



NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 09 2017

RECEIVED

COG Operating, LLC

Eddy County, NM (NAD 27)

Sec 25, T25-S, R29-E

Cabo Wabo 25 Federal Com #3H

30-015-42507

Wellbore #1

Design: Wellbore #1

DDC Survey Report

29 December, 2014





Survey Report



Company: COG Operating, LLC
Project: Eddy County, NM (NAD 27)
Site: Sec 25, T25-S, R29-E
Well: Cabo Wabo 25 Federal Com #3H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Cabo Wabo 25 Federal Com #3H
TVD Reference: WELL @ 3086.3usft (Original Well Elev)
MD Reference: WELL @ 3086.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site Position: Northing: 398,474.10 usft Latitude: 32° 5' 41.662 N
From: Map Easting: 622,259.90 usft Longitude: 103° 56' 18.722 W
Position Uncertainty: 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: 0.21 °

Well Position +N/-S 0.0 usft Northing: 398,492.70 usft Latitude: 32° 5' 41.796 N
+E/-W 0.0 usft Easting: 623,619.80 usft Longitude: 103° 56' 2.913 W
Position Uncertainty 0.0 usft Wellhead Elevation: usft Ground Level: 3,068.3 usft

IGRF2010 12/7/2014 7.32 59.92 48,154

Audit Notes:
Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.0

0.0 0.0 0.0 358.66

25.0 7,300.0 GYRO (Wellbore #1) Good_gyro Good Gyro
7,336.0 17,420.0 MWD (Wellbore #1) MWD default MWD - Standard

0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
25.0	0.18	245.96	25.0	0.0	0.0	0.0	0.72	0.72	0.00
50.0	0.03	246.50	50.0	0.0	-0.1	0.0	0.60	-0.60	2.16
75.0	0.03	246.00	75.0	0.0	-0.1	0.0	0.00	0.00	-2.00
100.0	0.12	255.84	100.0	0.0	-0.1	0.0	0.36	0.36	39.36
125.0	0.21	215.99	125.0	-0.1	-0.2	-0.1	0.56	0.36	-159.40
150.0	0.09	149.48	150.0	-0.1	-0.2	-0.1	0.77	-0.48	-266.04
175.0	0.03	306.79	175.0	-0.2	-0.2	-0.2	0.47	-0.24	629.24
200.0	0.09	300.08	200.0	-0.1	-0.2	-0.1	0.24	0.24	-26.84
225.0	0.18	224.06	225.0	-0.2	-0.3	-0.2	0.72	0.36	-304.08



