19
4575.00	0.11	127.69	4574.98	4.86	4.92	5.22	0.38	7.17	46.73
4600.00	0.12	157.52	4599.98	4.82	4.88	5.25	0.24	7.17	47.12
4625.00	0.10	159.67	4624.98	4.78	4.83	5.27	0.05	7.15	47.48
4650.00	0.13	150.02	4649.98	4.73	4.79	5.29	0.12	7.14	47.87
4675.00	0.14	144.73	4674.98	4.68	4.74	5.32	0.06	7.13	48.33
4700.00	0.10	103.23	4699.98	4.65	4.71	5.36	0.36	7.14	48.70
4725.00	0.08	128.22	4724.98	4.64	4.70	5.40	0.17	7.15	48.97
4750.00	0.11	128.22	4749.98	4.61	4.67	5.43	0.12	7.16	49.29
4775.00	0.20	118.68	4774.98	4.57	4.63	5.48	0.36	7.18	49.79
4800.00	0.22	128.93	4799.98	4.52	4.58	5.56	0.19	7.21	50.49
4825.00	0.21	116.63	4824.98	4.47	4.53	5.64	0.19	7.23	51.21
4850.00	0.26	116.99	4849.98	4.42	4.49	5.73	0.17	7.28	51.94

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
4875.00	0.30	118.15	4874.98	4.37	4.43	5.84	0.18	7.33	52.81
4900.00	0.33	110.91	4899.98	4.31	4.37	5.96	0.20	7.39	53.74
4925.00	0.30	119.64	4924.98	4.25	4.31	6.09	0.22	7.46	54.67
4950.00	0.34	111.63	4949.98	4.19	4.26	6.21	0.22	7.53	55.59
4975.00	0.34	115.85	4974.98	4.13	4.20	6.35	0.10	7.61	56.54
5000.00	0.36	116.38	4999.98	4.06	4.13	6.49	0.08	7.69	57.53
5025.00	0.35	116.98	5024.97	3.99	4.06	6.62	0.05	7.77	58.51
5050.00	0.36	120.72	5049.97	3.91	3.98	6.76	0.10	7.85	59.49
5075.00	0.37	114.92	5074.97	3.83	3.91	6.90	0.16	7.93	60.46
5100.00	0.33	103.40	5099.97	3.78	3.86	7.05	0.32	8.03	61.29
5125.00	0.42	112.93	5124.97	3.73	3.81	7.20	0.41	8.14	62.14
5150.00	0.56	117.82	5149.97	3.63	3.71	7.39	0.57	8.27	63.32
5175.00	0.57	115.91	5174.97	3.52	3.60	7.61	0.11	8.42	64.67
5200.00	0.56	113.53	5199.97	3.41	3.50	7.84	0.11	8.58	65.93
5225.00	0.55	114.61	5224.97	3.31	3.40	8.06	0.06	8.75	67.12
5250.00	0.61	113.08	5249.97	3.21	3.30	8.29	0.26	8.92	68.31
5275.00	0.49	98.55	5274.97	3.14	3.23	8.52	0.74	9.11	69.24
5300.00	0.46	95.36	5299.96	3.11	3.20	8.73	0.17	9.30	69.84
5325.00	0.42	86.46	5324.96	3.10	3.20	8.92	0.31	9.47	70.26
5350.00	0.35	86.04	5349.96	3.11	3.21	9.09	0.29	9.64	70.53
5375.00	0.28	79.37	5374.96	3.13	3.23	9.22	0.32	9.77	70.71
5400.00	0.32	92.03	5399.96	3.13	3.24	9.35	0.30	9.89	70.91
5425.00	0.28	66.59	5424.96	3.15	3.26	9.47	0.54	10.02	71.02
5450.00	0.24	78.60	5449.96	3.19	3.29	9.58	0.28	10.13	71.03
5475.00	0.24	77.07	5474.96	3.21	3.31	9.68	0.03	10.23	71.10
5500.00	0.19	47.59	5499.96	3.25	3.35	9.77	0.48	10.33	71.04
5525.00	0.18	54.75	5524.96	3.30	3.41	9.83	0.11	10.40	70.89
5550.00	0.08	47.91	5549.96	3.33	3.44	9.87	0.40	10.45	70.79
5575.00	0.04	7.76	5574.96	3.35	3.46	9.89	0.21	10.47	70.72
5600.00	0.05	18.03	5599.96	3.37	3.48	9.89	0.05	10.48	70.62
5625.00	0.01	9.91	5624.96	3.38	3.49	9.89	0.18	10.49	70.57
5650.00	0.05	340.42	5649.96	3.39	3.50	9.89	0.19	10.49	70.50

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
5675.00	0.04	42.05	5674.96	3.41	3.52	9.89	0.19	10.50	70.42
5700.00	0.05	45.23	5699.96	3.42	3.53	9.90	0.04	10.52	70.37
5725.00	0.03	40.69	5724.96	3.44	3.54	9.92	0.09	10.53	70.33
5750.00	0.01	19.44	5749.96	3.44	3.55	9.92	0.08	10.54	70.31
5775.00	0.04	292.56	5774.96	3.45	3.56	9.91	0.18	10.53	70.26
5800.00	0.01	253.13	5799.96	3.45	3.56	9.90	0.15	10.52	70.23
5825.00	0.04	49.98	5824.96	3.46	3.57	9.91	0.18	10.53	70.21
5850.00	0.07	134.48	5849.96	3.45	3.56	9.92	0.30	10.54	70.27
5875.00	0.02	301.89	5874.96	3.44	3.55	9.93	0.35	10.55	70.32
5900.00	0.03	301.68	5899.96	3.45	3.56	9.92	0.06	10.54	70.27
5925.00	0.02	271.50	5924.96	3.45	3.56	9.91	0.08	10.53	70.23
5950.00	0.03	131.98	5949.96	3.45	3.56	9.91	0.20	10.53	70.25
5975.00	0.06	76.50	5974.96	3.45	3.56	9.93	0.20	10.55	70.29
6000.00	0.06	293.69	5999.96	3.45	3.56	9.93	0.44	10.55	70.26
6025.00	0.03	277.80	6024.96	3.46	3.57	9.91	0.10	10.54	70.19
6050.00	0.05	199.83	6049.96	3.45	3.56	9.90	0.21	10.52	70.22
6075.00	0.04	349.90	6074.96	3.45	3.56	9.90	0.33	10.52	70.22
6100.00	0.09	317.25	6099.96	3.47	3.58	9.88	0.27	10.51	70.08
6125.00	0.04	202.93	6124.96	3.48	3.59	9.86	0.47	10.50	70.01
6150.00	0.01	22.64	6149.96	3.47	3.58	9.86	0.21	10.49	70.04
6175.00	0.03	19.38	6174.96	3.48	3.59	9.86	0.09	10.50	70.00
6200.00	0.01	212.83	6199.96	3.49	3.59	9.86	0.17	10.50	69.98
6225.00	0.03	243.42	6224.96	3.48	3.59	9.86	0.07	10.49	69.99
6250.00	0.03	284.18	6249.96	3.48	3.59	9.85	0.08	10.48	69.97
6275.00	0.05	64.82	6274.96	3.49	3.60	9.85	0.30	10.49	69.95
6300.00	0.07	31.62	6299.96	3.50	3.61	9.87	0.16	10.51	69.89
6325.00	0.04	259.77	6324.96	3.52	3.62	9.87	0.41	10.51	69.83
6350.00	0.05	104.19	6349.96	3.51	3.62	9.87	0.37	10.51	69.86
6375.00	0.10	352.67	6374.96	3.53	3.64	9.88	0.51	10.53	69.78
6400.00	0.07	56.99	6399.96	3.56	3.67	9.89	0.37	10.54	69.64
6425.00	0.04	15.64	6424.96	3.58	3.69	9.90	0.18	10.56	69.58
6450.00	0.05	214.65	6449.96	3.58	3.69	9.90	0.37	10.56	69.57

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
6475.00	0.01	266.35	6474.96	3.57	3.68	9.89	0.17	10.55	69.60
6500.00	0.07	87.23	6499.96	3.57	3.68	9.90	0.33	10.56	69.62
6525.00	0.04	53.67	6524.96	3.57	3.68	9.93	0.17	10.59	69.64
6550.00	0.02	311.00	6549.96	3.58	3.69	9.93	0.20	10.59	69.60
6575.00	0.04	261.57	6574.96	3.58	3.69	9.92	0.13	10.58	69.57
6600.00	0.07	311.81	6599.96	3.59	3.70	9.90	0.21	10.57	69.49
6625.00	0.08	343.87	6624.96	3.62	3.73	9.88	0.17	10.56	69.33
6650.00	0.11	310.58	6649.96	3.65	3.76	9.86	0.24	10.55	69.13
6675.00	0.07	294.86	6674.96	3.67	3.78	9.83	0.17	10.53	68.96
6700.00	0.06	311.49	6699.96	3.69	3.80	9.80	0.09	10.51	68.83
6725.00	0.09	321.03	6724.96	3.71	3.82	9.78	0.12	10.50	68.66
6750.00	0.09	333.67	6749.96	3.75	3.85	9.76	0.08	10.49	68.46
6775.00	0.14	336.32	6774.96	3.79	3.90	9.74	0.21	10.49	68.19
6800.00	0.16	326.29	6799.96	3.85	3.96	9.71	0.14	10.48	67.83
6825.00	0.16	322.37	6824.96	3.91	4.01	9.67	0.05	10.47	67.46
6850.00	0.21	338.45	6849.96	3.98	4.08	9.63	0.28	10.46	67.02
6875.00	0.23	328.40	6874.96	4.06	4.17	9.59	0.17	10.45	66.50
6900.00	0.17	317.88	6899.96	4.13	4.24	9.53	0.28	10.43	66.03
6925.00	0.19	326.30	6924.96	4.19	4.30	9.49	0.12	10.42	65.62
6950.00	0.19	345.52	6949.96	4.27	4.37	9.45	0.26	10.42	65.17
6975.00	0.21	318.57	6974.96	4.35	4.45	9.41	0.39	10.41	64.70
7000.00	0.20	322.14	6999.96	4.42	4.52	9.35	0.07	10.39	64.21
7025.00	0.20	329.12	7024.96	4.49	4.59	9.31	0.10	10.38	63.73
7050.00	0.24	337.04	7049.96	4.58	4.68	9.26	0.18	10.38	63.20
7075.00	0.28	331.34	7074.96	4.68	4.78	9.21	0.20	10.38	62.58
7100.00	0.28	329.34	7099.96	4.78	4.88	9.15	0.04	10.37	61.91
7125.00	0.25	327.20	7124.96	4.88	4.98	9.09	0.12	10.37	61.28
7150.00	0.25	340.50	7149.96	4.98	5.08	9.04	0.23	10.37	60.68
7175.00	0.37	331.55	7174.96	5.10	5.20	8.99	0.49	10.39	59.94
7200.00	0.32	328.84	7199.96	5.23	5.33	8.91	0.18	10.39	59.11
7225.00	0.31	337.92	7224.96	5.36	5.46	8.85	0.21	10.40	58.35
7250.00	0.35	336.91	7249.96	5.49	5.59	8.80	0.16	10.42	57.56

