



COG Operating, LLC

Lea County, NM

Sec 30, T24-S,R35E

Fascinator Fed Com #601H

Wellbore #1

Design: Wellbore #1

QES Survey Report

20 February, 2019

HOBBS OCD

OCT 23 2019

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Survey Report



Company: COG Operating, LLC
Project: Lea County, NM
Site: Sec 30, T24-S,R35E
Well: Fascinator Fed Com #601H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Fascinator Fed Com #601H
TVD Reference: RKB @ 3375.0usft (Noram #21)
MD Reference: RKB @ 3375.0usft (Noram #21)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project Lea County, NM

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 Sec 30, T24-S,R35E

Site Position: Northing: 430,949.60 usft Latitude: 32° 10' 52.979 N
From: Map Easting: 787,533.30 usft Longitude: 103° 24' 14.307 W
Position Uncertainty: 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: 0.50 °

Well Fascinator Fed Com #601H

Well Position: +N/-S 0.0 usft Northing: 435,910.47 usft Latitude: 32° 11' 42.172 N
+E/-W 0.0 usft Easting: 786,305.20 usft Longitude: 103° 24' 28.099 W
Position Uncertainty: 0.0 usft Wellhead Elevation: usft Ground Level: 3,346.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	1/24/2019	6.70	59.89	47,898.00000000

Design Wellbore #1

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	180.41

Survey Program Date 2/20/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	11,633.0	Gyro Surveys (Wellbore #1)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
11,758.0	18,324.0	QES MWD (gyro tie) (Wellbore #1)	MWD	OWSG MWD - Standard
18,419.0	22,385.0	GT Surveys (Wellbore #1)	MWD	OWSG MWD - Standard

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.31	31.37	100.0	0.2	0.1	-0.2	0.31	0.31	0.00
125.0	0.37	51.13	125.0	0.3	0.2	-0.3	0.52	0.24	79.04
150.0	0.37	67.43	150.0	0.4	0.4	-0.4	0.42	0.00	65.20
175.0	0.34	80.16	175.0	0.5	0.5	-0.5	0.34	-0.12	50.92
200.0	0.34	97.50	200.0	0.5	0.7	-0.5	0.41	0.00	69.36
225.0	0.37	89.35	225.0	0.5	0.8	-0.5	0.23	0.12	-32.60
250.0	0.33	83.88	250.0	0.5	1.0	-0.5	0.21	-0.16	-21.88
275.0	0.39	75.93	275.0	0.5	1.1	-0.5	0.31	0.24	-31.80



Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #601H
Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3375.0usft (Noram #21)
Well:	Fascinator Fed Com #601H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
300.0	0.42	64.32	300.0	0.6	1.3	-0.6	0.35	0.12	-46.44
325.0	0.55	65.68	325.0	0.6	1.5	-0.7	0.52	0.52	5.44
350.0	0.68	69.55	350.0	0.7	1.7	-0.8	0.55	0.52	15.48
375.0	0.61	77.88	375.0	0.8	2.0	-0.8	0.47	-0.28	33.32
400.0	0.74	77.87	400.0	0.9	2.3	-0.9	0.52	0.52	-0.04
425.0	0.70	83.10	425.0	0.9	2.6	-1.0	0.31	-0.16	20.92
450.0	0.68	88.92	450.0	1.0	2.9	-1.0	0.29	-0.08	23.28
475.0	0.68	89.90	475.0	1.0	3.2	-1.0	0.05	0.00	3.92
500.0	0.53	107.88	500.0	0.9	3.5	-1.0	0.96	-0.60	71.92
525.0	0.53	105.13	525.0	0.9	3.7	-0.9	0.10	0.00	-11.00
550.0	0.47	94.98	550.0	0.8	3.9	-0.9	0.43	-0.24	-40.60
575.0	0.47	76.48	575.0	0.8	4.1	-0.9	0.60	0.00	-74.00
600.0	0.64	75.22	600.0	0.9	4.3	-0.9	0.68	0.68	-5.04
625.0	0.77	84.76	625.0	1.0	4.6	-1.0	0.70	0.52	38.16
650.0	0.67	98.39	650.0	0.9	4.9	-1.0	0.79	-0.40	54.52
675.0	0.63	101.59	675.0	0.9	5.2	-0.9	0.22	-0.16	12.80
700.0	0.61	105.17	700.0	0.8	5.5	-0.9	0.17	-0.08	14.32
725.0	0.55	108.42	725.0	0.8	5.7	-0.8	0.27	-0.24	13.00
750.0	0.47	113.41	750.0	0.7	5.9	-0.7	0.37	-0.32	19.96
775.0	0.42	83.95	775.0	0.7	6.1	-0.7	0.93	-0.20	-117.84
800.0	0.47	77.64	800.0	0.7	6.3	-0.7	0.28	0.20	-25.24
825.0	0.47	84.37	825.0	0.7	6.5	-0.8	0.22	0.00	26.92
850.0	0.63	73.04	850.0	0.8	6.7	-0.8	0.77	0.64	-45.32
875.0	0.83	73.74	875.0	0.9	7.1	-0.9	0.80	0.80	2.80
900.0	0.92	80.43	900.0	0.9	7.4	-1.0	0.54	0.36	26.76
925.0	0.94	79.92	925.0	1.0	7.8	-1.1	0.09	0.08	-2.04
950.0	0.96	79.26	950.0	1.1	8.2	-1.1	0.09	0.08	-2.64
975.0	0.93	73.88	975.0	1.2	8.6	-1.2	0.37	-0.12	-21.52
1,000.0	0.77	78.04	999.9	1.3	9.0	-1.3	0.69	-0.64	16.64
1,025.0	0.66	62.18	1,024.9	1.4	9.3	-1.4	0.90	-0.44	-63.44
1,050.0	0.71	55.22	1,049.9	1.5	9.5	-1.6	0.39	0.20	-27.84
1,075.0	0.77	51.86	1,074.9	1.7	9.8	-1.8	0.30	0.24	-13.44
1,100.0	0.79	44.94	1,099.9	1.9	10.1	-2.0	0.38	0.08	-27.68
1,125.0	0.69	51.43	1,124.9	2.2	10.3	-2.2	0.52	-0.40	25.96
1,150.0	0.40	57.95	1,149.9	2.3	10.5	-2.4	1.18	-1.16	26.08
1,175.0	0.13	102.05	1,174.9	2.3	10.6	-2.4	1.28	-1.08	176.40
1,200.0	0.18	210.94	1,199.9	2.3	10.6	-2.4	1.02	0.20	435.56
1,225.0	0.32	252.99	1,224.9	2.2	10.5	-2.3	0.89	0.56	168.20
1,250.0	0.34	263.99	1,249.9	2.2	10.4	-2.3	0.27	0.08	44.00
1,275.0	0.25	255.42	1,274.9	2.2	10.2	-2.3	0.40	-0.36	-34.28
1,300.0	0.47	214.80	1,299.9	2.1	10.1	-2.2	1.30	0.88	-162.48
1,325.0	0.54	215.60	1,324.9	1.9	10.0	-2.0	0.28	0.28	3.20
1,350.0	0.70	221.28	1,349.9	1.7	9.8	-1.8	0.68	0.64	22.72

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,375.0	0.83	234.24	1,374.9	1.5	9.6	-1.6	0.86	0.52	51.84
1,400.0	0.74	232.91	1,399.9	1.3	9.3	-1.4	0.37	-0.36	-5.32
1,425.0	0.59	237.41	1,424.9	1.1	9.1	-1.2	0.63	-0.60	18.00
1,450.0	0.56	223.01	1,449.9	1.0	8.9	-1.0	0.59	-0.12	-57.60
1,475.0	0.66	208.05	1,474.9	0.7	8.7	-0.8	0.75	0.40	-59.84
1,500.0	0.57	205.90	1,499.9	0.5	8.6	-0.6	0.37	-0.36	-8.60
1,525.0	0.68	206.90	1,524.9	0.3	8.5	-0.3	0.44	0.44	4.00
1,550.0	0.61	206.86	1,549.9	0.0	8.4	-0.1	0.28	-0.28	-0.16
1,575.0	0.55	211.55	1,574.9	-0.2	8.2	0.2	0.31	-0.24	18.76
1,600.0	0.55	225.18	1,599.9	-0.4	8.1	0.3	0.52	0.00	54.52
1,625.0	0.53	231.98	1,624.9	-0.6	7.9	0.5	0.27	-0.08	27.20
1,650.0	0.50	246.55	1,649.9	-0.7	7.7	0.6	0.54	-0.12	58.28
1,675.0	0.43	236.66	1,674.9	-0.8	7.5	0.7	0.43	-0.28	-39.56
1,700.0	0.35	243.45	1,699.9	-0.8	7.4	0.8	0.37	-0.32	27.16
1,725.0	0.21	198.19	1,724.9	-0.9	7.3	0.9	1.01	-0.56	-181.04
1,750.0	0.24	196.25	1,749.9	-1.0	7.3	1.0	0.12	0.12	-7.76
1,775.0	0.33	189.72	1,774.9	-1.1	7.3	1.1	0.38	0.36	-26.12
1,800.0	0.31	205.10	1,799.9	-1.3	7.2	1.2	0.35	-0.08	61.52
1,825.0	0.36	224.16	1,824.9	-1.4	7.1	1.3	0.49	0.20	76.24
1,850.0	0.26	237.72	1,849.9	-1.5	7.0	1.4	0.49	-0.40	54.24
1,875.0	0.19	268.05	1,874.9	-1.5	6.9	1.5	0.54	-0.28	121.32
1,900.0	0.07	356.20	1,899.9	-1.5	6.9	1.4	0.80	-0.48	352.60
1,925.0	0.16	121.52	1,924.9	-1.5	6.9	1.4	0.83	0.36	501.28
1,950.0	0.23	178.82	1,949.9	-1.6	7.0	1.5	0.79	0.28	229.20
1,975.0	0.20	210.78	1,974.9	-1.7	6.9	1.6	0.49	-0.12	127.84
2,000.0	0.19	235.60	1,999.9	-1.7	6.9	1.7	0.34	-0.04	99.28
2,025.0	0.04	263.18	2,024.9	-1.7	6.8	1.7	0.62	-0.60	110.32
2,050.0	0.14	97.86	2,049.9	-1.7	6.9	1.7	0.72	0.40	-661.28
2,075.0	0.24	188.62	2,074.9	-1.8	6.9	1.8	1.12	0.40	363.04
2,100.0	0.23	203.75	2,099.9	-1.9	6.9	1.8	0.25	-0.04	60.52
2,125.0	0.17	253.83	2,124.9	-2.0	6.8	1.9	0.71	-0.24	200.32
2,150.0	0.08	10.99	2,149.9	-1.9	6.8	1.9	0.87	-0.36	468.64
2,175.0	0.09	95.05	2,174.9	-1.9	6.8	1.9	0.46	0.04	336.24
2,200.0	0.17	148.59	2,199.9	-2.0	6.8	1.9	0.55	0.32	214.16
2,225.0	0.32	191.75	2,224.9	-2.1	6.8	2.0	0.91	0.60	172.64
2,250.0	0.33	188.94	2,249.9	-2.2	6.8	2.2	0.08	0.04	-11.24
2,275.0	0.18	222.00	2,274.9	-2.3	6.8	2.3	0.82	-0.60	132.24
2,300.0	0.36	250.11	2,299.9	-2.4	6.7	2.3	0.87	0.72	112.44
2,325.0	0.66	259.39	2,324.9	-2.4	6.5	2.4	1.24	1.20	37.12
2,350.0	0.81	335.97	2,349.9	-2.3	6.2	2.2	3.67	0.60	306.32
2,375.0	0.87	312.14	2,374.9	-2.0	6.0	1.9	1.41	0.24	-95.32
2,400.0	0.76	312.58	2,399.9	-1.8	5.8	1.7	0.44	-0.44	1.76
2,425.0	0.77	309.62	2,424.9	-1.5	5.5	1.5	0.16	0.04	-11.84