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250.0	0.29	186.95	250.0	-0.3	-0.3	-0.2	0.73	0.44	-148.44
275.0	0.43	149.27	275.0	-0.4	-0.2	-0.4	1.07	0.56	-150.72
300.0	0.47	127.06	300.0	-0.5	-0.1	-0.5	0.71	0.16	-88.84
325.0	0.54	138.23	325.0	-0.7	0.0	-0.7	0.48	0.28	44.68
350.0	0.46	113.08	350.0	-0.8	0.2	-0.8	0.93	-0.32	-100.60
375.0	0.43	109.90	375.0	-0.9	0.4	-0.9	0.16	-0.12	-12.72
400.0	0.63	114.48	400.0	-1.0	0.6	-1.0	0.82	0.80	18.32
425.0	0.74	118.19	425.0	-1.1	0.9	-1.1	0.47	0.44	14.84
450.0	0.84	116.74	450.0	-1.3	1.2	-1.3	0.41	0.40	-5.80
475.0	0.94	114.83	475.0	-1.4	1.5	-1.5	0.42	0.40	-7.64
500.0	0.95	118.97	500.0	-1.6	1.9	-1.7	0.28	0.04	16.56
525.0	0.70	120.76	525.0	-1.8	2.2	-1.9	1.01	-1.00	7.16
550.0	0.79	123.05	550.0	-2.0	2.5	-2.0	0.38	0.36	9.16
575.0	0.89	135.64	575.0	-2.2	2.8	-2.3	0.84	0.40	50.36
600.0	0.89	140.34	600.0	-2.5	3.0	-2.6	0.29	0.00	18.80
625.0	0.74	145.74	625.0	-2.8	3.2	-2.9	0.67	-0.60	21.60
650.0	0.59	156.80	650.0	-3.0	3.4	-3.1	0.79	-0.60	44.24
675.0	0.60	166.85	675.0	-3.3	3.5	-3.4	0.42	0.04	40.20
700.0	0.70	197.39	700.0	-3.6	3.4	-3.6	1.42	0.40	122.16
725.0	1.12	213.68	725.0	-3.9	3.3	-4.0	1.96	1.68	65.16
750.0	1.98	239.37	750.0	-4.3	2.8	-4.4	4.34	3.44	102.76
775.0	2.10	259.24	774.9	-4.6	1.9	-4.7	2.85	0.48	79.48
800.0	1.38	267.52	799.9	-4.7	1.2	-4.8	3.04	-2.88	33.12
825.0	1.00	274.00	824.9	-4.7	0.7	-4.7	1.61	-1.52	25.92
850.0	1.03	284.92	849.9	-4.7	0.2	-4.7	0.78	0.12	43.68
875.0	0.83	279.78	874.9	-4.6	-0.2	-4.6	0.87	-0.80	-20.56
900.0	0.69	277.85	899.9	-4.5	-0.5	-4.5	0.57	-0.56	-7.72
925.0	0.53	273.29	924.9	-4.5	-0.8	-4.5	0.67	-0.64	-18.24
950.0	0.35	257.64	949.9	-4.5	-0.9	-4.5	0.86	-0.72	-62.60
975.0	0.35	245.95	974.9	-4.5	-1.1	-4.5	0.29	0.00	-46.76
1,000.0	0.16	238.10	999.9	-4.6	-1.2	-4.6	0.77	-0.76	-31.40
1,025.0	0.17	211.48	1,024.9	-4.6	-1.2	-4.6	0.31	0.04	-106.48
1,050.0	0.09	195.84	1,049.9	-4.7	-1.3	-4.7	0.35	-0.32	-62.56
1,075.0	0.06	145.00	1,074.9	-4.7	-1.3	-4.7	0.28	-0.12	-203.36
1,100.0	0.09	320.47	1,099.9	-4.7	-1.3	-4.7	0.60	0.12	701.88
1,125.0	0.13	34.18	1,124.9	-4.7	-1.3	-4.6	0.54	0.16	294.84
1,150.0	0.13	53.82	1,149.9	-4.6	-1.2	-4.6	0.18	0.00	78.56
1,175.0	0.17	60.62	1,174.9	-4.6	-1.2	-4.6	0.17	0.16	27.20
1,200.0	0.20	50.14	1,199.9	-4.6	-1.1	-4.5	0.18	0.12	-41.92
1,225.0	0.09	39.48	1,224.9	-4.5	-1.1	-4.5	0.45	-0.44	-42.64
1,250.0	0.09	53.07	1,249.9	-4.5	-1.0	-4.5	0.09	0.00	54.36
1,275.0	0.07	41.93	1,274.9	-4.5	-1.0	-4.4	0.10	-0.08	-44.56
1,300.0	0.16	31.51	1,299.9	-4.4	-1.0	-4.4	0.37	0.36	-41.68