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS %/100ft	CLOSURE DIST ft	CLOSURE DIR deg
7275.00	0.34	329.72	7274.96	5.63	5.72	8.73	0.19	10.44	56.74
7300.00	0.43	327.38	7299.96	5.77	5.87	8.64	0.40	10.44	55.82
7325.00	0.49	321.90	7324.96	5.94	6.03	8.52	0.28	10.44	54.72
7350.00	0.51	313.41	7349.95	6.10	6.19	8.38	0.31	10.42	53.53
7375.00	0.53	315.62	7374.95	6.26	6.35	8.22	0.12	10.38	52.30
7400.00	0.60	302.42	7399.95	6.41	6.50	8.03	0.58	10.33	50.98
7425.00	0.54	304.23	7424.95	6.55	6.64	7.82	0.25	10.26	49.67
7450.00	0.59	298.91	7449.95	6.68	6.77	7.61	0.28	10.18	48.36
7475.00	0.62	298.45	7474.95	6.81	6.89	7.38	0.13	10.10	46.95
7500.00	0.66	298.64	7499.95	6.95	7.03	7.13	0.17	10.01	45.44
7525.00	0.58	297.93	7524.95	7.08	7.15	6.90	0.31	9.94	43.95
7550.00	0.62	297.54	7549.94	7.20	7.28	6.66	0.17	9.87	42.48
7575.00	0.62	290.93	7574.94	7.32	7.39	6.42	0.29	9.78	40.98
7600.00	0.62	289.79	7599.94	7.41	7.48	6.16	0.06	9.69	39.48
7625.00	0.64	296.90	7624.94	7.53	7.59	5.91	0.32	9.62	37.90
7650.00	0.67	291.78	7649.94	7.65	7.71	5.65	0.27	9.56	36.23
7675.00	0.60	286.36	7674.94	7.74	7.80	5.39	0.37	9.48	34.62
7700.00	0.60	288.07	7699.93	7.82	7.88	5.14	0.08	9.40	33.10
7725.00	0.58	287.35	7724.93	7.90	7.96	4.89	0.06	9.34	31.58
7750.00	0.59	292.73	7749.93	7.99	8.04	4.65	0.22	9.29	30.04
7775.00	0.55	284.39	7774.93	8.07	8.12	4.42	0.36	9.25	28.54
7800.00	0.50	283.56	7799.93	8.13	8.18	4.19	0.19	9.19	27.15
7825.00	0.59	285.35	7824.93	8.19	8.24	3.96	0.36	9.14	25.69
7850.00	0.61	285.65	7849.93	8.27	8.31	3.71	0.07	9.10	24.07
7875.00	0.62	292.95	7874.93	8.36	8.40	3.46	0.31	9.08	22.39
7900.00	0.56	289.13	7899.92	8.45	8.49	3.22	0.27	9.08	20.77
7925.00	0.59	288.97	7924.92	8.54	8.57	2.98	0.13	9.07	19.18
7950.00	0.68	296.09	7949.92	8.65	8.68	2.73	0.48	9.10	17.44
7975.00	0.55	298.17	7974.92	8.77	8.80	2.49	0.55	9.15	15.78
8000.00	0.60	302.18	7999.92	8.90	8.93	2.27	0.26	9.21	14.27
8025.00	0.57	300.13	8024.92	9.04	9.06	2.05	0.15	9.29	12.77
8050.00	0.66	284.32	8049.92	9.14	9.16	1.81	0.76	9.33	11.16

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	%/100ft	ft	deg
8075.00	0.57	299.88	8074.91	9.24	9.25	1.56	0.75	9.38	9.57
8100.00	0.63	297.78	8099.91	9.36	9.38	1.33	0.26	9.47	8.08
8125.00	0.59	301.33	8124.91	9.50	9.51	1.10	0.21	9.57	6.60
8150.00	0.54	310.99	8149.91	9.64	9.65	0.90	0.44	9.70	5.33
8175.00	0.55	317.93	8174.91	9.81	9.82	0.73	0.27	9.85	4.25
8200.00	0.59	313.03	8199.91	9.99	10.00	0.56	0.24	10.01	3.18
8225.00	0.59	321.46	8224.91	10.18	10.19	0.38	0.35	10.19	2.14
8250.00	0.63	320.06	8249.91	10.39	10.39	0.21	0.14	10.40	1.17
8275.00	0.56	320.05	8274.90	10.59	10.59	0.05	0.25	10.59	0.25
8300.00	0.63	319.98	8299.90	10.79	10.79	-0.12	0.27	10.79	359.36
8325.00	0.67	319.47	8324.90	11.01	11.01	-0.30	0.15	11.01	358.42
8350.00	0.72	320.00	8349.90	11.24	11.24	-0.50	0.22	11.25	357.46
8375.00	0.67	316.49	8374.90	11.47	11.47	-0.70	0.25	11.49	356.50
8400.00	0.71	315.77	8399.90	11.69	11.68	-0.91	0.13	11.72	355.55
8425.00	0.73	312.06	8424.89	11.91	11.90	-1.14	0.22	11.95	354.55
8450.00	0.72	307.33	8449.89	12.12	12.10	-1.38	0.25	12.18	353.50
8475.00	0.79	302.71	8474.89	12.31	12.29	-1.65	0.39	12.40	352.36
8500.00	0.78	296.43	8499.89	12.48	12.46	-1.95	0.35	12.61	351.12
8525.00	0.85	300.19	8524.88	12.65	12.63	-2.26	0.35	12.83	349.86
8550.00	0.87	297.38	8549.88	12.84	12.81	-2.59	0.20	13.07	348.58
8575.00	0.87	298.92	8574.88	13.02	12.99	-2.92	0.09	13.31	347.32
8600.00	0.84	301.54	8599.88	13.21	13.18	-3.25	0.21	13.57	346.16
8625.00	0.93	294.09	8624.87	13.39	13.35	-3.59	0.58	13.83	344.97
8650.00	0.94	295.17	8649.87	13.57	13.52	-3.96	0.08	14.09	343.69
8675.00	0.97	296.99	8674.87	13.75	13.71	-4.33	0.16	14.37	342.47
8700.00	1.02	295.00	8699.86	13.95	13.90	-4.72	0.24	14.68	341.24
8725.00	1.00	295.99	8724.86	14.14	14.08	-5.11	0.11	14.98	340.04
8750.00	1.05	291.25	8749.86	14.32	14.26	-5.52	0.40	15.29	338.83
8775.00	0.97	294.35	8774.85	14.50	14.43	-5.93	0.39	15.60	337.67
8800.00	0.98	292.32	8799.85	14.67	14.60	-6.32	0.15	15.91	336.60
8825.00	1.04	294.79	8824.84	14.85	14.78	-6.72	0.29	16.23	335.54
8850.00	1.17	296.71	8849.84	15.07	14.99	-7.16	0.56	16.61	334.47

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	%/100ft	ft	deg
8875.00	1.09	297.15	8874.83	15.29	15.21	-7.60	0.34	17.00	333.46
8900.00	1.14	293.52	8899.83	15.51	15.42	-8.04	0.34	17.39	332.47
8925.00	1.25	291.93	8924.82	15.71	15.62	-8.52	0.46	17.79	331.40
8950.00	1.19	294.98	8949.82	15.93	15.83	-9.01	0.34	18.21	330.37
8975.00	1.26	286.28	8974.81	16.12	16.02	-9.51	0.79	18.63	329.31
9000.00	1.29	279.59	8999.81	16.25	16.14	-10.05	0.61	19.01	328.10
9025.00	1.51	278.26	9024.80	16.35	16.24	-10.65	0.88	19.42	326.73
9050.00	1.49	274.22	9049.79	16.43	16.31	-11.30	0.43	19.84	325.28
9075.00	1.57	269.22	9074.78	16.46	16.33	-11.97	0.61	20.24	323.75
9100.00	1.70	262.45	9099.77	16.41	16.27	-12.68	0.93	20.63	322.08
9125.00	1.64	267.46	9124.76	16.36	16.21	-13.40	0.63	21.03	320.41
9150.00	1.72	266.14	9149.75	16.32	16.17	-14.14	0.36	21.48	318.83
9175.00	1.78	267.27	9174.74	16.29	16.12	-14.90	0.27	21.95	317.26
9200.00	1.77	266.06	9199.73	16.25	16.08	-15.67	0.15	22.45	315.73
9225.00	1.65	267.05	9224.72	16.21	16.03	-16.42	0.50	22.95	314.32
9250.00	1.91	267.70	9249.70	16.19	16.00	-17.19	1.05	23.49	312.94
9275.00	2.10	273.85	9274.69	16.21	16.01	-18.07	1.14	24.14	311.55
9300.00	2.01	270.75	9299.67	16.26	16.05	-18.96	0.56	24.84	310.24
9325.00	2.09	271.92	9324.66	16.29	16.07	-19.86	0.37	25.55	308.98
9350.00	2.14	272.77	9349.64	16.34	16.11	-20.78	0.24	26.29	307.78
9375.00	2.15	273.26	9374.62	16.39	16.16	-21.71	0.07	27.07	306.65
9400.00	2.37	276.27	9399.60	16.49	16.24	-22.70	0.99	27.91	305.59
9425.00	2.62	277.12	9424.58	16.63	16.37	-23.77	1.02	28.86	304.54
9450.00	2.84	277.10	9449.55	16.79	16.51	-24.96	0.90	29.93	303.49
9475.00	2.85	277.42	9474.52	16.96	16.67	-26.19	0.07	31.05	302.48
9500.00	2.96	278.98	9499.49	17.15	16.85	-27.44	0.54	32.21	301.55
9525.00	3.16	278.27	9524.45	17.37	17.05	-28.76	0.79	33.44	300.66
9550.00	3.40	279.06	9549.41	17.60	17.27	-30.18	0.98	34.77	299.78
9575.00	3.55	280.51	9574.36	17.87	17.53	-31.67	0.69	36.19	298.96
9600.00	3.65	280.79	9599.31	18.18	17.82	-33.21	0.42	37.69	298.21
9625.00	3.71	280.84	9624.26	18.50	18.12	-34.79	0.25	39.22	297.51
9650.00	3.87	280.71	9649.21	18.83	18.43	-36.41	0.64	40.81	296.84

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
9675.00	3.84	282.15	9674.15	19.18	18.76	-38.06	0.41	42.43	296.24
9700.00	3.91	280.57	9699.09	19.53	19.09	-39.71	0.51	44.06	295.68
9725.00	3.88	281.65	9724.04	19.87	19.42	-41.38	0.32	45.71	295.14
9750.00	3.90	280.15	9748.98	20.21	19.74	-43.04	0.42	47.35	294.64
9775.00	3.89	280.97	9773.92	20.54	20.05	-44.71	0.23	49.00	294.15
9800.00	4.05	279.88	9798.86	20.87	20.36	-46.41	0.70	50.68	293.69
9825.00	4.02	280.54	9823.80	21.20	20.68	-48.15	0.21	52.40	293.24
9850.00	4.10	280.11	9848.74	21.54	20.99	-49.89	0.32	54.12	292.82
9875.00	4.29	280.27	9873.67	21.88	21.32	-51.69	0.76	55.91	292.41
9900.00	4.34	280.07	9898.60	22.23	21.65	-53.54	0.22	57.75	292.02
9925.00	4.47	280.39	9923.53	22.60	21.99	-55.42	0.52	59.63	291.64
9950.00	4.58	280.76	9948.45	22.98	22.35	-57.36	0.46	61.56	291.29
9975.00	4.54	279.73	9973.37	23.35	22.70	-59.32	0.36	63.51	290.94
10000.00	4.78	279.03	9998.29	23.71	23.03	-61.32	1.00	65.50	290.59
10025.00	4.87	279.01	10023.20	24.06	23.36	-63.40	0.37	67.57	290.23
10050.00	4.82	278.64	10048.11	24.41	23.69	-65.49	0.24	69.64	289.89
10075.00	4.83	278.52	10073.02	24.74	24.00	-67.57	0.04	71.70	289.56
10100.00	4.90	278.04	10097.93	25.07	24.31	-69.66	0.34	73.78	289.24
10125.00	4.86	278.05	10122.84	25.39	24.60	-71.77	0.15	75.87	288.92
10150.00	4.96	276.79	10147.75	25.69	24.88	-73.89	0.58	77.97	288.61
10175.00	4.91	276.87	10172.65	25.97	25.14	-76.03	0.19	80.08	288.30
10200.00	5.01	276.81	10197.56	26.25	25.39	-78.18	0.40	82.20	288.00
10225.00	5.06	275.97	10222.46	26.52	25.64	-80.36	0.34	84.35	287.70
10250.00	5.00	275.43	10247.37	26.76	25.86	-82.53	0.30	86.49	287.39
10275.00	4.98	276.23	10272.27	27.01	26.08	-84.70	0.29	88.62	287.11
10300.00	4.74	275.71	10297.18	27.25	26.30	-86.80	0.95	90.70	286.85
10325.00	4.86	274.72	10322.10	27.46	26.49	-88.89	0.56	92.75	286.59
10350.00	4.82	274.26	10347.01	27.65	26.65	-90.99	0.21	94.81	286.33
10375.00	4.81	273.75	10371.92	27.82	26.80	-93.08	0.18	96.86	286.06
10400.00	4.94	273.23	10396.83	27.97	26.93	-95.21	0.56	98.94	285.79
10425.00	4.77	273.86	10421.74	28.13	27.06	-97.32	0.71	101.01	285.54
10450.00	4.57	273.46	10446.65	28.28	27.19	-99.35	0.81	103.01	285.31