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
2,450.0	0.72	301.34	2,449.9	-1.3	5.2	1.3	0.47	-0.20	-33.12
2,475.0	0.88	295.45	2,474.9	-1.2	4.9	1.1	0.72	0.64	-23.56
2,500.0	0.97	305.26	2,499.9	-1.0	4.6	0.9	0.73	0.36	39.24
2,525.0	0.95	311.84	2,524.9	-0.7	4.3	0.7	0.45	-0.08	26.32
2,550.0	0.71	315.85	2,549.9	-0.5	4.0	0.4	0.99	-0.96	16.04
2,575.0	0.63	302.13	2,574.9	-0.3	3.8	0.3	0.71	-0.32	-54.88
2,600.0	0.84	307.61	2,599.9	-0.1	3.5	0.1	0.88	0.84	21.92
2,625.0	0.58	329.97	2,624.9	0.1	3.3	-0.1	1.50	-1.04	89.44
2,650.0	0.40	319.23	2,649.9	0.3	3.2	-0.3	0.81	-0.72	-42.96
2,675.0	0.59	308.25	2,674.9	0.4	3.0	-0.5	0.85	0.76	-43.92
2,700.0	0.50	319.84	2,699.9	0.6	2.9	-0.6	0.57	-0.36	46.36
2,725.0	0.51	334.76	2,724.9	0.8	2.7	-0.8	0.53	0.04	59.68
2,750.0	0.42	349.73	2,749.9	1.0	2.7	-1.0	0.60	-0.36	59.88
2,775.0	0.36	309.87	2,774.9	1.1	2.6	-1.1	1.09	-0.24	-159.44
2,800.0	0.48	315.74	2,799.9	1.3	2.5	-1.3	0.51	0.48	23.48
2,825.0	0.39	344.98	2,824.9	1.4	2.4	-1.4	0.94	-0.36	116.96
2,850.0	0.16	306.11	2,849.9	1.5	2.3	-1.5	1.14	-0.92	-155.48
2,875.0	0.31	320.12	2,874.9	1.6	2.3	-1.6	0.64	0.60	56.04
2,900.0	0.34	331.30	2,899.9	1.7	2.2	-1.7	0.28	0.12	44.72
2,925.0	0.32	19.41	2,924.9	1.8	2.2	-1.8	1.08	-0.08	192.44
2,950.0	0.21	47.99	2,949.9	1.9	2.2	-1.9	0.67	-0.44	114.32
2,975.0	0.14	71.22	2,974.9	2.0	2.3	-2.0	0.39	-0.28	92.92
3,000.0	0.07	20.40	2,999.9	2.0	2.3	-2.0	0.44	-0.28	-203.28
3,025.0	0.27	357.00	3,024.9	2.1	2.3	-2.1	0.83	0.80	-93.60
3,050.0	0.33	41.58	3,049.9	2.2	2.4	-2.2	0.94	0.24	178.32
3,075.0	0.24	59.43	3,074.9	2.3	2.5	-2.3	0.50	-0.36	71.40
3,100.0	0.22	78.90	3,099.9	2.3	2.5	-2.3	0.32	-0.08	77.88
3,125.0	0.14	26.22	3,124.9	2.3	2.6	-2.3	0.70	-0.32	-210.72
3,150.0	0.26	56.05	3,149.9	2.4	2.7	-2.4	0.62	0.48	119.32
3,175.0	0.34	65.86	3,174.9	2.5	2.8	-2.5	0.38	0.32	39.24
3,200.0	0.42	90.14	3,199.9	2.5	2.9	-2.5	0.71	0.32	97.12
3,225.0	0.25	117.67	3,224.9	2.5	3.1	-2.5	0.92	-0.68	110.12
3,250.0	0.19	89.48	3,249.9	2.4	3.2	-2.5	0.49	-0.24	-112.76
3,275.0	0.13	103.99	3,274.9	2.4	3.2	-2.4	0.29	-0.24	58.04
3,300.0	0.27	40.91	3,299.9	2.5	3.3	-2.5	0.96	0.56	-252.32
3,325.0	0.36	61.23	3,324.9	2.5	3.4	-2.6	0.57	0.36	81.28
3,350.0	0.36	107.76	3,349.9	2.6	3.6	-2.6	1.14	0.00	186.12
3,375.0	0.38	170.86	3,374.9	2.5	3.6	-2.5	1.55	0.08	252.40
3,400.0	0.60	190.64	3,399.9	2.2	3.6	-2.3	1.10	0.88	79.12
3,425.0	0.62	192.56	3,424.9	2.0	3.6	-2.0	0.11	0.08	7.68
3,450.0	0.69	202.85	3,449.9	1.7	3.5	-1.7	0.55	0.28	41.16
3,475.0	0.62	212.61	3,474.9	1.5	3.4	-1.5	0.53	-0.28	39.04
3,500.0	0.49	224.49	3,499.9	1.3	3.2	-1.3	0.69	-0.52	47.52
3,525.0	0.40	203.01	3,524.9	1.1	3.1	-1.1	0.75	-0.36	-85.92

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Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
3,550.0	0.47	179.83	3,549.9	0.9	3.1	-1.0	0.75	0.28	-92.72
3,575.0	0.62	185.46	3,574.9	0.7	3.1	-0.7	0.64	0.60	22.52
3,600.0	0.66	195.72	3,599.9	0.4	3.0	-0.4	0.48	0.16	41.04
3,625.0	0.55	208.47	3,624.9	0.2	2.9	-0.2	0.69	-0.44	51.00
3,650.0	0.38	207.21	3,649.9	0.0	2.8	0.0	0.68	-0.68	-5.04
3,675.0	0.28	201.83	3,674.9	-0.1	2.8	0.1	0.42	-0.40	-21.52
3,700.0	0.35	172.37	3,699.9	-0.3	2.7	0.2	0.70	0.28	-117.84
3,725.0	0.52	176.66	3,724.9	-0.5	2.8	0.4	0.69	0.68	17.16
3,750.0	0.59	194.30	3,749.9	-0.7	2.7	0.7	0.73	0.28	70.56
3,775.0	0.56	197.21	3,774.9	-0.9	2.7	0.9	0.17	-0.12	11.64
3,800.0	0.49	205.67	3,799.8	-1.1	2.6	1.1	0.42	-0.28	33.84
3,825.0	0.41	247.86	3,824.8	-1.3	2.5	1.3	1.33	-0.32	168.76
3,850.0	0.48	284.21	3,849.8	-1.3	2.3	1.3	1.14	0.28	145.40
3,875.0	0.59	301.29	3,874.8	-1.2	2.1	1.2	0.77	0.44	68.32
3,900.0	0.53	295.61	3,899.8	-1.1	1.8	1.1	0.33	-0.24	-22.72
3,925.0	0.48	289.82	3,924.8	-1.0	1.6	1.0	0.29	-0.20	-23.16
3,950.0	0.47	278.54	3,949.8	-0.9	1.4	0.9	0.38	-0.04	-45.12
3,975.0	0.62	265.71	3,974.8	-0.9	1.2	0.9	0.77	0.60	-51.32
4,000.0	0.69	273.01	3,999.8	-0.9	0.9	0.9	0.44	0.28	29.20
4,025.0	0.64	286.77	4,024.8	-0.9	0.6	0.9	0.67	-0.20	55.04
4,050.0	0.52	293.86	4,049.8	-0.8	0.4	0.8	0.56	-0.48	28.36
4,075.0	0.42	303.44	4,074.8	-0.7	0.2	0.7	0.51	-0.40	38.32
4,100.0	0.29	324.46	4,099.8	-0.6	0.1	0.6	0.73	-0.52	84.08
4,125.0	0.16	279.70	4,124.8	-0.5	0.0	0.5	0.84	-0.52	-179.04
4,150.0	0.16	263.36	4,149.8	-0.5	0.0	0.5	0.18	0.00	-65.36
4,175.0	0.24	282.90	4,174.8	-0.5	-0.1	0.5	0.42	0.32	78.16
4,200.0	0.23	358.73	4,199.8	-0.5	-0.2	0.5	1.16	-0.04	303.32
4,225.0	0.37	66.91	4,224.8	-0.4	-0.1	0.4	1.42	0.56	272.72
4,250.0	0.45	87.61	4,249.8	-0.4	0.1	0.4	0.67	0.32	82.80
4,275.0	0.45	75.53	4,274.8	-0.3	0.3	0.3	0.38	0.00	-48.32
4,300.0	0.72	70.42	4,299.8	-0.3	0.5	0.3	1.10	1.08	-20.44
4,325.0	0.97	80.03	4,324.8	-0.2	0.9	0.2	1.15	1.00	38.44
4,350.0	1.01	92.65	4,349.8	-0.1	1.3	0.1	0.88	0.16	50.48
4,375.0	0.84	96.31	4,374.8	-0.2	1.7	0.2	0.72	-0.68	14.64
4,400.0	0.78	83.50	4,399.8	-0.2	2.0	0.2	0.76	-0.24	-51.24
4,425.0	0.92	86.85	4,424.8	-0.1	2.4	0.1	0.59	0.56	13.40
4,450.0	0.94	103.11	4,449.8	-0.2	2.8	0.2	1.06	0.08	65.04
4,475.0	0.75	108.67	4,474.8	-0.3	3.2	0.3	0.83	-0.76	22.24
4,500.0	0.49	97.11	4,499.8	-0.3	3.4	0.3	1.15	-1.04	-46.24
4,525.0	0.39	148.52	4,524.8	-0.4	3.6	0.4	1.57	-0.40	205.64
4,550.0	0.43	196.52	4,549.8	-0.6	3.6	0.6	1.34	0.16	192.00
4,575.0	0.76	233.52	4,574.8	-0.8	3.4	0.8	1.96	1.32	148.00
4,600.0	1.09	250.73	4,599.8	-1.0	3.1	0.9	1.71	1.32	68.84