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1,325.0	0.11	22.42	1,324.9	-4.4	-0.9	-4.3	0.22	-0.20	-36.36
1,350.0	0.10	31.58	1,349.9	-4.3	-0.9	-4.3	0.08	-0.04	36.64
1,375.0	0.06	50.42	1,374.9	-4.3	-0.9	-4.3	0.19	-0.16	75.36
1,400.0	0.10	45.34	1,399.9	-4.3	-0.9	-4.3	0.16	0.16	-20.32
1,425.0	0.13	31.28	1,424.9	-4.2	-0.8	-4.2	0.16	0.12	-56.24
1,450.0	0.15	320.33	1,449.9	-4.2	-0.9	-4.2	0.65	0.08	-283.80
1,475.0	0.12	315.84	1,474.9	-4.1	-0.9	-4.1	0.13	-0.12	-17.96
1,500.0	0.11	221.01	1,499.9	-4.1	-0.9	-4.1	0.68	-0.04	-379.32
1,525.0	0.10	249.62	1,524.9	-4.2	-1.0	-4.1	0.21	-0.04	114.44
1,550.0	0.10	237.49	1,549.9	-4.2	-1.0	-4.2	0.08	0.00	-48.52
1,575.0	0.12	152.31	1,574.9	-4.2	-1.0	-4.2	0.60	0.08	-340.72
1,600.0	0.16	154.00	1,599.9	-4.3	-1.0	-4.3	0.16	0.16	6.76
1,625.0	0.18	128.14	1,624.9	-4.3	-0.9	-4.3	0.31	0.08	-103.44
1,650.0	0.24	126.21	1,649.9	-4.4	-0.9	-4.4	0.24	0.24	-7.72
1,675.0	0.23	130.98	1,674.9	-4.5	-0.8	-4.4	0.09	-0.04	19.08
1,700.0	0.29	100.08	1,699.9	-4.5	-0.7	-4.5	0.60	0.24	-123.60
1,725.0	0.12	68.51	1,724.9	-4.5	-0.6	-4.5	0.79	-0.68	-126.28
1,750.0	0.10	356.15	1,749.9	-4.5	-0.6	-4.5	0.52	-0.08	-289.44
1,775.0	0.14	12.78	1,774.9	-4.4	-0.6	-4.4	0.21	0.16	66.52
1,800.0	0.13	346.53	1,799.9	-4.4	-0.6	-4.3	0.25	-0.04	-105.00
1,825.0	0.21	295.78	1,824.9	-4.3	-0.6	-4.3	0.65	0.32	-203.00
1,850.0	0.14	301.01	1,849.9	-4.3	-0.7	-4.3	0.29	-0.28	20.92
1,875.0	0.08	290.27	1,874.9	-4.3	-0.7	-4.2	0.25	-0.24	-42.96
1,900.0	0.09	220.92	1,899.9	-4.3	-0.8	-4.2	0.39	0.04	-277.40
1,925.0	0.05	304.20	1,924.9	-4.3	-0.8	-4.3	0.39	-0.16	333.12
1,950.0	0.01	207.68	1,949.9	-4.3	-0.8	-4.2	0.21	-0.16	-386.08
1,975.0	0.05	247.35	1,974.9	-4.3	-0.8	-4.3	0.17	0.16	158.68
2,000.0	0.04	226.06	1,999.9	-4.3	-0.8	-4.3	0.08	-0.04	-85.16
2,025.0	0.04	201.24	2,024.9	-4.3	-0.8	-4.3	0.07	0.00	-99.28
2,050.0	0.08	158.53	2,049.9	-4.3	-0.8	-4.3	0.23	0.16	-170.84
2,075.0	0.12	131.92	2,074.9	-4.4	-0.8	-4.3	0.24	0.16	-106.44
2,100.0	0.15	126.45	2,099.9	-4.4	-0.7	-4.4	0.13	0.12	-21.88
2,125.0	0.12	127.67	2,124.9	-4.4	-0.7	-4.4	0.12	-0.12	4.88
2,150.0	0.18	110.36	2,149.9	-4.5	-0.6	-4.4	0.30	0.24	-69.24
2,175.0	0.24	65.89	2,174.9	-4.5	-0.6	-4.4	0.67	0.24	-177.88
2,200.0	0.16	66.63	2,199.9	-4.4	-0.5	-4.4	0.32	-0.32	2.96
2,225.0	0.04	111.42	2,224.9	-4.4	-0.4	-4.4	0.54	-0.48	179.16
2,250.0	0.05	273.93	2,249.9	-4.4	-0.4	-4.4	0.36	0.04	650.04
2,275.0	0.09	58.43	2,274.9	-4.4	-0.4	-4.4	0.54	0.16	578.00
2,300.0	0.18	51.46	2,299.9	-4.4	-0.4	-4.4	0.37	0.36	-27.88
2,325.0	0.23	42.80	2,324.9	-4.3	-0.3	-4.3	0.23	0.20	-34.64
2,350.0	0.05	61.42	2,349.9	-4.3	-0.3	-4.3	0.73	-0.72	74.48
2,375.0	0.25	26.85	2,374.9	-4.2	-0.2	-4.2	0.84	0.80	-138.28