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	%/100ft	ft	deg
10475.00	4.60	273.54	10471.57	28.42	27.31	-101.35	0.09	104.96	285.08
10500.00	4.39	272.29	10496.50	28.55	27.41	-103.30	0.93	106.88	284.86
10525.00	4.24	272.78	10521.43	28.65	27.49	-105.18	0.60	108.72	284.65
10550.00	4.04	271.76	10546.36	28.74	27.57	-106.99	0.84	110.48	284.45
10575.00	3.76	271.96	10571.30	28.82	27.62	-108.69	1.14	112.14	284.26
10600.00	3.56	272.06	10596.25	28.89	27.68	-110.28	0.80	113.70	284.09
10625.00	3.52	272.67	10621.21	28.97	27.74	-111.82	0.21	115.21	283.93
10650.00	3.39	272.45	10646.16	29.05	27.81	-113.33	0.54	116.69	283.79
10675.00	2.98	275.37	10671.12	29.16	27.90	-114.72	1.77	118.06	283.67
10700.00	2.71	276.33	10696.09	29.30	28.03	-115.95	1.09	119.29	283.59
10725.00	2.79	278.64	10721.06	29.47	28.18	-117.14	0.55	120.48	283.53
10750.00	2.52	278.66	10746.03	29.66	28.36	-118.28	1.09	121.64	283.48
10775.00	2.28	279.01	10771.01	29.83	28.52	-119.32	0.95	122.68	283.44
10800.00	2.15	279.00	10795.99	29.99	28.67	-120.28	0.51	123.65	283.41
10825.00	1.99	280.52	10820.98	30.15	28.82	-121.17	0.68	124.55	283.38
10850.00	1.72	282.88	10845.96	30.33	28.99	-121.96	1.12	125.36	283.37
10875.00	1.32	281.67	10870.96	30.47	29.13	-122.61	1.61	126.02	283.36
10900.00	1.40	282.41	10895.95	30.61	29.25	-123.19	0.34	126.62	283.36
10925.00	1.42	281.96	10920.94	30.74	29.38	-123.79	0.08	127.23	283.35
10950.00	1.41	279.18	10945.93	30.86	29.50	-124.40	0.28	127.85	283.34
10975.00	1.38	275.89	10970.93	30.95	29.58	-125.00	0.33	128.45	283.31
11000.00	1.33	274.11	10995.92	31.01	29.63	-125.59	0.28	129.04	283.27
11025.00	1.27	271.30	11020.91	31.04	29.65	-126.15	0.35	129.59	283.23
11050.00	1.21	269.48	11045.91	31.05	29.66	-126.70	0.26	130.12	283.18
11075.00	1.22	266.72	11070.90	31.04	29.64	-127.23	0.23	130.63	283.11
11100.00	1.09	263.71	11095.90	31.00	29.60	-127.73	0.58	131.11	283.05
11125.00	1.09	261.07	11120.89	30.94	29.54	-128.20	0.20	131.56	282.97
11150.00	1.02	261.19	11145.89	30.88	29.46	-128.65	0.28	131.98	282.90
11175.00	1.08	261.83	11170.88	30.81	29.40	-129.11	0.25	132.41	282.83
11200.00	1.17	257.15	11195.88	30.73	29.31	-129.59	0.49	132.86	282.74
11225.00	1.27	253.78	11220.87	30.60	29.17	-130.10	0.50	133.33	282.64
11250.00	1.30	256.67	11245.87	30.47	29.03	-130.65	0.30	133.83	282.53

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
11275.00	1.32	256.33	11270.86	30.34	28.90	-131.20	0.09	134.35	282.42
11300.00	1.42	252.70	11295.85	30.18	28.74	-131.78	0.52	134.88	282.30
11325.00	1.54	253.72	11320.84	30.00	28.55	-132.40	0.48	135.44	282.17
11350.00	1.57	253.55	11345.83	29.82	28.36	-133.05	0.11	136.04	282.03
11375.00	1.73	254.22	11370.82	29.63	28.16	-133.74	0.65	136.67	281.89
11400.00	1.75	250.46	11395.81	29.41	27.93	-134.46	0.46	137.33	281.73
11425.00	1.83	254.18	11420.80	29.18	27.69	-135.20	0.57	138.01	281.58
11450.00	1.95	258.04	11445.79	28.99	27.50	-136.00	0.71	138.75	281.43
11475.00	2.04	260.09	11470.77	28.84	27.33	-136.86	0.45	139.56	281.29
11500.00	2.16	261.33	11495.76	28.70	27.18	-137.76	0.53	140.42	281.16
11525.00	2.24	259.87	11520.74	28.55	27.03	-138.71	0.38	141.32	281.03
11550.00	2.31	261.74	11545.72	28.40	26.87	-139.69	0.41	142.25	280.89
11575.00	2.46	262.12	11570.70	28.27	26.72	-140.72	0.61	143.23	280.75
11600.00	2.49	262.11	11595.67	28.13	26.58	-141.79	0.11	144.26	280.62
11625.00	2.55	261.35	11620.65	27.99	26.42	-142.87	0.26	145.29	280.48
11650.00	2.74	260.54	11645.62	27.82	26.24	-144.01	0.79	146.38	280.32
11675.00	2.65	263.01	11670.59	27.66	26.07	-145.17	0.59	147.49	280.18
11700.00	2.77	264.70	11695.57	27.55	25.94	-146.35	0.58	148.63	280.05
11725.00	2.78	266.03	11720.54	27.46	25.84	-147.55	0.26	149.80	279.93
11750.00	2.91	266.02	11745.51	27.39	25.76	-148.79	0.53	151.01	279.82
11775.00	2.84	268.39	11770.47	27.34	25.70	-150.05	0.56	152.23	279.72
11800.00	2.73	271.24	11795.44	27.35	25.69	-151.26	0.72	153.43	279.64
11825.00	2.80	273.33	11820.42	27.41	25.74	-152.46	0.49	154.62	279.58
11850.00	2.98	271.99	11845.38	27.49	25.80	-153.72	0.79	155.87	279.53
11875.00	2.48	277.17	11870.36	27.59	25.89	-154.91	2.24	157.06	279.49
11900.00	2.69	278.51	11895.33	27.76	26.04	-156.02	0.88	158.18	279.48
11922.00	2.43	281.30	11917.31	27.93	26.21	-156.99	1.31	159.17	279.48



COG Operating LLC

Lea County, NM (NAD27 NME)

Baseball Cap Federal Com

607H

OH / 64771

Design: Surveys (McVay 8)

Standard Survey Report

24 July, 2019





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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	Latitude:	32° 10' 55.044304 N
From:	Map	Easting:	782,226.20 usft	Longitude:	103° 25' 16.037016 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.49 °

Well	607H					
Well Position	+N/-S	0.00 usft	Northing:	431,112.10 usft	Latitude:	32° 10' 55.225694 N
	+E/-W	0.00 usft	Easting:	779,961.20 usft	Longitude:	103° 25' 42.389634 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,422.60 usft

Wellbore	OH / 64771				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	7/3/2019	6.63	59.85	47,836.00000000

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)	Direction (°)	
	0.00	0.00	0.00	359.37	

Survey Program	Date 7/24/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	11,922.00	SDI Gyros (OH / 64771)	Scientific Keeper	Scientific Drilling Intl. Standard Wireline Keeper
12,034.00	21,217.00	Phoenix MWD Surveys (OH / 64771)	MWD+HRGM	OWSG MWD + HRGM
21,317.00	22,375.00	Gordon Technologies MWD (OH / 64771)	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	0.26	48.61	100.00	0.16	0.16	0.15	0.26	0.26	0.00	
125.00	0.27	114.95	125.00	0.17	0.26	0.17	1.19	0.04	273.36	
150.00	0.24	81.78	150.00	0.15	0.36	0.15	0.59	-0.12	-132.68	
175.00	0.30	49.29	175.00	0.20	0.47	0.20	0.65	0.24	-129.96	
200.00	0.29	49.17	200.00	0.29	0.56	0.28	0.04	-0.04	-0.48	
225.00	0.27	56.40	225.00	0.36	0.66	0.35	0.16	-0.08	28.92	
250.00	0.25	51.49	250.00	0.43	0.75	0.42	0.12	-0.08	-19.64	
275.00	0.27	54.97	275.00	0.50	0.84	0.49	0.10	0.08	13.92	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
300.00	0.29	57.51	300.00	0.56	0.94	0.55	0.09	0.08	10.16
325.00	0.25	38.92	325.00	0.64	1.03	0.63	0.38	-0.16	-74.36
350.00	0.25	41.81	350.00	0.72	1.10	0.71	0.05	0.00	11.56
375.00	0.26	43.99	375.00	0.80	1.18	0.79	0.06	0.04	8.72
400.00	0.24	47.69	400.00	0.88	1.26	0.87	0.10	-0.08	14.80
425.00	0.25	53.16	425.00	0.95	1.34	0.93	0.10	0.04	21.88
450.00	0.20	42.19	450.00	1.01	1.41	1.00	0.26	-0.20	-43.88
475.00	0.22	38.44	475.00	1.08	1.47	1.07	0.10	0.08	-15.00
500.00	0.21	34.13	500.00	1.16	1.53	1.14	0.08	-0.04	-17.24
525.00	0.19	71.03	525.00	1.21	1.59	1.19	0.51	-0.08	147.60
550.00	0.20	33.42	550.00	1.26	1.66	1.24	0.50	0.04	-150.44
575.00	0.16	31.73	575.00	1.33	1.70	1.31	0.16	-0.16	-6.76
600.00	0.17	30.46	600.00	1.39	1.73	1.37	0.04	0.04	-5.08
625.00	0.24	18.70	625.00	1.47	1.77	1.45	0.32	0.28	-43.04
650.00	0.27	23.93	649.99	1.57	1.81	1.55	0.14	0.12	16.92
675.00	0.26	24.29	674.99	1.68	1.86	1.66	0.04	-0.04	1.44
700.00	0.30	19.04	699.99	1.79	1.90	1.77	0.19	0.16	-21.00
725.00	0.33	22.22	724.99	1.92	1.95	1.90	0.14	0.12	12.72
750.00	0.20	33.92	749.99	2.02	2.00	2.00	0.56	-0.52	46.80
775.00	0.39	18.83	774.99	2.14	2.06	2.12	0.81	0.76	-60.36
800.00	0.36	27.81	799.99	2.29	2.12	2.27	0.26	-0.12	35.92
825.00	0.38	18.56	824.99	2.44	2.18	2.41	0.25	0.08	-37.00
850.00	0.43	21.58	849.99	2.60	2.24	2.58	0.22	0.20	12.08
875.00	0.46	17.88	874.99	2.79	2.31	2.76	0.17	0.12	-14.80
900.00	0.49	21.02	899.99	2.98	2.38	2.95	0.16	0.12	12.56
925.00	0.50	19.51	924.99	3.18	2.45	3.16	0.07	0.04	-6.04
950.00	0.51	19.93	949.99	3.39	2.53	3.36	0.04	0.04	1.68
975.00	0.52	22.90	974.99	3.60	2.61	3.57	0.11	0.04	11.88
1,000.00	0.46	23.38	999.99	3.80	2.69	3.77	0.24	-0.24	1.92
1,025.00	0.47	21.69	1,024.99	3.98	2.77	3.95	0.07	0.04	-6.76
1,050.00	0.45	21.26	1,049.98	4.17	2.85	4.14	0.08	-0.08	-1.72
1,075.00	0.41	30.62	1,074.98	4.34	2.93	4.31	0.32	-0.16	37.44
1,100.00	0.41	29.89	1,099.98	4.49	3.02	4.46	0.02	0.00	-2.92
1,125.00	0.35	37.07	1,124.98	4.63	3.11	4.60	0.31	-0.24	28.72
1,150.00	0.35	32.59	1,149.98	4.76	3.19	4.72	0.11	0.00	-17.92
1,175.00	0.32	39.64	1,174.98	4.88	3.28	4.84	0.20	-0.12	28.20
1,200.00	0.27	56.61	1,199.98	4.96	3.37	4.92	0.40	-0.20	67.88
1,225.00	0.28	56.30	1,224.98	5.03	3.47	4.99	0.04	0.04	-1.24
1,250.00	0.29	56.99	1,249.98	5.10	3.58	5.06	0.04	0.04	2.76
1,275.00	0.28	44.47	1,274.98	5.17	3.67	5.13	0.25	-0.04	-50.08
1,300.00	0.18	70.99	1,299.98	5.23	3.75	5.19	0.57	-0.40	106.08
1,325.00	0.15	84.00	1,324.98	5.25	3.82	5.20	0.19	-0.12	52.04
1,350.00	0.14	66.26	1,349.98	5.26	3.88	5.22	0.18	-0.04	-70.96