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #601H
Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3375.0usft (Noram #21)
Well:	Fascinator Fed Com #601H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
4,625.0	1.00	262.57	4,624.8	-1.1	2.6	1.0	0.93	-0.36	47.36
4,650.0	0.97	263.67	4,649.8	-1.1	2.2	1.1	0.14	-0.12	4.40
4,675.0	0.81	256.52	4,674.8	-1.2	1.8	1.2	0.78	-0.64	-28.60
4,700.0	1.00	248.75	4,699.8	-1.3	1.5	1.3	0.90	0.76	-31.08
4,725.0	1.13	257.13	4,724.8	-1.4	1.0	1.4	0.81	0.52	33.52
4,750.0	1.06	259.69	4,749.8	-1.5	0.5	1.5	0.34	-0.28	10.24
4,775.0	0.91	257.18	4,774.8	-1.6	0.1	1.6	0.62	-0.60	-10.04
4,800.0	0.84	252.70	4,799.8	-1.7	-0.2	1.7	0.39	-0.28	-17.92
4,825.0	1.15	245.33	4,824.8	-1.9	-0.6	1.9	1.34	1.24	-29.48
4,850.0	1.30	243.23	4,849.8	-2.1	-1.1	2.1	0.63	0.60	-8.40
4,875.0	0.91	247.16	4,874.8	-2.3	-1.6	2.3	1.59	-1.56	15.72
4,900.0	0.90	240.61	4,899.8	-2.5	-1.9	2.5	0.42	-0.04	-26.20
4,925.0	1.25	246.68	4,924.8	-2.7	-2.3	2.7	1.47	1.40	24.28
4,950.0	0.97	244.61	4,949.7	-2.9	-2.8	2.9	1.13	-1.12	-8.28
4,975.0	0.85	223.40	4,974.7	-3.1	-3.1	3.1	1.42	-0.48	-84.84
5,000.0	0.99	210.08	4,999.7	-3.4	-3.3	3.5	1.02	0.56	-53.28
5,025.0	1.08	213.45	5,024.7	-3.8	-3.6	3.8	0.43	0.36	13.48
5,050.0	0.95	203.87	5,049.7	-4.2	-3.8	4.2	0.85	-0.52	-38.32
5,075.0	1.14	189.75	5,074.7	-4.6	-3.9	4.7	1.27	0.76	-56.48
5,100.0	1.28	195.40	5,099.7	-5.1	-4.0	5.2	0.74	0.56	22.60
5,125.0	0.98	196.43	5,124.7	-5.6	-4.2	5.7	1.20	-1.20	4.12
5,150.0	1.08	188.78	5,149.7	-6.1	-4.3	6.1	0.68	0.40	-30.60
5,175.0	1.29	194.41	5,174.7	-6.6	-4.4	6.6	0.96	0.84	22.52
5,200.0	1.04	199.49	5,199.7	-7.1	-4.5	7.1	1.08	-1.00	20.32
5,225.0	0.91	188.65	5,224.7	-7.5	-4.6	7.5	0.90	-0.52	-43.36
5,250.0	1.03	181.82	5,249.7	-7.9	-4.7	7.9	0.67	0.48	-27.32
5,275.0	0.94	198.56	5,274.7	-8.3	-4.7	8.3	1.20	-0.36	66.96
5,300.0	0.69	185.64	5,299.7	-8.6	-4.8	8.7	1.24	-1.00	-51.68
5,325.0	0.73	173.65	5,324.7	-9.0	-4.8	9.0	0.61	0.16	-47.96
5,350.0	0.87	190.98	5,349.7	-9.3	-4.8	9.3	1.11	0.56	69.32
5,375.0	0.87	197.13	5,374.7	-9.7	-4.9	9.7	0.37	0.00	24.60
5,400.0	0.69	192.46	5,399.7	-10.0	-5.0	10.0	0.76	-0.72	-18.68
5,425.0	0.64	179.72	5,424.7	-10.3	-5.0	10.3	0.62	-0.20	-50.96
5,450.0	0.81	186.23	5,449.7	-10.6	-5.1	10.6	0.75	0.68	26.04
5,475.0	0.63	203.22	5,474.7	-10.9	-5.1	10.9	1.11	-0.72	67.96
5,500.0	0.45	197.10	5,499.7	-11.1	-5.2	11.2	0.76	-0.72	-24.48
5,525.0	0.64	193.90	5,524.7	-11.3	-5.3	11.4	0.77	0.76	-12.80
5,550.0	0.76	240.15	5,549.7	-11.6	-5.4	11.6	2.24	0.48	185.00
5,575.0	0.74	265.15	5,574.7	-11.7	-5.8	11.7	1.30	-0.08	100.00
5,600.0	0.74	255.93	5,599.7	-11.7	-6.1	11.8	0.48	0.00	-36.88
5,625.0	1.01	262.62	5,624.7	-11.8	-6.4	11.8	1.15	1.08	26.76
5,650.0	0.87	277.22	5,649.7	-11.8	-6.9	11.8	1.11	-0.56	58.40
5,675.0	0.70	266.63	5,674.7	-11.8	-7.2	11.8	0.89	-0.68	-42.36



Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #601H
Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3375.0usft (Noram #21)
Well:	Fascinator Fed Com #601H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
5,700.0	0.90	256.75	5,699.7	-11.8	-7.5	11.9	0.97	0.80	-39.52
5,725.0	0.99	265.90	5,724.7	-11.9	-7.9	11.9	0.70	0.36	36.60
5,750.0	0.76	281.16	5,749.7	-11.9	-8.3	11.9	1.30	-0.92	61.04
5,775.0	0.69	258.93	5,774.6	-11.9	-8.6	11.9	1.15	-0.28	-88.92
5,800.0	0.71	269.05	5,799.6	-11.9	-8.9	12.0	0.50	0.08	40.48
5,825.0	0.67	279.12	5,824.6	-11.9	-9.2	11.9	0.51	-0.16	40.28
5,850.0	0.46	271.94	5,849.6	-11.9	-9.5	11.9	0.88	-0.84	-28.72
5,875.0	0.55	252.99	5,874.6	-11.9	-9.7	12.0	0.75	0.36	-75.80
5,900.0	0.73	269.97	5,899.6	-11.9	-10.0	12.0	1.04	0.72	67.92
5,925.0	0.68	273.49	5,924.6	-11.9	-10.3	12.0	0.26	-0.20	14.08
5,950.0	0.67	280.13	5,949.6	-11.9	-10.6	12.0	0.32	-0.04	26.56
5,975.0	0.46	264.77	5,974.6	-11.9	-10.8	11.9	1.03	-0.84	-61.44
6,000.0	0.43	265.60	5,999.6	-11.9	-11.0	12.0	0.12	-0.12	3.32
6,025.0	0.56	290.52	6,024.6	-11.8	-11.2	11.9	0.99	0.52	99.68
6,050.0	0.75	313.60	6,049.6	-11.7	-11.4	11.8	1.29	0.76	92.32
6,075.0	0.78	320.94	6,074.6	-11.4	-11.7	11.5	0.41	0.12	29.36
6,100.0	0.81	319.68	6,099.6	-11.2	-11.9	11.3	0.14	0.12	-5.04
6,125.0	0.88	326.18	6,124.6	-10.9	-12.1	11.0	0.47	0.28	26.00
6,150.0	0.87	324.37	6,149.6	-10.6	-12.3	10.7	0.12	-0.04	-7.24
6,175.0	0.85	330.43	6,174.6	-10.2	-12.5	10.3	0.37	-0.08	24.24
6,200.0	0.77	339.96	6,199.6	-9.9	-12.7	10.0	0.63	-0.32	38.12
6,225.0	0.71	335.85	6,224.6	-9.6	-12.8	9.7	0.32	-0.24	-16.44
6,250.0	0.73	323.10	6,249.6	-9.4	-13.0	9.5	0.64	0.08	-51.00
6,275.0	0.64	328.33	6,274.6	-9.1	-13.1	9.2	0.44	-0.36	20.92
6,300.0	0.63	327.67	6,299.6	-8.9	-13.3	9.0	0.05	-0.04	-2.64
6,325.0	0.57	323.56	6,324.6	-8.7	-13.4	8.8	0.30	-0.24	-16.44
6,350.0	0.49	317.05	6,349.6	-8.5	-13.6	8.6	0.40	-0.32	-26.04
6,375.0	0.62	328.11	6,374.6	-8.3	-13.7	8.4	0.67	0.52	44.24
6,400.0	0.51	346.96	6,399.6	-8.1	-13.8	8.2	0.86	-0.44	75.40
6,425.0	0.29	352.81	6,424.6	-7.9	-13.8	8.0	0.89	-0.88	23.40
6,450.0	0.33	303.51	6,449.6	-7.8	-13.9	7.9	1.04	0.16	-197.20
6,475.0	0.45	296.46	6,474.6	-7.7	-14.1	7.8	0.52	0.48	-28.20
6,500.0	0.36	311.69	6,499.6	-7.6	-14.2	7.7	0.56	-0.36	60.92
6,525.0	0.25	352.54	6,524.6	-7.5	-14.3	7.6	0.95	-0.44	163.40
6,550.0	0.11	255.25	6,549.6	-7.5	-14.3	7.6	1.14	-0.56	-389.16
6,575.0	0.38	290.28	6,574.6	-7.4	-14.4	7.5	1.19	1.08	140.12
6,600.0	0.36	338.76	6,599.6	-7.3	-14.5	7.4	1.22	-0.08	193.92
6,625.0	0.12	295.51	6,624.6	-7.3	-14.6	7.4	1.14	-0.96	-173.00
6,650.0	0.29	275.67	6,649.6	-7.2	-14.6	7.3	0.73	0.68	-79.36
6,675.0	0.41	281.97	6,674.6	-7.2	-14.8	7.3	0.50	0.48	25.20
6,700.0	0.27	248.08	6,699.6	-7.2	-14.9	7.3	0.96	-0.56	-135.56
6,725.0	0.16	303.70	6,724.6	-7.2	-15.0	7.3	0.89	-0.44	222.48
6,750.0	0.41	338.77	6,749.6	-7.1	-15.1	7.2	1.18	1.00	140.28
6,775.0	0.39	6.53	6,774.6	-6.9	-15.1	7.1	0.77	-0.08	111.04