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2,400.0	0.21	307.15	2,399.9	-4.1	-0.3	-4.1	1.19	-0.16	-318.80
2,425.0	0.23	316.52	2,424.9	-4.1	-0.3	-4.1	0.16	0.08	37.48
2,450.0	0.11	12.37	2,449.9	-4.0	-0.4	-4.0	0.77	-0.48	223.40
2,475.0	0.10	28.41	2,474.9	-4.0	-0.3	-4.0	0.12	-0.04	64.16
2,500.0	0.11	31.43	2,499.9	-3.9	-0.3	-3.9	0.05	0.04	12.08
2,525.0	0.13	32.83	2,524.9	-3.9	-0.3	-3.9	0.08	0.08	5.60
2,550.0	0.08	18.18	2,549.9	-3.8	-0.3	-3.8	0.23	-0.20	-58.60
2,575.0	0.08	35.83	2,574.9	-3.8	-0.3	-3.8	0.10	0.00	70.60
2,600.0	0.12	47.91	2,599.9	-3.8	-0.2	-3.8	0.18	0.16	48.32
2,625.0	0.22	50.26	2,624.9	-3.7	-0.2	-3.7	0.40	0.40	9.40
2,650.0	0.50	63.44	2,649.9	-3.6	0.0	-3.6	1.16	1.12	52.72
2,675.0	0.70	69.27	2,674.9	-3.5	0.2	-3.5	0.84	0.80	23.32
2,700.0	0.89	72.16	2,699.9	-3.4	0.5	-3.4	0.78	0.76	11.56
2,725.0	1.07	79.48	2,724.9	-3.3	0.9	-3.4	0.88	0.72	29.28
2,750.0	1.25	77.41	2,749.9	-3.2	1.4	-3.3	0.74	0.72	-8.28
2,775.0	1.32	70.99	2,774.9	-3.1	2.0	-3.1	0.64	0.28	-25.68
2,800.0	1.37	73.60	2,799.9	-2.9	2.5	-3.0	0.32	0.20	10.44
2,825.0	1.23	64.46	2,824.9	-2.7	3.1	-2.8	1.00	-0.56	-36.56
2,850.0	1.06	52.31	2,849.9	-2.4	3.5	-2.5	1.18	-0.68	-48.60
2,875.0	0.79	32.75	2,874.9	-2.2	3.8	-2.2	1.65	-1.08	-78.24
2,900.0	0.95	21.19	2,899.9	-1.8	3.9	-1.9	0.95	0.64	-46.24
2,925.0	0.85	19.08	2,924.9	-1.4	4.1	-1.5	0.42	-0.40	-8.44
2,950.0	0.54	17.63	2,949.9	-1.2	4.2	-1.3	1.24	-1.24	-5.80
2,975.0	0.77	9.78	2,974.9	-0.9	4.2	-1.0	0.99	0.92	-31.40
3,000.0	0.68	5.34	2,999.9	-0.6	4.3	-0.7	0.42	-0.36	-17.76
3,025.0	0.51	1.23	3,024.9	-0.3	4.3	-0.4	0.70	-0.68	-16.44
3,050.0	0.38	12.56	3,049.9	-0.1	4.3	-0.2	0.63	-0.52	45.32
3,075.0	0.25	39.01	3,074.8	0.0	4.4	-0.1	0.77	-0.52	105.80
3,100.0	0.32	34.65	3,099.8	0.1	4.4	0.0	0.29	0.28	-17.44
3,125.0	0.36	13.98	3,124.8	0.2	4.5	0.1	0.51	0.16	-82.68
3,150.0	0.15	347.46	3,149.8	0.3	4.5	0.2	0.94	-0.84	-106.08
3,175.0	0.10	342.41	3,174.8	0.4	4.5	0.3	0.20	-0.20	-20.20
3,200.0	0.13	344.03	3,199.8	0.4	4.5	0.3	0.12	0.12	6.48
3,225.0	0.22	330.94	3,224.8	0.5	4.5	0.4	0.39	0.36	-52.36
3,250.0	0.13	353.45	3,249.8	0.6	4.4	0.5	0.45	-0.36	90.04
3,275.0	0.14	340.55	3,274.8	0.6	4.4	0.5	0.13	0.04	-51.60
3,300.0	0.09	359.50	3,299.8	0.7	4.4	0.6	0.25	-0.20	75.80
3,325.0	0.15	354.53	3,324.8	0.7	4.4	0.6	0.24	0.24	-19.88
3,350.0	0.20	355.10	3,349.8	0.8	4.4	0.7	0.20	0.20	2.28
3,375.0	0.28	352.54	3,374.8	0.9	4.4	0.8	0.32	0.32	-10.24
3,400.0	0.12	341.13	3,399.8	1.0	4.4	0.9	0.66	-0.64	-45.64
3,500.0	0.34	330.78	3,499.8	1.4	4.2	1.3	0.22	0.22	-10.35
3,600.0	0.17	343.48	3,599.8	1.8	4.0	1.7	0.18	-0.17	12.70
3,700.0	0.26	335.71	3,699.8	2.1	3.9	2.0	0.09	0.09	-7.77