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)	
1,375.00	0.16	37.60	1,374.98	5.30	3.93	5.26	0.31	0.08	-114.64	
1,400.00	0.08	74.14	1,399.98	5.34	3.97	5.29	0.43	-0.32	146.16	
1,425.00	0.03	49.47	1,424.98	5.34	3.99	5.30	0.22	-0.20	-98.68	
1,450.00	0.04	332.05	1,449.98	5.36	3.99	5.31	0.18	0.04	-309.68	
1,475.00	0.04	41.47	1,474.98	5.37	4.00	5.33	0.18	0.00	277.68	
1,500.00	0.05	136.94	1,499.98	5.37	4.01	5.32	0.27	0.04	381.88	
1,525.00	0.12	129.15	1,524.98	5.34	4.04	5.30	0.28	0.28	-31.16	
1,550.00	0.06	86.81	1,549.98	5.33	4.07	5.28	0.34	-0.24	-169.36	
1,575.00	0.03	15.52	1,574.98	5.34	4.08	5.29	0.23	-0.12	-285.16	
1,600.00	0.04	341.60	1,599.98	5.35	4.08	5.31	0.09	0.04	-135.68	
1,625.00	0.05	2.00	1,624.98	5.37	4.08	5.32	0.07	0.04	81.60	
1,650.00	0.03	106.25	1,649.98	5.38	4.09	5.33	0.26	-0.08	417.00	
1,675.00	0.03	15.19	1,674.98	5.38	4.10	5.34	0.17	0.00	-364.24	
1,700.00	0.05	159.95	1,699.98	5.38	4.10	5.33	0.31	0.08	579.04	
1,725.00	0.02	137.44	1,724.98	5.37	4.11	5.32	0.13	-0.12	-90.04	
1,750.00	0.05	104.36	1,749.98	5.36	4.12	5.31	0.14	0.12	-132.32	
1,775.00	0.07	129.67	1,774.98	5.35	4.14	5.30	0.13	0.08	101.24	
1,800.00	0.06	8.50	1,799.98	5.35	4.16	5.30	0.45	-0.04	-484.68	
1,825.00	0.03	254.17	1,824.98	5.36	4.15	5.32	0.31	-0.12	-457.32	
1,850.00	0.03	3.97	1,849.98	5.37	4.15	5.32	0.20	0.00	439.20	
1,875.00	0.01	6.54	1,874.98	5.38	4.15	5.33	0.08	-0.08	10.28	
1,900.00	0.05	110.19	1,899.98	5.37	4.16	5.33	0.21	0.16	414.60	
1,925.00	0.05	98.38	1,924.98	5.37	4.18	5.32	0.04	0.00	-47.24	
1,950.00	0.05	106.48	1,949.98	5.36	4.20	5.32	0.03	0.00	32.40	
1,975.00	0.04	118.51	1,974.98	5.36	4.22	5.31	0.05	-0.04	48.12	
2,000.00	0.02	191.02	1,999.98	5.35	4.23	5.30	0.16	-0.08	290.04	
2,025.00	0.03	335.77	2,024.98	5.35	4.22	5.30	0.19	0.04	579.00	
2,050.00	0.07	309.20	2,049.98	5.37	4.21	5.32	0.18	0.16	-106.28	
2,075.00	0.02	353.42	2,074.98	5.38	4.20	5.33	0.23	-0.20	176.88	
2,100.00	0.02	279.10	2,099.98	5.38	4.19	5.34	0.10	0.00	-297.28	
2,125.00	0.07	154.91	2,124.98	5.37	4.19	5.32	0.33	0.20	-496.76	
2,150.00	0.03	127.29	2,149.98	5.35	4.20	5.31	0.18	-0.16	-110.48	
2,175.00	0.03	3.23	2,174.98	5.36	4.21	5.31	0.21	0.00	-496.24	
2,200.00	0.05	83.91	2,199.98	5.36	4.22	5.32	0.22	0.08	322.72	
2,225.00	0.05	6.85	2,224.98	5.38	4.23	5.33	0.25	0.00	-308.24	
2,250.00	0.00	209.67	2,249.98	5.39	4.23	5.34	0.20	-0.20	0.00	
2,275.00	0.03	25.95	2,274.98	5.39	4.24	5.35	0.12	0.12	0.00	
2,300.00	0.03	92.28	2,299.98	5.40	4.25	5.35	0.13	0.00	265.32	
2,325.00	0.01	105.31	2,324.98	5.40	4.26	5.35	0.08	-0.08	52.12	
2,350.00	0.08	155.35	2,349.98	5.38	4.26	5.33	0.30	0.28	200.16	
2,375.00	0.04	68.70	2,374.98	5.37	4.28	5.32	0.35	-0.16	-346.60	
2,400.00	0.03	346.26	2,399.98	5.38	4.29	5.33	0.19	-0.04	-329.76	
2,425.00	0.01	151.90	2,424.98	5.38	4.29	5.33	0.16	-0.08	662.56	



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
2,450.00	0.02	23.51	2,449.98	5.38	4.29	5.34	0.11	0.04	-513.56
2,475.00	0.04	159.36	2,474.98	5.38	4.29	5.33	0.22	0.08	543.40
2,500.00	0.06	166.09	2,499.98	5.36	4.30	5.31	0.08	0.08	26.92
2,525.00	0.03	55.22	2,524.98	5.35	4.31	5.30	0.30	-0.12	-443.48
2,550.00	0.07	132.58	2,549.98	5.34	4.33	5.30	0.28	0.16	309.44
2,575.00	0.03	46.12	2,574.98	5.34	4.34	5.29	0.30	-0.16	-345.84
2,600.00	0.08	10.62	2,599.98	5.36	4.35	5.31	0.23	0.20	-142.00
2,625.00	0.01	109.79	2,624.98	5.38	4.35	5.33	0.33	-0.28	396.68
2,650.00	0.02	261.79	2,649.98	5.37	4.35	5.33	0.12	0.04	608.00
2,675.00	0.01	100.62	2,674.98	5.37	4.35	5.33	0.12	-0.04	-644.68
2,700.00	0.01	261.38	2,699.98	5.37	4.35	5.32	0.08	0.00	643.04
2,725.00	0.08	166.49	2,724.98	5.36	4.35	5.31	0.33	0.28	-379.56
2,750.00	0.07	161.13	2,749.98	5.32	4.36	5.28	0.05	-0.04	-21.44
2,775.00	0.08	116.24	2,774.98	5.30	4.38	5.25	0.23	0.04	-179.56
2,800.00	0.05	96.66	2,799.98	5.29	4.41	5.24	0.15	-0.12	-78.32
2,825.00	0.05	24.54	2,824.98	5.30	4.42	5.25	0.24	0.00	-288.48
2,850.00	0.05	358.52	2,849.98	5.32	4.43	5.27	0.09	0.00	-104.08
2,875.00	0.02	357.89	2,874.98	5.34	4.43	5.29	0.12	-0.12	-2.52
2,900.00	0.04	22.23	2,899.98	5.35	4.43	5.30	0.09	0.08	97.36
2,925.00	0.05	171.15	2,924.98	5.35	4.44	5.30	0.35	0.04	595.68
2,950.00	0.05	154.04	2,949.98	5.33	4.44	5.28	0.06	0.00	-68.44
2,975.00	0.09	143.63	2,974.98	5.30	4.46	5.25	0.17	0.16	-41.64
3,000.00	0.10	167.40	2,999.98	5.26	4.47	5.21	0.16	0.04	95.08
3,025.00	0.06	135.61	3,024.98	5.23	4.49	5.18	0.23	-0.16	-127.16
3,050.00	0.08	125.39	3,049.98	5.21	4.51	5.16	0.09	0.08	-40.88
3,075.00	0.09	113.56	3,074.98	5.20	4.54	5.15	0.08	0.04	-47.32
3,100.00	0.07	110.21	3,099.98	5.18	4.58	5.13	0.08	-0.08	-13.40
3,125.00	0.04	123.09	3,124.98	5.17	4.60	5.12	0.13	-0.12	51.52
3,150.00	0.03	66.50	3,149.98	5.17	4.61	5.12	0.14	-0.04	-226.36
3,175.00	0.07	26.46	3,174.98	5.19	4.62	5.14	0.20	0.16	-160.16
3,200.00	0.02	261.02	3,199.98	5.20	4.63	5.15	0.33	-0.20	-501.76
3,225.00	0.02	78.13	3,224.98	5.20	4.63	5.15	0.16	0.00	708.44
3,250.00	0.04	156.45	3,249.98	5.19	4.63	5.14	0.16	0.08	313.28
3,275.00	0.03	108.25	3,274.98	5.18	4.64	5.13	0.12	-0.04	-192.80
3,300.00	0.05	135.25	3,299.98	5.17	4.66	5.12	0.11	0.08	108.00
3,325.00	0.07	120.96	3,324.98	5.16	4.68	5.11	0.10	0.08	-57.16
3,350.00	0.08	96.89	3,349.98	5.15	4.71	5.10	0.13	0.04	-96.28
3,375.00	0.09	95.52	3,374.98	5.14	4.75	5.09	0.04	0.04	-5.48
3,400.00	0.06	41.85	3,399.98	5.15	4.77	5.10	0.29	-0.12	-214.68
3,425.00	0.07	107.93	3,424.98	5.16	4.80	5.10	0.29	0.04	264.32
3,450.00	0.04	107.91	3,449.98	5.15	4.82	5.10	0.12	-0.12	-0.08
3,475.00	0.02	47.90	3,474.98	5.15	4.83	5.10	0.14	-0.08	-240.04
3,500.00	0.01	267.77	3,499.98	5.15	4.83	5.10	0.11	-0.04	-560.52
3,525.00	0.01	332.15	3,524.98	5.15	4.83	5.10	0.04	0.00	257.52



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
3,550.00	0.05	113.35	3,549.98	5.15	4.84	5.10	0.23	0.16	564.80
3,575.00	0.02	124.85	3,574.98	5.14	4.85	5.09	0.12	-0.12	46.00
3,600.00	0.07	160.01	3,599.98	5.13	4.86	5.07	0.22	0.20	140.64
3,625.00	0.04	119.60	3,624.98	5.11	4.87	5.06	0.19	-0.12	-161.64
3,650.00	0.07	166.64	3,649.98	5.09	4.89	5.04	0.21	0.12	188.16
3,675.00	0.06	118.63	3,674.98	5.07	4.90	5.01	0.21	-0.04	-192.04
3,700.00	0.03	26.47	3,699.98	5.07	4.91	5.01	0.27	-0.12	-368.64
3,725.00	0.02	101.56	3,724.98	5.07	4.92	5.02	0.13	-0.04	300.36
3,750.00	0.01	187.90	3,749.98	5.07	4.93	5.02	0.09	-0.04	345.36
3,775.00	0.02	84.97	3,774.98	5.07	4.93	5.01	0.10	0.04	-411.72
3,800.00	0.07	87.64	3,799.98	5.07	4.95	5.01	0.20	0.20	10.68
3,825.00	0.03	70.04	3,824.98	5.07	4.97	5.02	0.17	-0.16	-70.40
3,850.00	0.09	351.46	3,849.98	5.09	4.97	5.04	0.36	0.24	-314.32
3,875.00	0.01	222.16	3,874.98	5.11	4.97	5.06	0.39	-0.32	-517.20
3,900.00	0.02	106.65	3,899.98	5.11	4.97	5.05	0.10	0.04	-462.04
3,925.00	0.06	33.77	3,924.98	5.12	4.98	5.06	0.23	0.16	-291.52
3,950.00	0.13	8.76	3,949.98	5.16	5.00	5.10	0.32	0.28	-100.04
3,975.00	0.13	11.18	3,974.98	5.21	5.01	5.16	0.02	0.00	9.68
4,000.00	0.08	19.42	3,999.98	5.26	5.02	5.20	0.21	-0.20	32.96
4,025.00	0.07	135.28	4,024.98	5.26	5.03	5.21	0.51	-0.04	463.44
4,050.00	0.08	174.03	4,049.98	5.24	5.05	5.18	0.20	0.04	155.00
4,075.00	0.06	262.07	4,074.98	5.22	5.03	5.16	0.39	-0.08	352.16
4,100.00	0.10	304.68	4,099.98	5.23	5.00	5.17	0.28	0.16	170.44
4,125.00	0.05	208.35	4,124.98	5.23	4.98	5.17	0.47	-0.20	-385.32
4,150.00	0.03	266.11	4,149.98	5.22	4.97	5.16	0.17	-0.08	231.04
4,175.00	0.06	177.63	4,174.98	5.21	4.96	5.15	0.27	0.12	-353.92
4,200.00	0.06	130.82	4,199.98	5.18	4.97	5.13	0.19	0.00	-187.24
4,225.00	0.04	148.07	4,224.98	5.17	4.99	5.11	0.10	-0.08	69.00
4,250.00	0.03	105.27	4,249.98	5.16	5.00	5.10	0.11	-0.04	-171.20
4,275.00	0.03	156.14	4,274.98	5.15	5.01	5.10	0.10	0.00	203.48
4,300.00	0.04	96.75	4,299.98	5.14	5.02	5.09	0.14	0.04	-237.56
4,325.00	0.08	252.41	4,324.98	5.14	5.01	5.08	0.47	0.16	622.64
4,350.00	0.02	167.94	4,349.98	5.13	5.00	5.07	0.32	-0.24	-337.88
4,375.00	0.06	182.28	4,374.98	5.11	5.00	5.06	0.16	0.16	57.36
4,400.00	0.04	167.67	4,399.98	5.09	5.00	5.03	0.09	-0.08	-58.44
4,425.00	0.04	78.10	4,424.98	5.08	5.01	5.03	0.23	0.00	-358.28
4,450.00	0.02	86.31	4,449.98	5.08	5.02	5.03	0.08	-0.08	32.84
4,475.00	0.14	124.85	4,474.98	5.07	5.05	5.01	0.50	0.48	154.16
4,500.00	0.07	112.95	4,499.98	5.04	5.09	4.99	0.29	-0.28	-47.60
4,525.00	0.15	124.02	4,524.98	5.02	5.13	4.96	0.33	0.32	44.28
4,550.00	0.20	141.53	4,549.98	4.97	5.18	4.91	0.29	0.20	70.04
4,575.00	0.11	127.69	4,574.98	4.92	5.23	4.86	0.39	-0.36	-55.36
4,600.00	0.12	157.52	4,599.98	4.88	5.26	4.82	0.24	0.04	119.32