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #601H
Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3375.0usft (Noram #21)
Well:	Fascinator Fed Com #601H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
6,800.0	0.25	20.06	6,799.6	-6.8	-15.1	6.9	0.63	-0.56	54.12
6,825.0	0.18	332.08	6,824.6	-6.7	-15.1	6.8	0.74	-0.28	-191.92
6,850.0	0.29	336.38	6,849.6	-6.6	-15.1	6.7	0.45	0.44	17.20
6,875.0	0.43	355.93	6,874.6	-6.5	-15.2	6.6	0.74	0.56	78.20
6,900.0	0.35	11.51	6,899.6	-6.3	-15.1	6.4	0.53	-0.32	62.32
6,925.0	0.17	13.71	6,924.6	-6.2	-15.1	6.3	0.72	-0.72	8.80
6,950.0	0.33	342.86	6,949.6	-6.1	-15.1	6.2	0.81	0.64	-123.40
6,975.0	0.84	350.20	6,974.6	-5.8	-15.2	6.0	2.06	2.04	29.36
7,000.0	1.15	3.98	6,999.6	-5.4	-15.2	5.5	1.56	1.24	55.12
7,025.0	1.04	3.61	7,024.6	-4.9	-15.2	5.0	0.44	-0.44	-1.48
7,050.0	1.07	352.64	7,049.6	-4.5	-15.2	4.6	0.82	0.12	-43.88
7,075.0	1.30	355.47	7,074.6	-4.0	-15.2	4.1	0.95	0.92	11.32
7,100.0	1.25	5.61	7,099.6	-3.4	-15.2	3.5	0.92	-0.20	40.56
7,125.0	1.07	1.66	7,124.6	-2.9	-15.2	3.0	0.79	-0.72	-15.80
7,150.0	1.05	354.50	7,149.6	-2.4	-15.2	2.6	0.54	-0.08	-28.64
7,175.0	1.19	350.95	7,174.6	-2.0	-15.3	2.1	0.62	0.56	-14.20
7,200.0	1.23	359.63	7,199.6	-1.4	-15.3	1.5	0.75	0.16	34.72
7,225.0	1.09	8.84	7,224.5	-0.9	-15.3	1.0	0.93	-0.56	36.84
7,250.0	0.91	2.40	7,249.5	-0.5	-15.2	0.6	0.85	-0.72	-25.76
7,275.0	0.96	358.59	7,274.5	-0.1	-15.2	0.2	0.32	0.20	-15.24
7,300.0	1.07	0.47	7,299.5	0.3	-15.2	-0.2	0.46	0.44	7.52
7,325.0	0.95	354.01	7,324.5	0.8	-15.3	-0.7	0.66	-0.48	-25.84
7,350.0	0.89	352.87	7,349.5	1.2	-15.3	-1.1	0.25	-0.24	-4.56
7,375.0	0.85	357.69	7,374.5	1.6	-15.3	-1.5	0.33	-0.16	19.28
7,400.0	0.87	10.35	7,399.5	1.9	-15.3	-1.8	0.76	0.08	50.64
7,425.0	0.80	17.11	7,424.5	2.3	-15.2	-2.2	0.48	-0.28	27.04
7,450.0	0.74	16.16	7,449.5	2.6	-15.1	-2.5	0.25	-0.24	-3.80
7,475.0	0.63	18.88	7,474.5	2.9	-15.0	-2.8	0.46	-0.44	10.88
7,500.0	0.56	18.19	7,499.5	3.1	-15.0	-3.0	0.28	-0.28	-2.76
7,525.0	0.52	22.81	7,524.5	3.4	-14.9	-3.3	0.24	-0.16	18.48
7,550.0	0.53	24.79	7,549.5	3.6	-14.8	-3.5	0.08	0.04	7.92
7,575.0	0.46	18.91	7,574.5	3.8	-14.7	-3.7	0.35	-0.28	-23.52
7,600.0	0.69	29.16	7,599.5	4.0	-14.6	-3.9	1.00	0.92	41.00
7,625.0	0.56	7.76	7,624.5	4.3	-14.5	-4.1	1.06	-0.52	-85.60
7,650.0	0.50	359.65	7,649.5	4.5	-14.5	-4.4	0.38	-0.24	-32.44
7,675.0	0.49	24.34	7,674.5	4.7	-14.4	-4.6	0.85	-0.04	98.76
7,700.0	0.26	32.25	7,699.5	4.8	-14.4	-4.7	0.94	-0.92	31.64
7,725.0	0.28	340.50	7,724.5	4.9	-14.4	-4.8	0.95	0.08	-207.00
7,750.0	0.51	16.33	7,749.5	5.1	-14.4	-5.0	1.31	0.92	143.32
7,775.0	0.46	32.76	7,774.5	5.3	-14.3	-5.2	0.59	-0.20	65.72
7,800.0	0.22	39.90	7,799.5	5.4	-14.2	-5.3	0.97	-0.96	28.56
7,825.0	0.33	350.88	7,824.5	5.5	-14.2	-5.4	1.00	0.44	-196.08
7,850.0	0.46	18.71	7,849.5	5.7	-14.1	-5.6	0.91	0.52	111.32

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #601H
Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3375.0usft (Noram #21)
Well:	Fascinator Fed Com #601H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
7,875.0	0.31	47.20	7,874.5	5.8	-14.1	-5.7	0.96	-0.60	113.96
7,900.0	0.08	345.50	7,899.5	5.9	-14.0	-5.8	1.12	-0.92	-246.80
7,925.0	0.34	14.51	7,924.5	6.0	-14.0	-5.9	1.09	1.04	116.04
7,950.0	0.35	46.24	7,949.5	6.1	-13.9	-6.0	0.76	0.04	126.92
7,975.0	0.10	43.81	7,974.5	6.2	-13.9	-6.1	1.00	-1.00	-9.72
8,000.0	0.31	5.18	7,999.5	6.3	-13.8	-6.2	0.96	0.84	-154.52
8,025.0	0.38	46.04	8,024.5	6.4	-13.8	-6.3	1.00	0.28	163.44
8,050.0	0.17	43.34	8,049.5	6.5	-13.7	-6.4	0.84	-0.84	-10.80
8,075.0	0.32	8.22	8,074.5	6.6	-13.7	-6.5	0.82	0.60	-140.48
8,100.0	0.39	50.20	8,099.5	6.7	-13.6	-6.6	1.05	0.28	167.92
8,125.0	0.30	56.93	8,124.5	6.8	-13.5	-6.7	0.39	-0.36	26.92
8,150.0	0.23	353.14	8,149.5	6.9	-13.4	-6.8	1.15	-0.28	-255.16
8,175.0	0.41	29.50	8,174.5	7.0	-13.4	-6.9	1.05	0.72	145.44
8,200.0	0.20	61.52	8,199.5	7.1	-13.3	-7.0	1.05	-0.84	128.08
8,225.0	0.16	14.91	8,224.5	7.1	-13.2	-7.1	0.59	-0.16	-186.44
8,250.0	0.35	12.19	8,249.5	7.3	-13.2	-7.2	0.76	0.76	-10.88
8,275.0	0.32	58.82	8,274.5	7.4	-13.1	-7.3	1.07	-0.12	186.52
8,300.0	0.09	40.21	8,299.5	7.4	-13.1	-7.3	0.95	-0.92	-74.44
8,325.0	0.31	1.13	8,324.5	7.5	-13.1	-7.4	0.99	0.88	-156.32
8,350.0	0.34	42.70	8,349.5	7.6	-13.0	-7.5	0.93	0.12	166.28
8,375.0	0.19	56.98	8,374.5	7.7	-12.9	-7.6	0.65	-0.60	57.12
8,400.0	0.16	354.31	8,399.5	7.8	-12.9	-7.7	0.74	-0.12	-250.68
8,425.0	0.42	29.64	8,424.5	7.9	-12.8	-7.8	1.22	1.04	141.32
8,450.0	0.29	57.94	8,449.5	8.0	-12.7	-7.9	0.86	-0.52	113.20
8,475.0	0.13	16.55	8,474.5	8.0	-12.7	-8.0	0.84	-0.64	-165.56
8,500.0	0.39	17.54	8,499.5	8.2	-12.6	-8.1	1.04	1.04	3.96
8,525.0	0.38	46.20	8,524.5	8.3	-12.6	-8.2	0.76	-0.04	114.64
8,550.0	0.27	65.76	8,549.5	8.4	-12.4	-8.3	0.62	-0.44	78.24
8,575.0	0.17	8.60	8,574.5	8.4	-12.4	-8.3	0.91	-0.40	-228.64
8,600.0	0.38	8.17	8,599.5	8.6	-12.4	-8.5	0.84	0.84	-1.72
8,625.0	0.37	16.63	8,624.5	8.7	-12.3	-8.6	0.22	-0.04	33.84
8,650.0	0.50	36.87	8,649.5	8.9	-12.2	-8.8	0.80	0.52	80.96
8,675.0	0.45	60.07	8,674.5	9.0	-12.1	-8.9	0.79	-0.20	92.80
8,700.0	0.40	62.29	8,699.5	9.1	-11.9	-9.0	0.21	-0.20	8.88
8,725.0	0.41	29.36	8,724.5	9.2	-11.8	-9.1	0.92	0.04	-131.72
8,750.0	0.65	32.94	8,749.5	9.4	-11.7	-9.3	0.97	0.96	14.32
8,775.0	0.67	57.10	8,774.5	9.6	-11.5	-9.5	1.11	0.08	96.64
8,800.0	0.52	63.54	8,799.5	9.7	-11.3	-9.7	0.66	-0.60	25.76
8,825.0	0.55	49.29	8,824.5	9.9	-11.1	-9.8	0.54	0.12	-57.00
8,850.0	0.74	43.04	8,849.5	10.1	-10.9	-10.0	0.81	0.76	-25.00
8,875.0	0.75	60.51	8,874.5	10.3	-10.6	-10.2	0.91	0.04	69.88
8,900.0	0.68	67.20	8,899.5	10.4	-10.3	-10.3	0.44	-0.28	26.76
8,925.0	0.61	68.23	8,924.5	10.5	-10.1	-10.4	0.28	-0.28	4.12