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3,800.0	0.13	348.71	3,799.8	2.4	3.7	2.4	0.14	-0.13	13.00
3,900.0	0.10	344.21	3,899.8	2.6	3.7	2.5	0.03	-0.03	-4.50
4,000.0	0.16	344.87	3,999.8	2.9	3.6	2.8	0.06	0.06	0.66
4,100.0	0.15	317.31	4,099.8	3.1	3.5	3.0	0.07	-0.01	-27.56
4,200.0	0.30	339.06	4,199.8	3.4	3.3	3.3	0.17	0.15	21.75
4,300.0	0.30	338.09	4,299.8	3.9	3.1	3.8	0.01	0.00	-0.97
4,400.0	0.24	359.57	4,399.8	4.4	3.0	4.3	0.12	-0.06	21.48
4,500.0	0.39	334.44	4,499.8	4.9	2.9	4.8	0.20	0.15	-25.13
4,600.0	0.19	343.77	4,599.8	5.3	2.7	5.3	0.20	-0.20	9.33
4,700.0	0.60	331.34	4,699.8	6.0	2.4	5.9	0.42	0.41	-12.43
4,800.0	0.54	336.33	4,799.8	6.9	2.0	6.8	0.08	-0.06	4.99
4,900.0	0.48	354.06	4,899.8	7.7	1.7	7.7	0.17	-0.06	17.73
5,000.0	0.42	338.20	4,999.8	8.5	1.6	8.4	0.14	-0.06	-15.86
5,100.0	0.16	351.47	5,099.8	8.9	1.4	8.9	0.27	-0.26	13.27
5,200.0	0.35	339.27	5,199.8	9.4	1.3	9.3	0.20	0.19	-12.20
5,300.0	0.38	341.31	5,299.8	10.0	1.1	9.9	0.03	0.03	2.04
5,400.0	0.30	341.26	5,399.8	10.5	0.9	10.5	0.08	-0.08	-0.05
5,500.0	0.26	328.33	5,499.8	11.0	0.7	10.9	0.07	-0.04	-12.93
5,600.0	0.29	305.58	5,599.8	11.3	0.3	11.3	0.11	0.03	-22.75
5,700.0	0.11	309.91	5,699.8	11.5	0.1	11.5	0.18	-0.18	4.33
5,800.0	0.37	230.09	5,799.8	11.4	-0.3	11.4	0.37	0.26	-79.82
5,900.0	0.40	232.38	5,899.8	10.9	-0.8	11.0	0.03	0.03	2.29
6,000.0	0.40	214.43	5,999.8	10.4	-1.3	10.5	0.12	0.00	-17.95
6,100.0	0.64	219.23	6,099.8	9.7	-1.8	9.8	0.24	0.24	4.80
6,200.0	0.71	207.91	6,199.8	8.7	-2.5	8.8	0.15	0.07	-11.32
6,300.0	0.70	200.03	6,299.8	7.6	-3.0	7.7	0.10	-0.01	-7.88
6,400.0	0.99	208.02	6,399.8	6.3	-3.6	6.4	0.31	0.29	7.99
6,500.0	1.06	205.35	6,499.8	4.7	-4.4	4.8	0.08	0.07	-2.67
6,600.0	1.03	212.08	6,599.7	3.1	-5.2	3.2	0.13	-0.03	6.73
6,700.0	1.04	200.04	6,699.7	1.5	-6.0	1.6	0.22	0.01	-12.04
6,800.0	0.72	193.79	6,799.7	0.0	-6.5	0.2	0.33	-0.32	-6.25
6,900.0	0.94	196.14	6,899.7	-1.4	-6.9	-1.2	0.22	0.22	2.35
7,000.0	1.16	196.05	6,999.7	-3.1	-7.4	-3.0	0.22	0.22	-0.09
7,100.0	1.17	196.08	7,099.7	-5.1	-7.9	-4.9	0.01	0.01	0.03
7,200.0	0.62	169.97	7,199.7	-6.6	-8.1	-6.4	0.67	-0.55	-26.11
7,300.0	0.67	139.10	7,299.7	-7.6	-7.7	-7.4	0.35	0.05	-30.87
7,336.0	1.00	24.50	7,335.6	-7.5	-7.4	-7.3	3.93	0.92	-318.33
7,368.0	3.00	356.40	7,367.6	-6.4	-7.3	-6.2	6.78	6.25	-87.81
7,399.0	6.00	350.90	7,398.5	-4.0	-7.6	-3.8	9.77	9.68	-17.74
7,431.0	8.80	350.00	7,430.3	0.1	-8.3	0.3	8.76	8.75	-2.81
7,462.0	11.40	348.60	7,460.8	5.4	-9.3	5.7	8.42	8.39	-4.52
7,493.0	13.40	346.90	7,491.1	11.9	-10.8	12.2	6.56	6.45	-5.48