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
4,625.00	0.10	159.67	4,624.98	4.84	5.28	4.78	0.08	-0.08	8.60
4,650.00	0.13	150.02	4,649.98	4.79	5.30	4.73	0.14	0.12	-38.60
4,675.00	0.14	144.73	4,674.98	4.74	5.33	4.68	0.06	0.04	-21.16
4,700.00	0.10	103.23	4,699.98	4.71	5.37	4.65	0.37	-0.16	-166.00
4,725.00	0.08	128.22	4,724.98	4.70	5.40	4.64	0.17	-0.08	99.96
4,750.00	0.11	128.22	4,749.98	4.67	5.44	4.61	0.12	0.12	0.00
4,775.00	0.20	118.68	4,774.98	4.63	5.49	4.57	0.37	0.36	-38.16
4,800.00	0.22	128.93	4,799.98	4.58	5.57	4.52	0.17	0.08	41.00
4,825.00	0.21	116.63	4,824.98	4.53	5.65	4.47	0.19	-0.04	-49.20
4,850.00	0.26	116.99	4,849.98	4.49	5.74	4.42	0.20	0.20	1.44
4,875.00	0.30	118.15	4,874.98	4.43	5.85	4.36	0.16	0.16	4.64
4,900.00	0.33	110.91	4,899.98	4.37	5.97	4.31	0.20	0.12	-28.96
4,925.00	0.30	119.64	4,924.98	4.31	6.10	4.25	0.23	-0.12	34.92
4,950.00	0.34	111.63	4,949.98	4.25	6.22	4.19	0.24	0.16	-32.04
4,975.00	0.34	115.85	4,974.98	4.19	6.36	4.12	0.10	0.00	16.88
5,000.00	0.36	116.38	4,999.98	4.13	6.50	4.06	0.08	0.08	2.12
5,025.00	0.35	116.98	5,024.97	4.06	6.63	3.98	0.04	-0.04	2.40
5,050.00	0.36	120.72	5,049.97	3.98	6.77	3.91	0.10	0.04	14.96
5,075.00	0.37	114.92	5,074.97	3.91	6.91	3.83	0.15	0.04	-23.20
5,100.00	0.33	103.40	5,099.97	3.86	7.05	3.78	0.32	-0.16	-46.08
5,125.00	0.42	112.93	5,124.97	3.81	7.21	3.73	0.44	0.36	38.12
5,150.00	0.56	117.82	5,149.97	3.71	7.40	3.63	0.58	0.56	19.56
5,175.00	0.57	115.91	5,174.97	3.60	7.62	3.52	0.09	0.04	-7.64
5,200.00	0.56	113.53	5,199.97	3.50	7.84	3.41	0.10	-0.04	-9.52
5,225.00	0.55	114.61	5,224.97	3.40	8.07	3.31	0.06	-0.04	4.32
5,250.00	0.61	113.08	5,249.97	3.30	8.30	3.21	0.25	0.24	-6.12
5,275.00	0.49	98.55	5,274.97	3.23	8.52	3.14	0.73	-0.48	-58.12
5,300.00	0.46	95.36	5,299.97	3.20	8.73	3.11	0.16	-0.12	-12.76
5,325.00	0.42	86.46	5,324.96	3.20	8.92	3.10	0.32	-0.16	-35.60
5,350.00	0.35	86.04	5,349.96	3.21	9.09	3.11	0.28	-0.28	-1.68
5,375.00	0.28	79.37	5,374.96	3.23	9.23	3.13	0.32	-0.28	-26.68
5,400.00	0.32	92.03	5,399.96	3.24	9.36	3.13	0.31	0.16	50.64
5,425.00	0.28	66.59	5,424.96	3.26	9.48	3.15	0.55	-0.16	-101.76
5,450.00	0.24	78.60	5,449.96	3.29	9.59	3.19	0.27	-0.16	48.04
5,475.00	0.24	77.07	5,474.96	3.32	9.69	3.21	0.03	0.00	-6.12
5,500.00	0.19	47.59	5,499.96	3.36	9.77	3.25	0.48	-0.20	-117.92
5,525.00	0.18	54.75	5,524.96	3.41	9.84	3.30	0.10	-0.04	28.64
5,550.00	0.08	47.91	5,549.96	3.44	9.88	3.33	0.40	-0.40	-27.36
5,575.00	0.04	7.76	5,574.96	3.46	9.89	3.35	0.22	-0.16	-160.60
5,600.00	0.05	18.03	5,599.96	3.48	9.90	3.37	0.05	0.04	41.08
5,625.00	0.01	9.91	5,624.96	3.49	9.90	3.38	0.16	-0.16	-32.48
5,650.00	0.05	340.42	5,649.96	3.50	9.90	3.40	0.17	0.16	-117.96
5,675.00	0.04	42.05	5,674.96	3.52	9.90	3.41	0.19	-0.04	246.52



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
5,700.00	0.05	45.23	5,699.96	3.54	9.92	3.43	0.04	0.04	12.72
5,725.00	0.03	40.69	5,724.96	3.55	9.93	3.44	0.08	-0.08	-18.16
5,750.00	0.01	19.44	5,749.96	3.56	9.93	3.45	0.08	-0.08	-85.00
5,775.00	0.04	292.56	5,774.96	3.56	9.93	3.45	0.16	0.12	-347.52
5,800.00	0.01	253.13	5,799.96	3.56	9.91	3.45	0.13	-0.12	-157.72
5,825.00	0.04	49.98	5,824.96	3.57	9.92	3.46	0.20	0.12	627.40
5,850.00	0.07	134.48	5,849.96	3.56	9.94	3.45	0.31	0.12	338.00
5,875.00	0.02	301.89	5,874.96	3.55	9.94	3.45	0.36	-0.20	669.64
5,900.00	0.03	301.68	5,899.96	3.56	9.94	3.45	0.04	0.04	-0.84
5,925.00	0.02	271.50	5,924.96	3.56	9.93	3.45	0.06	-0.04	-120.72
5,950.00	0.03	131.98	5,949.96	3.56	9.93	3.45	0.19	0.04	-558.08
5,975.00	0.06	76.50	5,974.96	3.56	9.94	3.45	0.20	0.12	-221.92
6,000.00	0.06	293.69	5,999.96	3.57	9.94	3.46	0.45	0.00	-571.24
6,025.00	0.03	277.80	6,024.96	3.57	9.93	3.46	0.13	-0.12	-63.56
6,050.00	0.05	199.83	6,049.96	3.56	9.92	3.45	0.21	0.08	-311.88
6,075.00	0.04	349.90	6,074.96	3.56	9.91	3.45	0.35	-0.04	600.28
6,100.00	0.09	317.25	6,099.96	3.59	9.90	3.48	0.24	0.20	-130.60
6,125.00	0.04	202.93	6,124.96	3.59	9.88	3.48	0.45	-0.20	-457.28
6,150.00	0.01	22.64	6,149.96	3.59	9.88	3.48	0.20	-0.12	718.84
6,175.00	0.03	19.38	6,174.96	3.59	9.88	3.48	0.08	0.08	-13.04
6,200.00	0.01	212.83	6,199.96	3.60	9.88	3.49	0.16	-0.08	-666.20
6,225.00	0.03	243.42	6,224.96	3.59	9.87	3.48	0.09	0.08	122.36
6,250.00	0.03	284.18	6,249.96	3.59	9.86	3.48	0.08	0.00	163.04
6,275.00	0.05	64.82	6,274.96	3.60	9.86	3.49	0.30	0.08	562.56
6,300.00	0.07	31.62	6,299.96	3.62	9.88	3.51	0.16	0.08	-132.80
6,325.00	0.04	259.77	6,324.96	3.63	9.88	3.52	0.40	-0.12	-527.40
6,350.00	0.05	104.19	6,349.96	3.62	9.88	3.51	0.35	0.04	-622.32
6,375.00	0.10	352.67	6,374.96	3.64	9.89	3.53	0.51	0.20	-446.08
6,400.00	0.07	56.99	6,399.96	3.67	9.90	3.56	0.38	-0.12	257.28
6,425.00	0.04	15.64	6,424.96	3.69	9.92	3.58	0.19	-0.12	-165.40
6,450.00	0.05	214.65	6,449.96	3.69	9.91	3.58	0.36	0.04	-643.96
6,475.00	0.01	266.35	6,474.96	3.68	9.90	3.57	0.18	-0.16	206.80
6,500.00	0.07	87.23	6,499.96	3.68	9.92	3.57	0.32	0.24	-716.48
6,525.00	0.04	53.67	6,524.96	3.69	9.94	3.58	0.17	-0.12	-134.24
6,550.00	0.02	311.00	6,549.96	3.69	9.94	3.58	0.19	-0.08	-410.68
6,575.00	0.04	261.57	6,574.96	3.70	9.93	3.59	0.12	0.08	-197.72
6,600.00	0.07	311.81	6,599.96	3.70	9.91	3.59	0.22	0.12	200.96
6,625.00	0.08	343.87	6,624.96	3.73	9.90	3.62	0.17	0.04	128.24
6,650.00	0.11	310.58	6,649.96	3.76	9.87	3.65	0.25	0.12	-133.16
6,675.00	0.07	294.86	6,674.96	3.79	9.84	3.68	0.19	-0.16	-62.88
6,700.00	0.06	311.49	6,699.96	3.80	9.82	3.69	0.08	-0.04	66.52
6,725.00	0.09	321.03	6,724.96	3.82	9.79	3.72	0.13	0.12	38.16
6,750.00	0.09	333.67	6,749.96	3.86	9.77	3.75	0.08	0.00	50.56
6,775.00	0.14	336.32	6,774.96	3.90	9.75	3.80	0.20	0.20	10.60