Company: COG Operating, LLC
Project: Lea County, NM
Site: Sec 30, T24-S,R35E
Well: Fascinator Fed Com #601H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Fascinator Fed Com #601H
TVD Reference: RKB @ 3375.0usft (Noram #21)
MD Reference: RKB @ 3375.0usft (Noram #21)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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)
8,950.0	0.56	63.96	8,949.5	10.6	-9.8	-10.5	0.27	-0.20	-17.08
8,975.0	0.57	59.47	8,974.5	10.7	-9.6	-10.7	0.18	0.04	-17.96
9,000.0	0.72	45.73	8,999.5	10.9	-9.4	-10.8	0.86	0.60	-54.96
9,025.0	0.82	60.36	9,024.5	11.1	-9.1	-11.0	0.88	0.40	58.52
9,050.0	0.70	66.05	9,049.5	11.3	-8.8	-11.2	0.57	-0.48	22.76
9,075.0	0.65	50.77	9,074.5	11.4	-8.6	-11.3	0.74	-0.20	-61.12
9,100.0	0.89	51.03	9,099.5	11.6	-8.3	-11.6	0.96	0.96	1.04
9,125.0	0.91	69.66	9,124.5	11.8	-8.0	-11.8	1.17	0.08	74.52
9,150.0	0.89	76.32	9,149.5	11.9	-7.6	-11.9	0.43	-0.08	26.64
9,175.0	0.84	74.03	9,174.5	12.0	-7.3	-12.0	0.24	-0.20	-9.16
9,200.0	0.80	56.27	9,199.5	12.2	-6.9	-12.1	1.02	-0.16	-71.04
9,225.0	0.99	70.81	9,224.5	12.3	-6.6	-12.3	1.18	0.76	58.16
9,250.0	0.79	72.55	9,249.5	12.5	-6.2	-12.4	0.81	-0.80	6.96
9,275.0	1.05	64.90	9,274.4	12.6	-5.9	-12.6	1.15	1.04	-30.60
9,300.0	0.93	76.37	9,299.4	12.8	-5.4	-12.7	0.92	-0.48	45.88
9,325.0	1.05	65.99	9,324.4	12.9	-5.0	-12.9	0.86	0.48	-41.52
9,350.0	1.13	74.88	9,349.4	13.1	-4.6	-13.0	0.75	0.32	35.56
9,375.0	1.00	80.09	9,374.4	13.2	-4.1	-13.1	0.65	-0.52	20.84
9,400.0	1.11	74.92	9,399.4	13.3	-3.7	-13.2	0.58	0.44	-20.68
9,425.0	1.14	88.99	9,424.4	13.3	-3.2	-13.3	1.11	0.12	56.28
9,450.0	1.04	77.56	9,449.4	13.4	-2.7	-13.4	0.96	-0.40	-45.72
9,475.0	1.22	83.78	9,474.4	13.5	-2.3	-13.4	0.87	0.72	24.88
9,500.0	1.05	78.40	9,499.4	13.5	-1.8	-13.5	0.80	-0.68	-21.52
9,525.0	1.19	86.67	9,524.4	13.6	-1.3	-13.6	0.85	0.56	33.08
9,550.0	1.06	76.23	9,549.4	13.7	-0.8	-13.7	0.97	-0.52	-41.76
9,575.0	1.03	84.12	9,574.4	13.7	-0.3	-13.7	0.59	-0.12	31.56
9,600.0	0.42	74.07	9,599.4	13.8	0.0	-13.8	2.48	-2.44	-40.20
9,625.0	0.28	74.77	9,624.4	13.8	0.1	-13.8	0.56	-0.56	2.80
9,650.0	0.30	260.15	9,649.4	13.8	0.1	-13.8	2.32	0.08	-698.48
9,675.0	0.43	288.56	9,674.4	13.8	0.0	-13.8	0.88	0.52	113.64
9,700.0	0.32	268.37	9,699.4	13.9	-0.2	-13.9	0.68	-0.44	-80.76
9,725.0	0.56	262.19	9,724.4	13.9	-0.4	-13.9	0.98	0.96	-24.72
9,750.0	0.32	271.63	9,749.4	13.8	-0.6	-13.8	1.00	-0.96	37.76
9,775.0	0.59	263.87	9,774.4	13.8	-0.8	-13.8	1.11	1.08	-31.04
9,800.0	0.27	279.95	9,799.4	13.8	-1.0	-13.8	1.36	-1.28	64.32
9,825.0	0.38	269.37	9,824.4	13.8	-1.1	-13.8	0.50	0.44	-42.32
9,850.0	0.21	11.07	9,849.4	13.9	-1.2	-13.9	1.88	-0.68	406.80
9,875.0	0.21	36.94	9,874.4	14.0	-1.2	-14.0	0.38	0.00	103.48
9,900.0	0.71	36.37	9,899.4	14.1	-1.0	-14.1	2.00	2.00	-2.28
9,925.0	1.18	53.82	9,924.4	14.4	-0.7	-14.4	2.18	1.88	69.80
9,950.0	1.25	55.11	9,949.4	14.7	-0.3	-14.7	0.30	0.28	5.16
9,975.0	1.43	46.19	9,974.4	15.1	0.1	-15.1	1.10	0.72	-35.68
10,000.0	1.62	44.94	9,999.4	15.5	0.6	-15.6	0.77	0.76	-5.00
10,025.0	1.81	51.00	10,024.3	16.0	1.2	-16.1	1.05	0.76	24.24

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #601H
Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3375.0usft (Noram #21)
Well:	Fascinator Fed Com #601H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
10,050.0	1.76	55.38	10,049.3	16.5	1.8	-16.5	0.58	-0.20	17.52
10,075.0	1.61	50.51	10,074.3	17.0	2.4	-17.0	0.83	-0.60	-19.48
10,100.0	1.68	51.01	10,099.3	17.4	2.9	-17.4	0.29	0.28	2.00
10,125.0	1.65	51.74	10,124.3	17.9	3.5	-17.9	0.15	-0.12	2.92
10,150.0	2.09	40.31	10,149.3	18.4	4.1	-18.5	2.30	1.76	-45.72
10,175.0	2.46	33.05	10,174.3	19.2	4.7	-19.3	1.87	1.48	-29.04
10,200.0	2.68	28.68	10,199.2	20.2	5.2	-20.2	1.18	0.88	-17.48
10,225.0	3.03	17.98	10,224.2	21.3	5.7	-21.4	2.54	1.40	-42.80
10,250.0	3.19	15.50	10,249.2	22.6	6.1	-22.7	0.84	0.64	-9.92
10,275.0	3.30	10.81	10,274.1	24.0	6.4	-24.1	1.15	0.44	-18.76
10,300.0	3.42	9.69	10,299.1	25.4	6.7	-25.5	0.55	0.48	-4.48
10,325.0	3.44	6.78	10,324.1	26.9	6.9	-27.0	0.70	0.08	-11.64
10,350.0	3.50	2.37	10,349.0	28.4	7.0	-28.5	1.09	0.24	-17.64
10,375.0	3.35	359.89	10,374.0	29.9	7.1	-30.0	0.84	-0.60	-9.92
10,400.0	3.35	356.83	10,398.9	31.4	7.0	-31.4	0.72	0.00	-12.24
10,425.0	3.37	355.97	10,423.9	32.9	6.9	-32.9	0.22	0.08	-3.44
10,450.0	3.32	355.90	10,448.8	34.3	6.8	-34.4	0.20	-0.20	-0.28
10,475.0	3.40	354.72	10,473.8	35.8	6.7	-35.8	0.42	0.32	-4.72
10,500.0	3.29	354.21	10,498.7	37.2	6.6	-37.3	0.46	-0.44	-2.04
10,525.0	3.21	354.37	10,523.7	38.6	6.4	-38.7	0.32	-0.32	0.64
10,550.0	3.13	352.65	10,548.7	40.0	6.3	-40.0	0.50	-0.32	-6.88
10,575.0	3.07	352.81	10,573.6	41.3	6.1	-41.4	0.24	-0.24	0.64
10,600.0	3.14	353.61	10,598.6	42.7	5.9	-42.7	0.33	0.28	3.20
10,625.0	3.05	352.14	10,623.6	44.0	5.8	-44.1	0.48	-0.36	-5.88
10,650.0	3.05	352.97	10,648.5	45.3	5.6	-45.4	0.18	0.00	3.32
10,675.0	2.92	353.92	10,673.5	46.6	5.5	-46.7	0.56	-0.52	3.80
10,700.0	2.86	355.21	10,698.5	47.9	5.3	-47.9	0.35	-0.24	5.16
10,725.0	2.76	357.86	10,723.4	49.1	5.3	-49.2	0.66	-0.40	10.60
10,750.0	2.61	358.22	10,748.4	50.3	5.2	-50.3	0.60	-0.60	1.44
10,775.0	2.37	356.46	10,773.4	51.4	5.2	-51.4	1.01	-0.96	-7.04
10,800.0	2.01	357.28	10,798.4	52.3	5.1	-52.4	1.45	-1.44	3.28
10,825.0	2.01	0.76	10,823.3	53.2	5.1	-53.2	0.49	0.00	13.92
10,850.0	1.96	354.46	10,848.3	54.1	5.1	-54.1	0.89	-0.20	-25.20
10,875.0	1.80	357.06	10,873.3	54.9	5.0	-54.9	0.73	-0.64	10.40
10,900.0	1.68	352.10	10,898.3	55.6	4.9	-55.7	0.77	-0.48	-19.84
10,925.0	1.47	353.73	10,923.3	56.3	4.9	-56.4	0.86	-0.84	6.52
10,950.0	1.32	342.42	10,948.3	56.9	4.7	-56.9	1.25	-0.60	-45.24
10,975.0	1.04	339.11	10,973.3	57.4	4.6	-57.4	1.15	-1.12	-13.24
11,000.0	0.88	318.94	10,998.3	57.8	4.4	-57.8	1.49	-0.64	-80.68
11,025.0	0.90	327.76	11,023.3	58.1	4.1	-58.1	0.55	0.08	35.28
11,050.0	0.81	318.54	11,048.3	58.4	3.9	-58.4	0.66	-0.36	-36.88
11,075.0	0.96	317.20	11,073.3	58.7	3.6	-58.7	0.61	0.60	-5.36
11,100.0	0.94	330.66	11,098.3	59.0	3.4	-59.0	0.89	-0.08	53.84