Survey Report



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Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Cabo Wabo 25 Federal Com #3H
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7,525.0	15.90	345.80	7,522.0	19.8	-12.7	20.1	7.86	7.81	-3.44
7,557.0	19.40	345.30	7,552.5	29.2	-15.1	29.5	10.95	10.94	-1.56
7,588.0	23.00	345.30	7,581.4	40.0	-17.9	40.5	11.61	11.61	0.00
7,620.0	26.90	345.30	7,610.4	53.1	-21.4	53.6	12.19	12.19	0.00
7,652.0	30.30	347.80	7,638.5	68.0	-24.9	68.6	11.26	10.63	7.81
7,684.0	32.50	351.10	7,665.8	84.4	-28.0	85.0	8.72	6.88	10.31
7,715.0	34.10	359.00	7,691.7	101.3	-29.4	102.0	14.90	5.16	25.48
7,747.0	37.00	1.00	7,717.8	119.9	-29.4	120.6	9.76	9.06	6.25
7,778.0	39.70	0.10	7,742.1	139.1	-29.2	139.8	8.89	8.71	-2.90
7,810.0	43.60	358.10	7,766.0	160.4	-29.5	161.0	12.87	12.19	-6.25
7,842.0	47.00	357.30	7,788.5	183.1	-30.5	183.8	10.77	10.63	-2.50
7,873.0	50.10	355.70	7,809.0	206.3	-31.9	207.0	10.72	10.00	-5.16
7,904.0	54.00	355.90	7,828.1	230.7	-33.7	231.4	12.59	12.58	0.65
7,936.0	58.00	357.60	7,846.0	257.2	-35.2	257.9	13.25	12.50	5.31
7,968.0	61.30	359.50	7,862.1	284.8	-35.9	285.5	11.51	10.31	5.94
7,999.0	66.60	359.90	7,875.7	312.6	-36.0	313.4	17.14	17.10	1.29
8,030.0	71.30	359.70	7,886.9	341.5	-36.1	342.3	15.17	15.16	-0.65
8,062.0	76.20	359.20	7,895.8	372.2	-36.4	373.0	15.39	15.31	-1.56
8,094.0	81.80	359.70	7,901.9	403.6	-36.7	404.4	17.57	17.50	1.56
8,123.0	87.10	1.00	7,904.7	432.5	-36.5	433.2	18.81	18.28	4.48
8,215.0	88.70	1.60	7,908.1	524.4	-34.4	525.1	1.86	1.74	0.65
8,306.0	88.50	0.60	7,910.3	615.4	-32.7	616.0	1.12	-0.22	-1.10
8,397.0	88.90	358.80	7,912.4	706.3	-33.2	706.9	2.03	0.44	-1.98
8,489.0	89.30	358.50	7,913.8	798.3	-35.3	798.9	0.54	0.43	-0.33
8,584.0	90.30	357.60	7,914.2	893.2	-38.6	893.9	1.42	1.05	-0.95
8,679.0	91.00	356.70	7,913.1	988.1	-43.3	988.8	1.20	0.74	-0.95
8,773.0	90.80	356.50	7,911.6	1,081.9	-48.9	1,082.8	0.30	-0.21	-0.21
8,868.0	90.40	356.70	7,910.6	1,176.8	-54.5	1,177.7	0.47	-0.42	0.21
8,963.0	89.30	357.30	7,910.9	1,271.6	-59.5	1,272.7	1.32	-1.16	0.63
9,057.0	89.70	357.60	7,911.7	1,365.5	-63.7	1,366.6	0.53	0.43	0.32
9,151.0	90.00	357.40	7,911.9	1,459.4	-67.8	1,460.6	0.38	0.32	-0.21
9,246.0	89.30	357.10	7,912.5	1,554.3	-72.3	1,555.6	0.80	-0.74	-0.32
9,341.0	89.30	357.80	7,913.7	1,649.2	-76.5	1,650.6	0.74	0.00	0.74
9,435.0	88.90	359.20	7,915.1	1,743.2	-79.0	1,744.5	1.55	-0.43	1.49
9,530.0	89.80	358.80	7,916.2	1,838.2	-80.7	1,839.5	1.04	0.95	-0.42
9,556.0	89.30	357.60	7,916.4	1,864.1	-81.5	1,865.5	5.00	-1.92	-4.62
9,650.0	90.50	358.00	7,916.6	1,958.1	-85.1	1,959.5	1.35	1.28	0.43
9,744.0	90.30	358.70	7,915.9	2,052.0	-87.8	2,053.5	0.77	-0.21	0.74
9,838.0	90.20	358.10	7,915.5	2,146.0	-90.4	2,147.5	0.65	-0.11	-0.64
9,931.0	89.40	358.10	7,915.9	2,238.9	-93.5	2,240.5	0.86	-0.86	0.00
10,026.0	90.40	358.00	7,916.0	2,333.9	-96.7	2,335.5	1.06	1.05	-0.11
10,117.0	89.90	357.60	7,915.8	2,424.8	-100.2	2,426.5	0.70	-0.55	-0.44
10,208.0	91.10	358.10	7,915.0	2,515.7	-103.6	2,517.5	1.43	1.32	0.55