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
6,800.00	0.16	326.29	6,799.96	3.96	9.72	3.85	0.13	0.08	-40.12
6,825.00	0.16	322.37	6,824.96	4.02	9.68	3.91	0.04	0.00	-15.68
6,850.00	0.21	338.45	6,849.96	4.09	9.64	3.98	0.29	0.20	64.32
6,875.00	0.23	328.40	6,874.96	4.17	9.60	4.07	0.17	0.08	-40.20
6,900.00	0.17	317.88	6,899.96	4.24	9.55	4.14	0.28	-0.24	-42.08
6,925.00	0.19	326.30	6,924.96	4.30	9.50	4.20	0.13	0.08	33.68
6,950.00	0.19	345.52	6,949.96	4.38	9.47	4.27	0.25	0.00	76.88
6,975.00	0.21	318.57	6,974.96	4.45	9.43	4.35	0.38	0.08	-107.80
7,000.00	0.20	322.14	6,999.96	4.52	9.37	4.42	0.06	-0.04	14.28
7,025.00	0.20	329.12	7,024.96	4.59	9.32	4.49	0.10	0.00	27.92
7,050.00	0.24	337.04	7,049.96	4.68	9.28	4.58	0.20	0.16	31.68
7,075.00	0.28	331.34	7,074.96	4.78	9.23	4.68	0.19	0.16	-22.80
7,100.00	0.28	329.34	7,099.96	4.89	9.17	4.79	0.04	0.00	-8.00
7,125.00	0.25	327.20	7,124.96	4.99	9.11	4.89	0.13	-0.12	-8.56
7,150.00	0.25	340.50	7,149.96	5.08	9.06	4.98	0.23	0.00	53.20
7,175.00	0.37	331.55	7,174.96	5.21	9.00	5.11	0.52	0.48	-35.80
7,200.00	0.32	328.84	7,199.96	5.34	8.93	5.24	0.21	-0.20	-10.84
7,225.00	0.31	337.92	7,224.96	5.46	8.86	5.36	0.20	-0.04	36.32
7,250.00	0.35	336.91	7,249.96	5.59	8.81	5.49	0.16	0.16	-4.04
7,275.00	0.34	329.72	7,274.96	5.73	8.74	5.63	0.18	-0.04	-28.76
7,300.00	0.43	327.38	7,299.96	5.87	8.65	5.77	0.37	0.36	-9.36
7,325.00	0.49	321.90	7,324.96	6.03	8.54	5.94	0.30	0.24	-21.92
7,350.00	0.51	313.41	7,349.95	6.19	8.39	6.10	0.31	0.08	-33.96
7,375.00	0.53	315.62	7,374.95	6.35	8.23	6.26	0.11	0.08	8.84
7,400.00	0.60	302.42	7,399.95	6.50	8.04	6.42	0.59	0.28	-52.80
7,425.00	0.54	304.23	7,424.95	6.64	7.83	6.55	0.25	-0.24	7.24
7,450.00	0.59	298.91	7,449.95	6.77	7.62	6.69	0.29	0.20	-21.28
7,475.00	0.62	298.45	7,474.95	6.90	7.39	6.81	0.12	0.12	-1.84
7,500.00	0.66	298.64	7,499.95	7.03	7.14	6.95	0.16	0.16	0.76
7,525.00	0.58	297.93	7,524.95	7.16	6.90	7.08	0.32	-0.32	-2.84
7,550.00	0.62	297.54	7,549.94	7.28	6.67	7.21	0.16	0.16	-1.56
7,575.00	0.62	290.93	7,574.94	7.39	6.43	7.32	0.29	0.00	-26.44
7,600.00	0.62	289.79	7,599.94	7.48	6.17	7.42	0.05	0.00	-4.56
7,625.00	0.64	296.90	7,624.94	7.59	5.92	7.53	0.32	0.08	28.44
7,650.00	0.67	291.78	7,649.94	7.71	5.66	7.65	0.26	0.12	-20.48
7,675.00	0.60	286.36	7,674.94	7.80	5.40	7.74	0.37	-0.28	-21.68
7,700.00	0.60	288.07	7,699.94	7.88	5.15	7.82	0.07	0.00	6.84
7,725.00	0.58	287.35	7,724.93	7.96	4.90	7.90	0.09	-0.08	-2.88
7,750.00	0.59	292.73	7,749.93	8.05	4.67	7.99	0.22	0.04	21.52
7,775.00	0.55	284.39	7,774.93	8.13	4.43	8.08	0.37	-0.16	-33.36
7,800.00	0.50	283.56	7,799.93	8.18	4.21	8.13	0.20	-0.20	-3.32
7,825.00	0.59	285.35	7,824.93	8.24	3.98	8.20	0.37	0.36	7.16
7,850.00	0.61	285.65	7,849.93	8.31	3.73	8.27	0.08	0.08	1.20



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
7,875.00	0.62	292.95	7,874.93	8.40	3.47	8.36	0.32	0.04	29.20
7,900.00	0.56	289.13	7,899.92	8.49	3.23	8.46	0.29	-0.24	-15.28
7,925.00	0.59	288.97	7,924.92	8.57	3.00	8.54	0.12	0.12	-0.64
7,950.00	0.68	296.09	7,949.92	8.68	2.74	8.65	0.48	0.36	28.48
7,975.00	0.55	298.17	7,974.92	8.80	2.50	8.77	0.53	-0.52	8.32
8,000.00	0.60	302.18	7,999.92	8.93	2.29	8.90	0.26	0.20	16.04
8,025.00	0.57	300.13	8,024.92	9.06	2.07	9.04	0.15	-0.12	-8.20
8,050.00	0.66	284.32	8,049.92	9.16	1.82	9.14	0.76	0.36	-63.24
8,075.00	0.57	299.88	8,074.92	9.26	1.57	9.24	0.76	-0.36	62.24
8,100.00	0.63	297.78	8,099.91	9.38	1.34	9.37	0.26	0.24	-8.40
8,125.00	0.59	301.33	8,124.91	9.51	1.11	9.50	0.22	-0.16	14.20
8,150.00	0.54	310.99	8,149.91	9.66	0.91	9.65	0.43	-0.20	38.64
8,175.00	0.55	317.93	8,174.91	9.82	0.74	9.82	0.27	0.04	27.76
8,200.00	0.59	313.03	8,199.91	10.00	0.57	9.99	0.25	0.16	-19.60
8,225.00	0.59	321.46	8,224.91	10.19	0.39	10.18	0.35	0.00	33.72
8,250.00	0.63	320.06	8,249.91	10.40	0.23	10.39	0.17	0.16	-5.60
8,275.00	0.56	320.05	8,274.90	10.59	0.06	10.59	0.28	-0.28	-0.04
8,300.00	0.63	319.98	8,299.90	10.79	-0.11	10.79	0.28	0.28	-0.28
8,325.00	0.67	319.47	8,324.90	11.01	-0.29	11.01	0.16	0.16	-2.04
8,350.00	0.72	320.00	8,349.90	11.24	-0.49	11.25	0.20	0.20	2.12
8,375.00	0.67	316.49	8,374.90	11.47	-0.69	11.47	0.26	-0.20	-14.04
8,400.00	0.71	315.77	8,399.90	11.68	-0.90	11.69	0.16	0.16	-2.88
8,425.00	0.73	312.06	8,424.89	11.90	-1.12	11.91	0.20	0.08	-14.84
8,450.00	0.72	307.33	8,449.89	12.10	-1.37	12.12	0.24	-0.04	-18.92
8,475.00	0.79	302.71	8,474.89	12.29	-1.64	12.31	0.37	0.28	-18.48
8,500.00	0.78	296.43	8,499.89	12.46	-1.93	12.48	0.35	-0.04	-25.12
8,525.00	0.85	300.19	8,524.89	12.63	-2.25	12.65	0.35	0.28	15.04
8,550.00	0.87	297.38	8,549.88	12.81	-2.58	12.84	0.19	0.08	-11.24
8,575.00	0.87	298.92	8,574.88	12.99	-2.91	13.02	0.09	0.00	6.16
8,600.00	0.84	301.54	8,599.88	13.18	-3.23	13.21	0.20	-0.12	10.48
8,625.00	0.93	294.09	8,624.87	13.36	-3.57	13.40	0.58	0.36	-29.80
8,650.00	0.94	295.17	8,649.87	13.53	-3.94	13.57	0.08	0.04	4.32
8,675.00	0.97	296.99	8,674.87	13.71	-4.32	13.76	0.17	0.12	7.28
8,700.00	1.02	295.00	8,699.86	13.90	-4.71	13.95	0.24	0.20	-7.96
8,725.00	1.00	295.99	8,724.86	14.09	-5.11	14.14	0.11	-0.08	3.96
8,750.00	1.05	291.25	8,749.86	14.27	-5.52	14.33	0.39	0.20	-18.96
8,775.00	0.97	294.35	8,774.85	14.44	-5.92	14.50	0.39	-0.32	12.40
8,800.00	0.98	292.32	8,799.85	14.61	-6.31	14.68	0.14	0.04	-8.12
8,825.00	1.04	294.79	8,824.84	14.78	-6.72	14.86	0.30	0.24	9.88
8,850.00	1.17	296.71	8,849.84	14.99	-7.15	15.07	0.54	0.52	7.68
8,875.00	1.09	297.15	8,874.83	15.22	-7.59	15.30	0.32	-0.32	1.76
8,900.00	1.14	293.52	8,899.83	15.42	-8.03	15.51	0.35	0.20	-14.52
8,925.00	1.25	291.93	8,924.82	15.63	-8.51	15.72	0.46	0.44	-6.36



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
8,950.00	1.19	294.98	8,949.82	15.84	-9.00	15.93	0.35	-0.24	12.20
8,975.00	1.26	286.28	8,974.81	16.02	-9.50	16.13	0.79	0.28	-34.80
9,000.00	1.29	279.59	8,999.81	16.15	-10.04	16.26	0.61	0.12	-26.76
9,025.00	1.51	278.26	9,024.80	16.24	-10.64	16.36	0.89	0.88	-5.32
9,050.00	1.49	274.22	9,049.79	16.31	-11.29	16.44	0.43	-0.08	-16.16
9,075.00	1.57	269.22	9,074.78	16.33	-11.96	16.46	0.62	0.32	-20.00
9,100.00	1.70	262.45	9,099.77	16.28	-12.67	16.42	0.93	0.52	-27.08
9,125.00	1.64	267.46	9,124.76	16.21	-13.39	16.36	0.63	-0.24	20.04
9,150.00	1.72	266.14	9,149.75	16.17	-14.13	16.33	0.36	0.32	-5.28
9,175.00	1.78	267.27	9,174.74	16.13	-14.89	16.29	0.28	0.24	4.52
9,200.00	1.77	266.06	9,199.73	16.08	-15.66	16.26	0.16	-0.04	-4.84
9,225.00	1.65	267.05	9,224.72	16.04	-16.41	16.22	0.49	-0.48	3.96
9,250.00	1.91	267.70	9,249.70	16.00	-17.18	16.19	1.04	1.04	2.60
9,275.00	2.10	273.85	9,274.69	16.02	-18.06	16.22	1.15	0.76	24.60
9,300.00	2.01	270.75	9,299.67	16.05	-18.95	16.26	0.57	-0.36	-12.40
9,325.00	2.09	271.92	9,324.66	16.08	-19.84	16.29	0.36	0.32	4.68
9,350.00	2.14	272.77	9,349.64	16.11	-20.77	16.34	0.24	0.20	3.40
9,375.00	2.15	273.26	9,374.62	16.16	-21.70	16.40	0.08	0.04	1.96
9,400.00	2.37	276.27	9,399.60	16.25	-22.68	16.49	1.00	0.88	12.04
9,425.00	2.62	277.12	9,424.58	16.37	-23.76	16.63	1.01	1.00	3.40
9,450.00	2.84	277.10	9,449.55	16.52	-24.95	16.79	0.88	0.88	-0.08
9,475.00	2.85	277.42	9,474.52	16.68	-26.18	16.96	0.08	0.04	1.28
9,500.00	2.96	278.98	9,499.49	16.86	-27.43	17.16	0.54	0.44	6.24
9,525.00	3.16	278.27	9,524.45	17.06	-28.75	17.37	0.81	0.80	-2.84
9,550.00	3.40	279.06	9,549.41	17.27	-30.16	17.60	0.98	0.96	3.16
9,575.00	3.55	280.51	9,574.36	17.53	-31.66	17.88	0.70	0.60	5.80
9,600.00	3.65	280.79	9,599.32	17.82	-33.20	18.19	0.41	0.40	1.12
9,625.00	3.71	280.84	9,624.26	18.12	-34.78	18.50	0.24	0.24	0.20
9,650.00	3.87	280.71	9,649.21	18.43	-36.40	18.83	0.64	0.64	-0.52
9,675.00	3.84	282.15	9,674.15	18.76	-38.05	19.18	0.41	-0.12	5.76
9,700.00	3.91	280.57	9,699.10	19.10	-39.70	19.53	0.51	0.28	-6.32
9,725.00	3.88	281.65	9,724.04	19.42	-41.37	19.88	0.32	-0.12	4.32
9,750.00	3.90	280.15	9,748.98	19.75	-43.03	20.22	0.41	0.08	-6.00
9,775.00	3.89	280.97	9,773.92	20.06	-44.70	20.55	0.23	-0.04	3.28
9,800.00	4.05	279.88	9,798.86	20.37	-46.41	20.88	0.71	0.64	-4.36
9,825.00	4.02	280.54	9,823.80	20.68	-48.14	21.21	0.22	-0.12	2.64
9,850.00	4.10	280.11	9,848.74	21.00	-49.88	21.55	0.34	0.32	-1.72
9,875.00	4.29	280.27	9,873.67	21.32	-51.68	21.89	0.76	0.76	0.64
9,900.00	4.34	280.07	9,898.60	21.65	-53.53	22.24	0.21	0.20	-0.80
9,925.00	4.47	280.39	9,923.53	21.99	-55.42	22.60	0.53	0.52	1.28
9,950.00	4.58	280.76	9,948.45	22.36	-57.36	22.99	0.46	0.44	1.48
9,975.00	4.54	279.73	9,973.37	22.71	-59.31	23.36	0.36	-0.16	-4.12
10,000.00	4.78	279.03	9,998.29	23.04	-61.32	23.71	0.99	0.96	-2.80
10,025.00	4.87	279.01	10,023.20	23.37	-63.39	24.07	0.36	0.36	-0.08