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #601H
Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3375.0usft (Noram #21)
Well:	Fascinator Fed Com #601H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
11,125.0	0.87	330.61	11,123.3	59.3	3.2	-59.4	0.28	-0.28	-0.20
11,150.0	0.85	336.72	11,148.3	59.7	3.0	-59.7	0.38	-0.08	24.44
11,175.0	0.96	345.09	11,173.3	60.0	2.9	-60.1	0.69	0.44	33.48
11,200.0	0.98	350.33	11,198.3	60.5	2.8	-60.5	0.36	0.08	20.96
11,225.0	1.08	353.84	11,223.2	60.9	2.8	-60.9	0.47	0.40	14.04
11,250.0	1.17	359.46	11,248.2	61.4	2.7	-61.4	0.57	0.36	22.48
11,275.0	1.21	356.29	11,273.2	61.9	2.7	-61.9	0.31	0.16	-12.68
11,300.0	1.18	356.76	11,298.2	62.4	2.7	-62.4	0.13	-0.12	1.88
11,325.0	0.89	350.73	11,323.2	62.9	2.6	-62.9	1.24	-1.16	-24.12
11,350.0	0.53	333.51	11,348.2	63.2	2.6	-63.2	1.66	-1.44	-68.88
11,375.0	0.44	326.01	11,373.2	63.4	2.4	-63.4	0.44	-0.36	-30.00
11,400.0	0.38	319.69	11,398.2	63.5	2.3	-63.5	0.30	-0.24	-25.28
11,425.0	0.43	316.45	11,423.2	63.6	2.2	-63.6	0.22	0.20	-12.96
11,450.0	0.49	307.56	11,448.2	63.8	2.1	-63.8	0.37	0.24	-35.56
11,475.0	0.51	326.70	11,473.2	63.9	1.9	-63.9	0.67	0.08	76.56
11,500.0	0.50	334.50	11,498.2	64.1	1.8	-64.1	0.28	-0.04	31.20
11,525.0	0.50	328.23	11,523.2	64.3	1.7	-64.3	0.22	0.00	-25.08
11,550.0	0.36	321.35	11,548.2	64.5	1.6	-64.5	0.60	-0.56	-27.52
11,575.0	0.41	318.59	11,573.2	64.6	1.5	-64.6	0.21	0.20	-11.04
11,600.0	0.44	272.88	11,598.2	64.7	1.3	-64.7	1.33	0.12	-182.84
11,625.0	0.32	311.54	11,623.2	64.7	1.2	-64.7	1.10	-0.48	154.64
Gyro Tie In @ 11633.0' MD / 11631.2' TVD									
11,633.0	0.21	226.07	11,631.2	64.7	1.2	-64.7	4.61	-1.38	-1,068.38
11,758.0	0.96	164.12	11,756.2	63.5	1.3	-63.6	0.70	0.60	-49.56
11,790.0	0.98	155.45	11,788.2	63.0	1.5	-63.0	0.46	0.06	-27.09
11,821.0	0.94	149.63	11,819.2	62.6	1.7	-62.6	0.34	-0.13	-18.77
11,852.0	2.80	175.80	11,850.2	61.6	1.9	-61.6	6.45	6.00	84.42
11,884.0	6.99	185.52	11,882.1	58.9	1.8	-58.9	13.30	13.09	30.38
11,915.0	11.55	190.52	11,912.7	54.0	1.0	-54.0	14.92	14.71	16.13
11,947.0	16.11	193.83	11,943.7	46.5	-0.6	-46.5	14.46	14.25	10.34
11,979.0	20.81	194.17	11,974.1	36.7	-3.1	-36.6	14.69	14.69	1.06
12,011.0	24.06	195.02	12,003.6	24.8	-6.2	-24.8	10.21	10.16	2.66
12,043.0	27.79	191.63	12,032.4	11.2	-9.4	-11.2	12.54	11.66	-10.59
12,074.0	31.54	188.16	12,059.3	-3.9	-12.0	4.0	13.30	12.10	-11.19
12,106.0	34.82	188.27	12,086.1	-21.2	-14.5	21.3	10.25	10.25	0.34
12,137.0	38.05	189.66	12,111.1	-39.4	-17.3	39.5	10.75	10.42	4.48
12,168.0	40.08	190.83	12,135.1	-58.6	-20.8	58.8	6.97	6.55	3.77
12,200.0	42.04	191.16	12,159.3	-79.2	-24.8	79.4	6.16	6.13	1.03
12,231.0	44.17	190.98	12,181.9	-100.0	-28.9	100.2	6.88	6.87	-0.58
FTP Crossed @ 12260.2' MD / 12202.5' TVD									
12,260.2	45.95	191.10	12,202.5	-120.3	-32.9	120.6	6.10	6.09	0.41
12,263.0	46.12	191.11	12,204.5	-122.3	-33.2	122.5	6.10	6.09	0.39
12,295.0	47.37	191.24	12,226.4	-145.2	-37.8	145.4	3.92	3.91	0.41
12,326.0	48.34	190.69	12,247.2	-167.7	-42.1	168.0	3.39	3.13	-1.77

Company: COG Operating, LLC
Project: Lea County, NM
Site: Sec 30, T24-S,R35E
Well: Fascinator Fed Com #601H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Fascinator Fed Com #601H
TVD Reference: RKB @ 3375.0usft (Noram #21)
MD Reference: RKB @ 3375.0usft (Noram #21)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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)
12,358.0	50.15	190.64	12,268.1	-191.5	-46.6	191.9	5.66	5.66	-0.16
12,389.0	52.41	191.12	12,287.5	-215.3	-51.2	215.7	7.39	7.29	1.55
12,421.0	54.55	190.69	12,306.5	-240.5	-56.1	240.9	6.77	6.69	-1.34
12,453.0	56.88	191.12	12,324.5	-266.5	-61.1	266.9	7.37	7.28	1.34
12,484.0	58.76	191.58	12,341.0	-292.2	-66.2	292.7	6.19	6.06	1.48
12,515.0	60.33	192.56	12,356.8	-318.4	-71.8	318.9	5.75	5.06	3.16
12,547.0	61.83	192.95	12,372.2	-345.7	-78.0	346.2	4.81	4.69	1.22
12,578.0	62.50	192.83	12,386.7	-372.4	-84.1	373.0	2.19	2.16	-0.39
12,610.0	64.36	192.66	12,401.0	-400.3	-90.4	401.0	5.83	5.81	-0.53
12,641.0	66.38	192.42	12,413.9	-427.8	-96.5	428.5	6.55	6.52	-0.77
12,673.0	69.05	191.52	12,426.1	-456.8	-102.7	457.5	8.74	8.34	-2.81
12,704.0	70.92	191.73	12,436.7	-485.3	-108.5	486.1	6.07	6.03	0.68
12,735.0	73.06	191.66	12,446.3	-514.2	-114.5	515.0	6.91	6.90	-0.23
12,767.0	75.67	192.21	12,454.9	-544.3	-120.9	545.2	8.32	8.16	1.72
12,799.0	77.58	192.59	12,462.3	-574.7	-127.6	575.6	6.08	5.97	1.19
12,831.0	80.31	193.03	12,468.4	-605.4	-134.5	606.3	8.64	8.53	1.38
12,894.0	86.03	192.38	12,475.9	-666.3	-148.3	667.4	9.14	9.08	-1.03
12,933.0	86.19	192.11	12,478.6	-704.4	-156.5	705.5	0.80	0.41	-0.69
13,027.0	89.55	185.78	12,482.1	-797.1	-171.1	798.3	7.62	3.57	-6.73
13,121.0	90.17	183.49	12,482.3	-890.8	-178.7	892.0	2.52	0.66	-2.44
13,216.0	89.94	182.10	12,482.2	-985.7	-183.4	987.0	1.48	-0.24	-1.46
13,311.0	90.64	180.51	12,481.7	-1,080.6	-185.5	1,081.9	1.83	0.74	-1.67
13,405.0	91.46	180.71	12,480.0	-1,174.6	-186.5	1,175.9	0.90	0.87	0.21
13,500.0	92.60	179.82	12,476.6	-1,269.6	-187.0	1,270.9	1.52	1.20	-0.94
13,595.0	92.27	179.56	12,472.6	-1,364.5	-186.5	1,365.8	0.44	-0.35	-0.27
13,689.0	88.18	179.75	12,472.2	-1,458.5	-185.9	1,459.7	4.36	-4.35	0.20
13,784.0	88.21	178.58	12,475.2	-1,553.4	-184.5	1,554.7	1.23	0.03	-1.23
13,879.0	88.69	176.68	12,477.8	-1,648.3	-180.6	1,649.5	2.06	0.51	-2.00
13,974.0	89.16	177.93	12,479.6	-1,743.1	-176.1	1,744.4	1.41	0.49	1.32
14,069.0	88.88	177.91	12,481.2	-1,838.1	-172.7	1,839.3	0.30	-0.29	-0.02
14,164.0	89.16	178.04	12,482.8	-1,933.0	-169.3	1,934.2	0.32	0.29	0.14
14,259.0	88.69	179.08	12,484.6	-2,028.0	-166.9	2,029.1	1.20	-0.49	1.09
14,354.0	90.03	179.61	12,485.7	-2,122.9	-165.8	2,124.1	1.52	1.41	0.56
14,449.0	89.47	181.49	12,486.1	-2,217.9	-166.7	2,219.1	2.06	-0.59	1.98
14,545.0	87.25	179.30	12,488.8	-2,313.9	-167.4	2,315.0	3.25	-2.31	-2.28
14,639.0	88.13	179.63	12,492.6	-2,407.8	-166.5	2,408.9	1.00	0.94	0.35
14,734.0	89.08	179.75	12,494.9	-2,502.8	-166.0	2,503.9	1.01	1.00	0.13
14,828.0	88.54	179.59	12,496.9	-2,596.7	-165.5	2,597.9	0.60	-0.57	-0.17
14,923.0	89.33	179.40	12,498.6	-2,691.7	-164.6	2,692.8	0.86	0.83	-0.20
15,018.0	88.82	178.96	12,500.2	-2,786.7	-163.3	2,787.8	0.71	-0.54	-0.46
15,113.0	89.41	178.78	12,501.6	-2,881.7	-161.4	2,882.7	0.65	0.62	-0.19
15,207.0	88.35	178.56	12,503.5	-2,975.6	-159.2	2,976.7	1.15	-1.13	-0.23
15,303.0	88.74	178.82	12,505.9	-3,071.6	-157.0	3,072.6	0.49	0.41	0.27