Survey Report



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Design: Wellbore #1

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10,300.0	91.10	358.70	7,913.2	2,607.7	-106.2	2,609.5	0.65	0.00	0.65
10,391.0	91.00	358.10	7,911.6	2,698.6	-108.7	2,700.4	0.67	-0.11	-0.66
10,483.0	88.50	359.40	7,912.0	2,790.6	-110.8	2,792.4	3.06	-2.72	1.41
10,574.0	89.60	358.80	7,913.5	2,881.6	-112.2	2,883.4	1.38	1.21	-0.66
10,666.0	89.80	358.70	7,913.9	2,973.6	-114.2	2,975.4	0.24	0.22	-0.11
10,757.0	89.70	359.00	7,914.3	3,064.5	-116.0	3,066.4	0.35	-0.11	0.33
10,849.0	89.20	359.50	7,915.2	3,156.5	-117.2	3,158.4	0.77	-0.54	0.54
10,940.0	88.20	359.20	7,917.3	3,247.5	-118.3	3,249.4	1.15	-1.10	-0.33
11,032.0	89.50	359.20	7,919.1	3,339.5	-119.5	3,341.3	1.41	1.41	0.00
11,126.0	90.50	359.50	7,919.1	3,433.5	-120.6	3,435.3	1.11	1.06	0.32
11,220.0	90.00	359.20	7,918.7	3,527.5	-121.7	3,529.3	0.62	-0.53	-0.32
11,316.0	88.60	358.50	7,919.9	3,623.4	-123.6	3,625.3	1.63	-1.46	-0.73
11,410.0	90.10	359.70	7,921.0	3,717.4	-125.1	3,719.3	2.04	1.60	1.28
11,504.0	89.70	0.60	7,921.1	3,811.4	-124.8	3,813.3	1.05	-0.43	0.96
11,598.0	88.90	1.00	7,922.3	3,905.4	-123.5	3,907.2	0.95	-0.85	0.43
11,692.0	89.80	1.30	7,923.3	3,999.4	-121.6	4,001.1	1.01	0.96	0.32
11,786.0	88.80	0.20	7,924.5	4,093.3	-120.4	4,095.0	1.58	-1.06	-1.17
11,880.0	89.60	358.80	7,925.8	4,187.3	-121.2	4,189.0	1.72	0.85	-1.49
11,975.0	89.90	359.50	7,926.2	4,282.3	-122.6	4,284.0	0.80	0.32	0.74
12,069.0	89.30	359.40	7,926.9	4,376.3	-123.5	4,378.0	0.65	-0.64	-0.11
12,163.0	89.60	358.30	7,927.8	4,470.3	-125.4	4,472.0	1.21	0.32	-1.17
12,257.0	90.00	358.50	7,928.1	4,564.2	-128.0	4,566.0	0.48	0.43	0.21
12,351.0	89.90	359.40	7,928.2	4,658.2	-129.8	4,660.0	0.96	-0.11	0.96
12,445.0	90.20	358.00	7,928.1	4,752.2	-131.9	4,754.0	1.52	0.32	-1.49
12,465.8	90.46	358.33	7,928.0	4,773.0	-132.6	4,774.8	2.02	1.26	1.58
12,540.0	91.40	359.50	7,926.8	4,847.2	-134.0	4,849.0	2.02	1.26	1.58
12,633.0	91.00	359.70	7,924.8	4,940.1	-134.6	4,941.9	0.48	-0.43	0.22
12,727.0	91.80	0.10	7,922.5	5,034.1	-134.8	5,035.9	0.95	0.85	0.43
12,822.0	89.20	359.20	7,921.7	5,129.1	-135.4	5,130.9	2.90	-2.74	-0.95
12,916.0	88.80	358.80	7,923.3	5,223.1	-137.0	5,224.8	0.60	-0.43	-0.43
13,010.0	88.10	359.00	7,925.9	5,317.0	-138.8	5,318.8	0.77	-0.74	0.21
13,104.0	88.70	359.00	7,928.5	5,411.0	-140.4	5,412.8	0.64	0.64	0.00
13,198.0	88.60	0.40	7,930.7	5,504.9	-140.9	5,506.7	1.49	-0.11	1.49
13,292.0	88.40	0.20	7,933.2	5,598.9	-140.4	5,600.7	0.30	-0.21	-0.21
13,386.0	88.90	0.10	7,935.4	5,692.9	-140.2	5,694.6	0.54	0.53	-0.11
13,480.0	88.80	359.70	7,937.3	5,786.9	-140.4	5,788.6	0.44	-0.11	-0.43
13,574.0	91.30	358.80	7,937.2	5,880.8	-141.6	5,882.5	2.83	2.66	-0.96
13,668.0	91.70	359.50	7,934.7	5,974.8	-143.0	5,976.5	0.86	0.43	0.74
13,762.0	89.40	359.40	7,933.8	6,068.8	-143.9	6,070.5	2.45	-2.45	-0.11
13,856.0	89.60	359.00	7,934.7	6,162.8	-145.2	6,164.5	0.48	0.21	-0.43
13,950.0	90.90	359.90	7,934.3	6,256.8	-146.1	6,258.5	1.68	1.38	0.96
14,044.0	90.30	359.00	7,933.3	6,350.7	-147.0	6,352.4	1.15	-0.64	-0.96
14,138.0	89.80	358.10	7,933.2	6,444.7	-149.4	6,446.4	1.10	-0.53	-0.96