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
10,050.00	4.82	278.64	10,048.11	23.69	-65.48	24.41	0.24	-0.20	-1.48
10,075.00	4.83	278.52	10,073.02	24.01	-67.56	24.75	0.06	0.04	-0.48
10,100.00	4.90	278.04	10,097.93	24.31	-69.66	25.08	0.32	0.28	-1.92
10,125.00	4.86	278.05	10,122.84	24.61	-71.76	25.40	0.16	-0.16	0.04
10,150.00	4.96	276.79	10,147.75	24.89	-73.89	25.70	0.59	0.40	-5.04
10,175.00	4.91	276.87	10,172.65	25.14	-76.02	25.98	0.20	-0.20	0.32
10,200.00	5.01	276.81	10,197.56	25.40	-78.17	26.26	0.40	0.40	-0.24
10,225.00	5.06	275.97	10,222.46	25.64	-80.35	26.53	0.36	0.20	-3.36
10,250.00	5.00	275.43	10,247.37	25.86	-82.53	26.77	0.31	-0.24	-2.16
10,275.00	4.98	276.23	10,272.27	26.08	-84.69	27.01	0.29	-0.08	3.20
10,300.00	4.74	275.71	10,297.18	26.30	-86.80	27.26	0.98	-0.96	-2.08
10,325.00	4.86	274.72	10,322.10	26.49	-88.88	27.47	0.58	0.48	-3.96
10,350.00	4.82	274.26	10,347.01	26.66	-90.99	27.66	0.22	-0.16	-1.84
10,375.00	4.81	273.75	10,371.92	26.81	-93.08	27.83	0.18	-0.04	-2.04
10,400.00	4.94	273.23	10,396.83	26.93	-95.20	27.98	0.55	0.52	-2.08
10,425.00	4.77	273.86	10,421.74	27.07	-97.31	28.13	0.71	-0.68	2.52
10,450.00	4.57	273.46	10,446.66	27.20	-99.34	28.29	0.81	-0.80	-1.60
10,475.00	4.60	273.54	10,471.58	27.32	-101.34	28.43	0.12	0.12	0.32
10,500.00	4.39	272.29	10,496.50	27.42	-103.29	28.55	0.93	-0.84	-5.00
10,525.00	4.24	272.78	10,521.43	27.50	-105.17	28.66	0.62	-0.60	1.96
10,550.00	4.04	271.76	10,546.36	27.57	-106.98	28.75	0.85	-0.80	-4.08
10,575.00	3.76	271.96	10,571.30	27.63	-108.68	28.82	1.12	-1.12	0.80
10,600.00	3.56	272.06	10,596.25	27.68	-110.27	28.89	0.80	-0.80	0.40
10,625.00	3.52	272.67	10,621.21	27.75	-111.81	28.97	0.22	-0.16	2.44
10,650.00	3.39	272.45	10,646.16	27.81	-113.32	29.06	0.52	-0.52	-0.88
10,675.00	2.98	275.37	10,671.12	27.91	-114.70	29.17	1.76	-1.64	11.68
10,700.00	2.71	276.33	10,696.09	28.03	-115.94	29.31	1.10	-1.08	3.84
10,725.00	2.79	278.64	10,721.06	28.19	-117.13	29.48	0.55	0.32	9.24
10,750.00	2.52	278.66	10,746.03	28.36	-118.27	29.66	1.08	-1.08	0.08
10,775.00	2.28	279.01	10,771.01	28.52	-119.31	29.83	0.96	-0.96	1.40
10,800.00	2.15	279.00	10,795.99	28.68	-120.26	30.00	0.52	-0.52	-0.04
10,825.00	1.99	280.52	10,820.98	28.83	-121.15	30.16	0.68	-0.64	6.08
10,850.00	1.72	282.88	10,845.96	28.99	-121.94	30.33	1.12	-1.08	9.44
10,875.00	1.32	281.67	10,870.96	29.13	-122.59	30.48	1.61	-1.60	-4.84
10,900.00	1.40	282.41	10,895.95	29.26	-123.17	30.61	0.33	0.32	2.96
10,925.00	1.42	281.96	10,920.94	29.39	-123.77	30.75	0.09	0.08	-1.80
10,950.00	1.41	279.18	10,945.93	29.50	-124.38	30.87	0.28	-0.04	-11.12
10,975.00	1.38	275.89	10,970.93	29.58	-124.98	30.95	0.34	-0.12	-13.16
11,000.00	1.33	274.11	10,995.92	29.63	-125.57	31.01	0.26	-0.20	-7.12
11,025.00	1.27	271.30	11,020.91	29.66	-126.14	31.04	0.35	-0.24	-11.24
11,050.00	1.21	269.48	11,045.91	29.66	-126.68	31.05	0.29	-0.24	-7.28
11,075.00	1.22	266.72	11,070.90	29.64	-127.21	31.04	0.24	0.04	-11.04
11,100.00	1.09	263.71	11,095.90	29.60	-127.71	31.01	0.57	-0.52	-12.04



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
11,125.00	1.09	261.07	11,120.89	29.54	-128.18	30.95	0.20	0.00	-10.56
11,150.00	1.02	261.19	11,145.89	29.47	-128.64	30.88	0.28	-0.28	0.48
11,175.00	1.08	261.83	11,170.88	29.40	-129.09	30.82	0.24	0.24	2.56
11,200.00	1.17	257.15	11,195.88	29.31	-129.57	30.73	0.51	0.36	-18.72
11,225.00	1.27	253.78	11,220.87	29.18	-130.09	30.61	0.49	0.40	-13.48
11,250.00	1.30	256.67	11,245.87	29.03	-130.63	30.47	0.29	0.12	11.56
11,275.00	1.32	256.33	11,270.86	28.90	-131.18	30.34	0.09	0.08	-1.36
11,300.00	1.42	252.70	11,295.85	28.74	-131.76	30.19	0.53	0.40	-14.52
11,325.00	1.54	253.72	11,320.84	28.56	-132.38	30.01	0.49	0.48	4.08
11,350.00	1.57	253.55	11,345.84	28.36	-133.03	29.82	0.12	0.12	-0.68
11,375.00	1.73	254.22	11,370.83	28.16	-133.72	29.63	0.64	0.64	2.68
11,400.00	1.75	250.46	11,395.81	27.93	-134.44	29.41	0.46	0.08	-15.04
11,425.00	1.83	254.18	11,420.80	27.70	-135.19	29.18	0.56	0.32	14.88
11,450.00	1.95	258.04	11,445.79	27.50	-135.99	28.99	0.70	0.48	15.44
11,475.00	2.04	260.09	11,470.77	27.34	-136.84	28.84	0.46	0.36	8.20
11,500.00	2.16	261.33	11,495.76	27.19	-137.75	28.70	0.51	0.48	4.96
11,525.00	2.24	259.87	11,520.74	27.03	-138.69	28.55	0.39	0.32	-5.84
11,550.00	2.31	261.74	11,545.72	26.87	-139.67	28.41	0.41	0.28	7.48
11,575.00	2.46	262.12	11,570.70	26.73	-140.70	28.27	0.60	0.60	1.52
11,600.00	2.49	262.11	11,595.67	26.58	-141.77	28.14	0.12	0.12	-0.04
11,625.00	2.55	261.35	11,620.65	26.42	-142.86	27.99	0.27	0.24	-3.04
11,650.00	2.74	260.54	11,645.62	26.24	-144.00	27.82	0.77	0.76	-3.24
11,675.00	2.65	263.01	11,670.59	26.07	-145.16	27.66	0.59	-0.36	9.88
11,700.00	2.77	264.70	11,695.57	25.94	-146.34	27.55	0.58	0.48	6.76
11,725.00	2.78	266.03	11,720.54	25.85	-147.54	27.47	0.26	0.04	5.32
11,750.00	2.91	266.02	11,745.51	25.76	-148.78	27.39	0.52	0.52	-0.04
11,775.00	2.84	268.39	11,770.47	25.70	-150.03	27.35	0.55	-0.28	9.48
11,800.00	2.73	271.24	11,795.45	25.69	-151.25	27.36	0.71	-0.44	11.40
11,825.00	2.80	273.33	11,820.42	25.74	-152.45	27.42	0.49	0.28	8.36
11,850.00	2.98	271.99	11,845.38	25.80	-153.71	27.49	0.77	0.72	-5.36
11,875.00	2.48	277.17	11,870.36	25.89	-154.90	27.59	2.23	-2.00	20.72
11,900.00	2.69	278.51	11,895.33	26.05	-156.01	27.76	0.87	0.84	5.36
11,922.00	2.43	281.30	11,917.31	26.21	-156.98	27.94	1.31	-1.18	12.68
Tie In									
12,038.00	1.85	266.58	12,033.23	26.58	-161.26	28.35	0.68	-0.50	-12.69
First Phoenix MWD Survey									
12,070.00	2.38	304.53	12,065.21	26.93	-162.33	28.71	4.57	1.66	118.59
12,101.00	5.40	335.63	12,096.14	28.62	-163.46	30.42	11.55	9.74	100.32
12,132.00	8.40	338.41	12,126.91	32.06	-164.89	33.87	9.73	9.68	8.97
12,163.00	13.39	354.73	12,157.35	37.74	-166.06	39.57	18.77	16.10	52.65
12,195.00	18.04	356.74	12,188.14	46.38	-166.68	48.21	14.63	14.53	6.28
12,226.00	22.48	356.89	12,217.22	57.10	-167.27	58.94	14.32	14.32	0.48
12,258.00	27.02	357.35	12,246.27	70.48	-167.94	72.32	14.20	14.19	1.44
12,289.00	31.09	358.04	12,273.36	85.52	-168.54	87.36	13.17	13.13	2.23



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
12,321.00	34.33	358.62	12,300.28	102.80	-169.04	104.65	10.17	10.13	1.81
12,352.00	38.82	359.73	12,325.50	120.83	-169.30	122.68	8.30	8.03	3.58
12,383.00	38.82	1.62	12,349.98	139.83	-169.07	141.68	7.46	6.45	6.10
12,415.00	41.04	2.47	12,374.52	160.36	-168.33	162.20	7.14	6.94	2.66
12,446.00	43.16	3.10	12,397.52	181.12	-167.32	182.94	6.97	6.84	2.03
12,478.00	44.82	2.70	12,420.54	203.31	-166.19	205.13	5.26	5.19	-1.25
12,509.00	46.48	2.83	12,442.21	225.45	-165.12	227.25	5.36	5.35	0.42
12,541.00	48.08	5.18	12,463.92	248.90	-163.48	250.68	7.36	5.00	7.34
12,573.00	50.39	5.96	12,484.82	273.02	-161.12	274.78	7.45	7.22	2.44
12,604.00	51.83	5.96	12,504.28	297.02	-158.62	298.74	4.65	4.65	0.00
12,636.00	53.95	6.60	12,523.59	322.38	-155.82	324.08	6.81	6.63	2.00
12,667.00	55.13	7.65	12,541.57	347.44	-152.69	349.09	4.70	3.81	3.39
12,699.00	56.39	8.35	12,559.57	373.63	-149.01	375.25	4.33	3.94	2.19
12,730.00	59.55	8.66	12,576.01	399.62	-145.12	401.19	10.23	10.19	1.00
12,762.00	63.10	8.43	12,591.37	427.38	-140.95	428.90	11.11	11.09	-0.72
12,793.00	64.39	7.92	12,605.08	454.90	-137.00	456.38	4.42	4.16	-1.65
12,825.00	68.23	7.99	12,617.93	483.91	-132.94	485.35	12.00	12.00	0.22
12,888.00	78.40	6.56	12,636.00	543.70	-125.33	545.04	16.29	16.14	-2.27
12,983.00	91.75	3.27	12,644.14	637.78	-117.27	639.03	14.47	14.05	-3.46
13,075.00	88.90	3.48	12,643.62	729.60	-111.85	730.79	3.11	-3.10	0.23
13,170.00	87.29	4.39	12,646.77	824.32	-105.34	825.43	1.95	-1.69	0.96
13,264.00	88.19	3.67	12,650.48	918.02	-98.74	919.05	1.23	0.96	-0.77
13,359.00	90.93	3.59	12,651.21	1,012.82	-92.72	1,013.77	2.89	2.88	-0.08
13,453.00	92.01	3.96	12,648.80	1,106.58	-86.53	1,107.46	1.21	1.15	0.39
13,548.00	93.75	2.39	12,644.03	1,201.31	-81.28	1,202.13	2.47	1.83	-1.65
13,642.00	92.87	2.65	12,638.60	1,295.06	-77.15	1,295.83	0.98	-0.94	0.28
13,736.00	89.96	1.88	12,636.28	1,388.95	-73.44	1,389.67	3.20	-3.10	-0.82
13,830.00	88.65	1.08	12,637.42	1,482.90	-71.03	1,483.60	1.64	-1.39	-0.87
13,925.00	88.34	1.30	12,639.91	1,577.85	-69.07	1,578.52	0.41	-0.33	0.25
14,019.00	87.88	1.32	12,643.01	1,671.78	-66.93	1,672.41	0.49	-0.49	0.02
14,113.00	89.59	0.14	12,645.09	1,765.74	-65.73	1,766.36	2.21	1.82	-1.26
14,206.00	88.76	358.90	12,646.43	1,858.72	-66.51	1,859.34	1.60	-0.89	-1.33
14,301.00	89.51	1.09	12,647.86	1,953.71	-66.52	1,954.32	2.44	0.79	2.31
14,395.00	87.02	0.84	12,650.71	2,047.64	-64.93	2,048.23	2.66	-2.65	-0.27
14,490.00	90.08	0.79	12,653.11	2,142.59	-63.58	2,143.16	3.22	3.22	-0.05
14,584.00	89.85	0.41	12,653.17	2,236.59	-62.60	2,237.14	0.47	-0.24	-0.40
14,677.00	88.08	359.86	12,654.85	2,329.57	-62.38	2,330.11	1.99	-1.90	-0.59
14,772.00	90.45	359.74	12,656.07	2,424.55	-62.71	2,425.09	2.50	2.49	-0.13
14,868.00	89.88	358.37	12,655.79	2,520.54	-64.29	2,521.09	1.55	-0.59	-1.43
14,973.00	90.50	0.53	12,655.44	2,625.52	-65.30	2,626.08	2.14	0.59	2.06
15,068.00	91.98	1.34	12,653.39	2,720.48	-63.75	2,721.02	1.78	1.56	0.85
15,163.00	92.13	0.95	12,649.98	2,815.40	-61.85	2,815.91	0.44	0.16	-0.41
15,257.00	91.24	1.87	12,647.22	2,909.33	-59.54	2,909.81	1.36	-0.95	0.98