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #601H
Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3375.0usft (Noram #21)
Well:	Fascinator Fed Com #601H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
15,399.0	89.22	179.07	12,507.6	-3,167.5	-155.3	3,168.6	0.56	0.50	0.26
15,494.0	88.63	179.26	12,509.4	-3,262.5	-153.9	3,263.5	0.65	-0.62	0.20
15,588.0	88.10	179.06	12,512.1	-3,356.5	-152.5	3,357.5	0.60	-0.56	-0.21
15,683.0	87.98	179.88	12,515.3	-3,451.4	-151.6	3,452.4	0.87	-0.13	0.86
15,777.0	87.98	180.58	12,518.7	-3,545.3	-152.0	3,546.3	0.74	0.00	0.74
15,873.0	87.98	180.14	12,522.0	-3,641.3	-152.6	3,642.3	0.46	0.00	-0.46
15,967.0	87.26	181.13	12,525.9	-3,735.2	-153.6	3,736.2	1.30	-0.77	1.05
16,061.0	87.98	178.93	12,529.8	-3,829.1	-153.7	3,830.1	2.46	0.77	-2.34
16,155.0	90.50	177.08	12,531.1	-3,923.0	-150.4	3,924.0	3.33	2.68	-1.97
16,250.0	90.42	176.91	12,530.3	-4,017.9	-145.4	4,018.8	0.20	-0.08	-0.18
16,344.0	90.31	177.41	12,529.7	-4,111.8	-140.8	4,112.7	0.54	-0.12	0.53
16,439.0	90.48	177.23	12,529.1	-4,206.7	-136.3	4,207.5	0.26	0.18	-0.19
16,533.0	90.17	177.66	12,528.5	-4,300.6	-132.2	4,301.4	0.56	-0.33	0.46
16,628.0	90.22	177.90	12,528.2	-4,395.5	-128.5	4,396.3	0.26	0.05	0.25
16,722.0	90.76	178.28	12,527.4	-4,489.4	-125.3	4,490.2	0.70	0.57	0.40
16,817.0	89.64	178.72	12,527.1	-4,584.4	-122.9	4,585.2	1.27	-1.18	0.46
16,911.0	88.57	179.32	12,528.5	-4,678.4	-121.2	4,679.1	1.31	-1.14	0.64
17,005.0	88.04	179.28	12,531.3	-4,772.3	-120.1	4,773.1	0.57	-0.56	-0.04
17,100.0	88.01	179.39	12,534.6	-4,867.3	-119.0	4,868.0	0.12	-0.03	0.12
17,195.0	88.21	179.70	12,537.7	-4,962.2	-118.2	4,962.9	0.39	0.21	0.33
17,290.0	87.96	179.62	12,540.9	-5,057.2	-117.7	5,057.9	0.28	-0.26	-0.08
17,384.0	87.90	180.35	12,544.3	-5,151.1	-117.7	5,151.8	0.78	-0.06	0.78
17,475.0	88.60	180.55	12,547.1	-5,242.0	-118.4	5,242.8	0.80	0.77	0.22
17,569.0	89.39	180.37	12,548.7	-5,336.0	-119.1	5,336.7	0.86	0.84	-0.19
17,664.0	89.89	180.67	12,549.3	-5,431.0	-120.0	5,431.7	0.61	0.53	0.32
17,758.0	90.06	180.27	12,549.4	-5,525.0	-120.8	5,525.7	0.46	0.18	-0.43
17,853.0	89.83	179.81	12,549.5	-5,620.0	-120.8	5,620.7	0.54	-0.24	-0.48
17,947.0	90.73	179.03	12,549.0	-5,714.0	-119.9	5,714.7	1.27	0.96	-0.83
18,042.0	91.17	179.27	12,547.4	-5,809.0	-118.5	5,809.7	0.53	0.46	0.25
18,136.0	89.89	179.53	12,546.6	-5,903.0	-117.5	5,903.7	1.39	-1.36	0.28
18,230.0	90.61	179.39	12,546.1	-5,997.0	-116.6	5,997.7	0.78	0.77	-0.15
Last QES MWD Survey @ 18324.0' MD / 12546.2' TVD									
18,324.0	89.30	179.91	12,546.2	-6,091.0	-116.0	6,091.6	1.50	-1.39	0.55
18,419.0	88.60	180.02	12,548.0	-6,186.0	-116.0	6,186.6	0.75	-0.74	0.12
18,513.0	87.90	180.45	12,550.8	-6,279.9	-116.3	6,280.6	0.87	-0.74	0.46
18,608.0	87.84	180.47	12,554.4	-6,374.8	-117.1	6,375.5	0.07	-0.06	0.02
18,702.0	88.07	182.94	12,557.7	-6,468.7	-119.9	6,469.4	2.64	0.24	2.63
18,797.0	87.51	180.11	12,561.4	-6,563.6	-122.4	6,564.3	3.03	-0.59	-2.98
18,891.0	87.59	180.32	12,565.4	-6,657.5	-122.8	6,658.2	0.24	0.09	0.22
18,985.0	87.42	180.58	12,569.5	-6,751.4	-123.5	6,752.1	0.33	-0.18	0.28
19,080.0	87.34	179.29	12,573.8	-6,846.3	-123.4	6,847.0	1.36	-0.08	-1.36
19,175.0	87.30	178.80	12,578.3	-6,941.2	-121.8	6,941.9	0.52	-0.04	-0.52
19,269.0	87.00	179.19	12,583.0	-7,035.1	-120.2	7,035.8	0.52	-0.32	0.41
19,364.0	87.20	178.68	12,587.8	-7,129.9	-118.4	7,130.6	0.58	0.21	-0.54

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #601H
Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3375.0usft (Noram #21)
Well:	Fascinator Fed Com #601H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
19,458.0	86.98	178.31	12,592.5	-7,223.8	-116.0	7,224.4	0.46	-0.23	-0.39
19,553.0	87.00	178.26	12,597.5	-7,318.6	-113.1	7,319.2	0.06	0.02	-0.05
19,648.0	87.48	177.74	12,602.1	-7,413.5	-109.8	7,414.0	0.74	0.51	-0.55
19,743.0	89.38	177.27	12,604.7	-7,508.3	-105.7	7,508.9	2.06	2.00	-0.49
19,837.0	90.64	175.61	12,604.7	-7,602.1	-99.8	7,602.7	2.22	1.34	-1.77
19,931.0	89.27	176.09	12,604.8	-7,695.9	-93.0	7,696.4	1.54	-1.46	0.51
20,026.0	88.94	176.13	12,606.2	-7,790.7	-86.6	7,791.1	0.35	-0.35	0.04
20,121.0	87.68	177.55	12,609.0	-7,885.5	-81.3	7,885.8	2.00	-1.33	1.49
20,215.0	88.04	178.79	12,612.6	-7,979.3	-78.3	7,979.7	1.37	0.38	1.32
20,310.0	87.98	179.93	12,615.9	-8,074.3	-77.3	8,074.6	1.20	-0.06	1.20
20,404.0	87.73	179.58	12,619.4	-8,168.2	-76.9	8,168.6	0.46	-0.27	-0.37
20,498.0	87.51	178.66	12,623.3	-8,262.1	-75.4	8,262.5	1.01	-0.23	-0.98
20,592.0	88.96	178.69	12,626.2	-8,356.1	-73.3	8,356.4	1.54	1.54	0.03
20,686.0	89.55	181.19	12,627.4	-8,450.0	-73.2	8,450.3	2.73	0.63	2.66
20,781.0	90.03	181.29	12,627.7	-8,545.0	-75.2	8,545.3	0.52	0.51	0.11
20,875.0	91.20	181.41	12,626.7	-8,639.0	-77.4	8,639.3	1.25	1.24	0.13
20,969.0	89.08	180.57	12,626.5	-8,733.0	-79.1	8,733.3	2.43	-2.26	-0.89
21,064.0	89.83	180.39	12,627.4	-8,828.0	-79.9	8,828.3	0.81	0.79	-0.19
21,159.0	90.17	180.70	12,627.4	-8,922.9	-80.8	8,923.3	0.48	0.36	0.33
21,253.0	90.73	180.99	12,626.7	-9,016.9	-82.2	9,017.3	0.67	0.60	0.31
21,348.0	89.89	180.74	12,626.2	-9,111.9	-83.6	9,112.3	0.92	-0.88	-0.26
21,443.0	88.21	180.58	12,627.7	-9,206.9	-84.7	9,207.3	1.78	-1.77	-0.17
21,538.0	88.77	180.33	12,630.2	-9,301.9	-85.4	9,302.2	0.65	0.59	-0.26
21,632.0	89.38	180.29	12,631.7	-9,395.8	-85.9	9,396.2	0.65	0.65	-0.04
21,726.0	89.72	180.36	12,632.5	-9,489.8	-86.5	9,490.2	0.37	0.36	0.07
21,821.0	88.18	180.60	12,634.2	-9,584.8	-87.3	9,585.2	1.64	-1.62	0.25
21,916.0	89.05	180.35	12,636.5	-9,679.8	-88.1	9,680.2	0.95	0.92	-0.26
22,011.0	91.01	180.58	12,636.5	-9,774.8	-88.8	9,775.2	2.08	2.06	0.24
22,105.0	88.63	180.41	12,636.8	-9,868.8	-89.6	9,869.2	2.54	-2.53	-0.18
22,200.0	88.66	179.25	12,639.0	-9,963.7	-89.4	9,964.1	1.22	0.03	-1.22
LTP Crossed @ 22258.7' MD / 12640.5' TVD									
22,258.7	88.50	179.05	12,640.5	-10,022.4	-88.5	10,022.8	0.44	-0.27	-0.35
22,295.0	88.40	178.92	12,641.5	-10,058.7	-87.8	10,059.1	0.44	-0.27	-0.35
22,329.0	88.26	178.69	12,642.4	-10,092.7	-87.1	10,093.0	0.79	-0.41	-0.68
TD @ 22385.0' MD / 12644.2' TVD									
22,385.0	88.26	178.69	12,644.1	-10,148.6	-85.9	10,149.0	0.00	0.00	0.00



Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #601H
Project:	Lea County, NM	TVD Reference:	RKB @ 3375.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3375.0usft (Noram #21)
Well:	Fascinator Fed Com #601H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,633.0	11,631.2	64.7	1.2	Gyro Tie In @ 11633.0' MD / 11631.2' TVD
12,260.2	12,202.5	-120.3	-32.9	FTP Crossed @ 12260.2' MD / 12202.5' TVD
18,324.0	12,546.2	-6,091.0	-116.0	Last QES MWD Survey @ 18324.0' MD / 12546.2' TVD
22,258.7	12,640.5	-10,022.4	-88.5	LTP Crossed @ 22258.7' MD / 12640.5' TVD
22,385.0	12,644.1	-10,148.6	-85.9	TD @ 22385.0' MD / 12644.2' TVD