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14,233.0	89.30	358.80	7,933.9	6,539.7	-152.0	6,541.4	0.91	-0.53	0.74
14,327.0	90.00	359.70	7,934.5	6,633.7	-153.2	6,635.4	1.21	0.74	0.96
14,427.0	90.00	0.60	7,934.5	6,733.7	-152.9	6,735.4	0.90	0.00	0.90
14,521.0	89.90	358.30	7,934.6	6,827.7	-153.8	6,829.4	2.45	-0.11	-2.45
14,615.0	89.80	357.10	7,934.8	6,921.6	-157.6	6,923.4	1.28	-0.11	-1.28
14,709.0	89.80	357.30	7,935.2	7,015.5	-162.2	7,017.3	0.21	0.00	0.21
14,803.0	89.60	357.30	7,935.7	7,109.4	-166.6	7,111.3	0.21	-0.21	0.00
14,897.0	89.40	358.00	7,936.5	7,203.3	-170.5	7,205.3	0.77	-0.21	0.74
14,991.0	89.30	358.10	7,937.5	7,297.2	-173.7	7,299.3	0.15	-0.11	0.11
15,080.0	89.20	358.50	7,938.7	7,386.2	-176.3	7,388.3	0.46	-0.11	0.45
15,174.0	90.00	358.00	7,939.4	7,480.1	-179.2	7,482.3	1.00	0.85	-0.53
15,268.0	88.70	356.20	7,940.4	7,574.0	-183.9	7,576.2	2.36	-1.38	-1.91
15,362.0	89.90	356.70	7,941.6	7,667.8	-189.8	7,670.1	1.38	1.28	0.53
15,457.0	90.00	359.20	7,941.7	7,762.7	-193.2	7,765.1	2.63	0.11	2.63
15,551.0	89.10	357.60	7,942.4	7,856.7	-195.8	7,859.1	1.95	-0.96	-1.70
15,645.0	90.00	359.50	7,943.1	7,950.6	-198.2	7,953.1	2.24	0.96	2.02
15,739.0	90.00	359.90	7,943.1	8,044.6	-198.6	8,047.1	0.43	0.00	0.43
15,833.0	89.70	359.20	7,943.4	8,138.6	-199.4	8,141.1	0.81	-0.32	-0.74
15,928.0	90.80	359.90	7,943.0	8,233.6	-200.1	8,236.1	1.37	1.16	0.74
16,022.0	91.60	0.40	7,941.0	8,327.6	-199.9	8,330.0	1.00	0.85	0.53
16,116.0	90.00	359.70	7,939.7	8,421.6	-199.8	8,424.0	1.86	-1.70	-0.74
16,210.0	90.80	0.40	7,939.0	8,515.6	-199.7	8,517.9	1.13	0.85	0.74
16,304.0	91.10	1.30	7,937.5	8,609.6	-198.3	8,611.9	1.01	0.32	0.96
16,398.0	89.90	0.10	7,936.7	8,703.6	-197.2	8,705.8	1.81	-1.28	-1.28
16,492.0	89.50	359.90	7,937.1	8,797.6	-197.2	8,799.8	0.48	-0.43	-0.21
16,586.0	89.20	359.70	7,938.2	8,891.5	-197.5	8,893.7	0.38	-0.32	-0.21
16,681.0	88.90	359.70	7,939.8	8,986.5	-198.0	8,988.7	0.32	-0.32	0.00
16,774.0	89.40	358.70	7,941.2	9,079.5	-199.3	9,081.7	1.20	0.54	-1.08
16,868.0	90.50	357.10	7,941.2	9,173.4	-202.7	9,175.7	2.07	1.17	-1.70
16,963.0	90.40	357.60	7,940.5	9,268.3	-207.1	9,270.7	0.54	-0.11	0.53
17,057.0	90.10	358.50	7,940.1	9,362.3	-210.3	9,364.6	1.01	-0.32	0.96
17,151.0	89.80	359.40	7,940.2	9,456.3	-212.1	9,458.6	1.01	-0.32	0.96
17,245.0	89.30	359.20	7,940.9	9,550.3	-213.2	9,552.6	0.57	-0.53	-0.21
17,339.0	88.60	358.00	7,942.6	9,644.2	-215.5	9,646.6	1.48	-0.74	-1.28
17,360.0	88.40	358.10	7,943.2	9,665.2	-216.2	9,667.6	1.06	-0.95	0.48
17,420.0	88.40	358.10	7,944.9	9,725.1	-218.2	9,727.6	0.00	0.00	0.00



Survey Report



Company: COG Operating, LLC
Project: Eddy County, NM (NAD 27)
Site: Sec 25, T25-S, R29-E
Well: Cabo Wabo 25 Federal Com #3H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Cabo Wabo 25 Federal Com #3H
TVD Reference: WELL @ 3086.3usft (Original Well Elev)
MD Reference: WELL @ 3086.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass

7,300.0	7,299.7	-7.6	-7.7	Tie In @ 7300' MD / 7300' TVD
12,465.8	7,928.0	4,773.0	-132.6	Crossed Section Line @ 12466' MD / 7928' TVD
17,420.0	7,944.9	9,725.1	-218.2	TD @ 17420' MD / 7945' TVD

Checked By: _____ Approved By: _____ Date: _____