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
15,350.00	88.31	0.39	12,647.58	3,002.30	-57.71	3,002.76	3.53	-3.15	-1.59
15,445.00	89.01	359.99	12,649.80	3,097.27	-57.39	3,097.72	0.85	0.74	-0.42
15,539.00	86.51	357.85	12,653.48	3,191.17	-59.16	3,191.63	3.50	-2.66	-2.28
15,634.00	85.20	357.63	12,660.34	3,285.85	-62.90	3,286.34	1.40	-1.38	-0.23
15,730.00	89.39	358.75	12,664.87	3,381.67	-65.92	3,382.19	4.52	4.36	1.17
15,824.00	86.65	357.97	12,668.12	3,475.57	-68.61	3,476.11	3.03	-2.91	-0.83
15,919.00	91.84	1.84	12,669.37	3,570.51	-68.77	3,571.05	6.81	5.46	4.07
16,013.00	89.41	359.43	12,668.35	3,664.48	-67.73	3,665.01	3.64	-2.59	-2.56
16,107.00	88.87	356.48	12,669.76	3,758.40	-71.08	3,758.96	3.19	-0.57	-3.14
16,204.00	91.67	355.82	12,669.30	3,855.17	-77.59	3,855.79	2.97	2.89	-0.68
16,299.00	93.18	355.64	12,665.28	3,949.82	-84.66	3,950.51	1.60	1.59	-0.19
16,393.00	92.09	355.65	12,660.96	4,043.45	-91.79	4,044.21	1.16	-1.16	0.01
16,488.00	91.98	357.19	12,657.59	4,138.20	-97.72	4,139.02	1.62	-0.12	1.62
16,583.00	92.69	358.49	12,653.72	4,233.05	-101.30	4,233.91	1.56	0.75	1.37
16,678.00	93.66	359.38	12,648.45	4,327.89	-103.06	4,328.76	1.38	1.02	0.94
16,773.00	93.07	0.20	12,642.88	4,422.72	-103.41	4,423.59	1.06	-0.62	0.86
16,867.00	92.55	0.50	12,638.27	4,516.61	-102.83	4,517.46	0.64	-0.55	0.32
16,962.00	91.76	359.63	12,634.70	4,611.54	-102.73	4,612.39	1.24	-0.83	-0.92
17,056.00	91.33	357.22	12,632.16	4,705.46	-105.31	4,706.33	2.60	-0.46	-2.56
17,152.00	92.52	357.74	12,628.94	4,801.31	-109.53	4,802.23	1.35	1.24	0.54
17,247.00	92.47	359.54	12,624.80	4,896.19	-111.78	4,897.12	1.89	-0.05	1.89
17,341.00	92.77	0.90	12,620.51	4,990.09	-111.42	4,991.01	1.48	0.32	1.45
17,436.00	92.06	0.56	12,616.50	5,085.00	-110.21	5,085.90	0.83	-0.75	-0.36
17,530.00	87.60	1.40	12,616.78	5,178.96	-108.60	5,179.84	4.83	-4.74	0.89
17,625.00	89.21	2.47	12,619.43	5,273.86	-105.40	5,274.70	2.03	1.69	1.13
17,720.00	86.77	0.36	12,622.76	5,368.76	-103.05	5,369.57	3.39	-2.57	-2.22
17,815.00	91.26	357.83	12,624.39	5,463.70	-104.55	5,464.52	5.42	4.73	-2.66
17,910.00	96.66	358.29	12,617.83	5,558.39	-107.76	5,559.24	5.70	5.68	0.48
18,004.00	97.89	356.51	12,605.93	5,651.53	-111.99	5,652.42	2.29	1.31	-1.89
18,098.00	97.97	357.98	12,592.96	5,744.52	-116.46	5,745.45	1.55	0.09	1.56
18,193.00	96.47	355.11	12,581.02	5,838.58	-122.14	5,839.57	3.39	-1.58	-3.02
18,288.00	95.51	359.05	12,571.10	5,932.92	-126.95	5,933.96	4.25	-1.01	4.15
18,383.00	95.99	4.76	12,561.57	6,027.35	-123.82	6,028.35	6.00	0.51	6.01
18,477.00	95.02	4.54	12,552.56	6,120.61	-116.23	6,121.52	1.06	-1.03	-0.23
18,572.00	95.81	3.66	12,543.59	6,214.94	-109.47	6,215.77	1.24	0.83	-0.93
18,666.00	91.84	2.13	12,537.32	6,308.59	-104.73	6,309.36	4.52	-4.22	-1.63
18,760.00	92.98	2.13	12,533.37	6,402.44	-101.24	6,403.17	1.21	1.21	0.00
18,854.00	90.61	1.66	12,530.42	6,496.34	-98.14	6,497.02	2.57	-2.52	-0.50
18,949.00	93.81	1.05	12,526.76	6,591.23	-95.89	6,591.88	3.43	3.37	-0.64
19,044.00	94.57	0.46	12,519.82	6,685.96	-94.64	6,686.60	1.01	0.80	-0.62
19,139.00	95.72	0.50	12,511.30	6,780.58	-93.85	6,781.20	1.21	1.21	0.04
19,233.00	95.75	0.75	12,501.91	6,874.10	-92.83	6,874.70	0.27	0.03	0.27
19,328.00	96.06	0.92	12,492.13	6,968.59	-91.45	6,969.17	0.37	0.33	0.18



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Com	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	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)
19,423.00	95.92	359.27	12,482.22	7,063.06	-91.30	7,063.64	1.73	-0.15	-1.74
19,517.00	95.96	0.80	12,472.49	7,156.56	-91.24	7,157.13	1.62	0.04	1.63
19,611.00	94.49	359.07	12,463.93	7,250.16	-91.35	7,250.72	2.41	-1.56	-1.84
19,706.00	92.66	358.87	12,458.01	7,344.95	-93.05	7,345.53	1.94	-1.93	-0.21
19,801.00	92.67	358.87	12,453.59	7,439.83	-94.92	7,440.43	0.01	0.01	0.00
19,896.00	93.49	358.53	12,448.49	7,534.67	-97.08	7,535.28	0.93	0.86	-0.36
19,990.00	85.38	357.83	12,449.41	7,628.54	-100.06	7,629.18	8.66	-8.63	-0.74
20,084.00	90.56	357.60	12,452.74	7,722.37	-103.80	7,723.05	5.52	5.51	-0.24
20,178.00	92.16	357.38	12,450.51	7,816.25	-107.92	7,816.97	1.72	1.70	-0.23
20,273.00	94.20	358.87	12,445.24	7,911.05	-111.02	7,911.79	2.66	2.15	1.57
20,368.00	95.11	359.42	12,437.53	8,005.72	-112.44	8,006.48	1.12	0.96	0.58
20,463.00	94.90	0.27	12,429.24	8,100.36	-112.69	8,101.11	0.92	-0.22	0.89
20,557.00	94.29	0.31	12,421.71	8,194.06	-112.22	8,194.80	0.65	-0.65	0.04
20,651.00	94.09	0.31	12,414.84	8,287.80	-111.71	8,288.53	0.21	-0.21	0.00
20,745.00	90.72	359.70	12,410.90	8,381.71	-111.70	8,382.43	3.64	-3.59	-0.65
20,839.00	89.62	359.79	12,410.62	8,475.70	-112.12	8,476.42	1.17	-1.17	0.10
20,934.00	91.10	0.32	12,410.02	8,570.70	-112.03	8,571.41	1.65	1.56	0.56
21,028.00	90.01	359.18	12,409.11	8,664.69	-112.44	8,665.40	1.68	-1.16	-1.21
21,122.00	87.57	359.56	12,411.10	8,758.66	-113.47	8,759.38	2.63	-2.60	0.40
21,217.00	86.85	359.09	12,415.72	8,853.53	-114.60	8,854.26	0.90	-0.76	-0.49
Final Phoenix MWD Survey									
21,317.00	88.80	359.32	12,419.52	8,953.45	-115.98	8,954.18	1.96	1.95	0.23
First Gordon MWD Survey									
21,411.00	88.88	359.31	12,421.42	9,047.42	-117.10	9,048.17	0.09	0.09	-0.01
21,505.00	90.06	359.55	12,422.29	9,141.41	-118.04	9,142.16	1.28	1.26	0.26
21,600.00	90.67	359.79	12,421.68	9,236.41	-118.58	9,237.16	0.69	0.64	0.25
21,695.00	90.06	359.30	12,421.08	9,331.40	-119.34	9,332.15	0.82	-0.64	-0.52
21,789.00	89.33	359.25	12,421.58	9,425.40	-120.53	9,426.15	0.78	-0.78	-0.05
21,884.00	89.52	359.13	12,422.53	9,520.38	-121.87	9,521.15	0.24	0.20	-0.13
21,979.00	89.38	358.19	12,423.45	9,615.35	-124.09	9,616.13	1.00	-0.15	-0.99
22,073.00	89.08	357.91	12,424.71	9,709.29	-127.29	9,710.10	0.44	-0.32	-0.30
22,168.00	87.37	356.61	12,427.65	9,804.13	-131.83	9,804.98	2.26	-1.80	-1.37
22,262.00	86.89	355.93	12,432.36	9,897.81	-137.94	9,898.73	0.88	-0.51	-0.72
22,270.00	86.88	355.86	12,432.79	9,905.78	-138.51	9,906.70	0.87	-0.12	-0.86
LTP: 22270' MD / 9706' TVD									
22,313.00	86.83	355.49	12,435.15	9,948.59	-141.75	9,949.55	0.87	-0.12	-0.86
Final Gordon MWD Survey									
22,375.00	86.83	355.49	12,438.58	10,010.30	-146.61	10,011.31	0.00	0.00	0.00
Projection to TD									



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 607H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3448.60usft (McVay 8)
Site:	Baseball Cap Federal Corn	MD Reference:	RKB @ 3448.60usft (McVay 8)
Well:	607H	North Reference:	Grid
Wellbore:	OH / 64771	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (McVay 8)	Database:	USA Compass

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,922.00	11,917.31	26.21	-156.98	Tie In
12,038.00	12,033.23	26.58	-161.26	First Phoenix MWD Survey
21,217.00	12,415.72	8,853.53	-114.60	Final Phoenix MWD Survey
21,317.00	12,419.52	8,953.45	-115.98	First Gordon MWD Survey
22,270.00	12,432.79	9,905.78	-138.51	LTP: 22270' MD / 9706' TVD
22,313.00	12,435.15	9,948.59	-141.75	Final Gordon MWD Survey
22,375.00	12,438.58	10,010.30	-146.61	Projection to TD