Checked By: _____	Approved By: _____	Date: _____
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From Bottom to Top	Stage 1	Distance Between Perfs	Shots	Stage 2	Distance Between Perfs	Shots	Stage 3	Distance Between Perfs	Shots	Stage 4	Distance Between Perfs	Shots	Stage 5	Distance Between Perfs	Shots
	22,244	22	4	21,998	89	4	21,840	38	4	21,650	25	4	21,446	31	4
	22,222	23	4	21,983	15	4	21,823	24	4	21,625	24	4	21,427	24	4
	22,199	22	4	21,968	15	4	21,799	25	4	21,601	25	4	21,403	25	4
	22,177	23	4	21,953	15	4	21,774	25	4	21,576	21	4	21,378	23	4
	22,154	22	4	21,938	16	4	21,749		4	21,555	29	4	21,355	27	4
	22,132	22	4	21,922	24	4	21,726	26	4	21,526	24	4	21,328	25	4
	22,110	23	3	21,898	20	4	21,700	25	4	21,502	25	4	21,303	24	4
	22,087		3	21,878		4	21,675		4	21,477		4	21,279		4
	Plug to Plug	92	30	Plug to Plug	55	32	Plug to Plug	86	32	Plug to Plug	87	32	Plug to Plug	78	32
	Frac Plug	22,269	Total Shots	Frac Plug	22,008	Total Shots	Frac Plug	21,860	Total Shots	Frac Plug	21,663	Total Shots	Frac Plug	21,456	Total Shots

From Bottom to Top	Stage 6	Distance Between Perfs	Shots	Stage 7	Distance Between Perfs	Shots	Stage 8	Distance Between Perfs	Shots	Stage 9	Distance Between Perfs	Shots	Stage 10	Distance Between Perfs	Shots
	21,246	33	4	21,054	27	4	20,858	25	4	20,659	26	4	20,454	33	4
	21,229	124	4	21,032	25	4	20,834	25	4	20,632	21	4	20,438	25	4
	21,105	-73	4	21,007	25	4	20,809	25	4	20,611	25	4	20,413	25	4
	21,178	23	4	20,982	25	4	20,784	27	4	20,586	25	4	20,388	25	4
	21,155	24	4	20,957	28	4	20,757	22	4	20,561	24	4	20,363	24	4
	21,131	25	4	20,929	21	4	20,735	25	4	20,537	26	4	20,339	25	4
	21,106	25	4	20,908	25	4	20,710	25	4	20,511	24	4	20,314	25	4
	21,081		4	20,883		4	20,685		4	20,487		4	20,289		4
	Plug to Plug	78	32	Plug to Plug	87	32	Plug to Plug	87	32	Plug to Plug	53	32	Plug to Plug	76	32
	Frac Plug	21,256	Total Shots	Frac Plug	21,069	Total Shots	Frac Plug	20,871	Total Shots	Frac Plug	20,639	Total Shots	Frac Plug	20,464	Total Shots

From Bottom to Top	Stage 11	Distance Between Perfs	Shots	Stage 12	Distance Between Perfs	Shots	Stage 13	Distance Between Perfs	Shots	Stage 14	Distance Between Perfs	Shots	Stage 15	Distance Between Perfs	Shots
	20,257	32	4	20,067	24	4	19,869	24	4	19,670	25	4	19,463	34	4
	20,240	26	4	20,042	32	4	19,844	20	4	19,650	29	4	19,448	25	4
	20,214	24	4	20,010	18	4	19,824	30	4	19,621	25	4	19,423	28	4
	20,190	24	4	19,992	25	4	19,794	24	4	19,596	24	4	19,395	21	4
	20,166	25	4	19,967	24	4	19,770	25	4	19,572	25	4	19,374	25	4
	20,141	25	4	19,943	25	4	19,745	25	4	19,547	22	4	19,349	25	4
	20,116	25	4	19,918	25	4	19,720	25	4	19,525	28	4	19,324	25	4
	20,091		4	19,893		4	19,695		4	19,497		4	19,299		4
	Plug to Plug	87	32	Plug to Plug	87	32	Plug to Plug	87	32	Plug to Plug	84	32	Plug to Plug	78	32
	Frac Plug	20,277	Total Shots	Frac Plug	20,079	Total Shots	Frac Plug	19,881	Total Shots	Frac Plug	19,680	Total Shots	Frac Plug	19,473	Total Shots

From Bottom to Top	Stage 16	Distance Between Perfs	Shots	Stage 17	Distance Between Perfs	Shots	Stage 18	Distance Between Perfs	Shots	Stage 19	Distance Between Perfs	Shots	Stage 20	Distance Between Perfs	Shots
	19,271	28	4	19,077	25	4	18,879	31	4	18,677	29	4	18,475	33	4
	19,250	25	4	19,052	27	4	18,854	24	4	18,659	28	4	18,460	27	4
	19,225	30	4	19,025	22	4	18,830	25	4	18,631	24	4	18,433	26	4
	19,195	19	4	19,003	25	4	18,805	26	4	18,607	25	4	18,407	23	4
	19,176	25	4	18,978	25	4	18,779	4	4	18,582	25	4	18,384	25	4
	19,151	25	4	18,953	25	4	18,775	45	4	18,557	25	4	18,359	25	4
	19,126	24	4	18,928	18	4	18,730	24	4	18,532	24	4	18,334	24	4
	19,102		4	18,910		4	18,706		4	18,508		4	18,310		4
	Plug to Plug	92	32	Plug to Plug	86	32	Plug to Plug	86	32	Plug to Plug	80	32	Plug to Plug	78	32
	Frac Plug	19,287	Total Shots	Frac Plug	19,089	Total Shots	Frac Plug	18,891	Total Shots	Frac Plug	18,687	Total Shots	Frac Plug	18,485	Total Shots

From Bottom to Top	Stage 21	Distance Between Perfs	Shots	Stage 22	Distance Between Perfs	Shots	Stage 23	Distance Between Perfs	Shots	Stage 24	Distance Between Perfs	Shots	Stage 25	Distance Between Perfs	Shots
	18,285	25	4	18,087	25	4	17,888	26	4	17,685	31	4	17,493	25	4
	18,260	25	4	18,062	22	4	17,859	19	4	17,666	26	4	17,468	27	4
	18,235	24	4	18,040	27	4	17,840	25	4	17,640	23	4	17,441	22	4
	18,211	25	4	18,013	25	4	17,815	25	4	17,617	25	4	17,419	25	4
	18,186	28	4	17,988	25	4	17,790	25	4	17,592	25	4	17,394	25	4
	18,158	22	4	17,963	24	4	17,765	24	4	17,567	24	4	17,369	24	4
	18,136	24	4	17,939	25	4	17,741	25	4	17,543	25	4	17,345	25	4
	18,112		4	17,914		4	17,716		4	17,518		4	17,320		4
	Plug to Plug	86	32	Plug to Plug	86	32	Plug to Plug	83	32	Plug to Plug	86	32	Plug to Plug	87	32
	Frac Plug	18,297	Total Shots	Frac Plug	18,099	Total Shots	Frac Plug	17,898	Total Shots	Frac Plug	17,703	Total Shots	Frac Plug	17,506	Total Shots

From Bottom to Top	Stage 26	Distance Between Perfs	Shots	Stage 27	Distance Between Perfs	Shots	Stage 28	Distance Between Perfs	Shots	Stage 29	Distance Between Perfs	Shots	Stage 30	Distance Between Perfs	Shots
	17,290	30	4	17,097	25	4	16,899	27	4	16,700	28	4	16,503	25	4
	17,273	27	4	17,073	20	4	16,872	22	4	16,677	25	4	16,479	25	4
	17,246	26	4	17,053	30	4	16,850	25	4	16,652	25	4	16,454	25	4
	17,220	24	4	17,023	25	4	16,825	25	4	16,627	25	4	16,429	32	4
	17,196	25	4	16,998	24	4	16,800	24	4	16,602	21	4	16,397	17	4
	17,171	24	4	16,974	25	4	16,776	22	4	16,581	28	4	16,380	28	4
	17,147	25	4	16,949	23	4	16,754	26	4	16,553	25	4	16,352	22	4
	17,122		4	16,926		4	16,728		4	16,528		4	16,330		4
	Plug to Plug	80	32	Plug to Plug	87	32	Plug to Plug	87	32	Plug to Plug	89	32	Plug to Plug	87	32
	Frac Plug	17,300	Total Shots	Frac Plug	17,110	Total Shots	Frac Plug	16,912	Total Shots	Frac Plug	16,716	Total Shots	Frac Plug	16,516	Total Shots

From Bottom to Top	Stage 48	Distance Between Perfs	Shots	Stage 49	Distance Between Perfs	Shots	Stage 50	Distance Between Perfs	Shots	Stage 51	Distance Between Perfs	Shots	Stage 52	Distance Between Perfs	Shots
	16,292	38	4	16,107	25	4	15,906	28	4	15,706	30	4	15,512	29	4
	16,285	29	4	16,083	23	4	15,880	20	4	15,687	25	4	15,495	31	4
	16,256	25	4	16,060	27	4	15,860	25	4	15,662	25	4	15,464	25	4
	16,231	25	4	16,033	26	4	15,835	24	4	15,637	24	4	15,439	24	4
	16,206	29	4	16,007	23	4	15,811	25	4	15,613	25	4	15,415	25	4
	16,177	20	4	15,984	25	4	15,786	25	4	15,588	25	4	15,390	29	4
	16,157	25	4	15,959	25	4	15,761	25	4	15,563	22	4	15,361	21	4
	16,132		4	15,934		4	15,736		4	15,541		4	15,340		4
	Plug to Plug	71	32	Plug to Plug	87	32	Plug to Plug	83	32	Plug to Plug	87	32	Plug to Plug	85	32
Frac Plug		16,302	Total Shots	Frac Plug	16,120	Total Shots	Frac Plug	15,918	Total Shots	Frac Plug	15,724	Total Shots	Frac Plug	15,524	Total Shots

From Bottom to Top	Stage 48	Distance Between Perfs	Shots	Stage 49	Distance Between Perfs	Shots	Stage 50	Distance Between Perfs	Shots	Stage 51	Distance Between Perfs	Shots	Stage 52	Distance Between Perfs	Shots
	15,316	24	4	15,112	30	4	14,920	24	4	14,714	33	4	14,518	31	4
	15,291	25	4	15,093	25	4	14,895	25	4	14,697	25	4	14,500	26	4
	15,266	24	4	15,068	25	4	14,870	24	4	14,672	27	4	14,474	28	4
	15,242	25	4	15,043	24	4	14,846	25	4	14,645	22	4	14,446	21	4
	15,217	28	4	15,019	29	4	14,821	25	4	14,623	25	4	14,425	25	4
	15,189	22	4	14,990	21	4	14,796	25	4	14,598	29	4	14,400	28	4
	15,167	25	4	14,969	25	4	14,771	24	4	14,569	20	4	14,372	21	4
	15,142		4	14,944		4	14,747		4	14,549		4	14,351		4
	Plug to Plug	88	32	Plug to Plug	87	32	Plug to Plug	84	32	Plug to Plug	80	32	Plug to Plug	82	32
Frac Plug		15,330	Total Shots	Frac Plug	15,130	Total Shots	Frac Plug	14,930	Total Shots	Frac Plug	14,725	Total Shots	Frac Plug	14,528	Total Shots

From Bottom to Top	Stage 48	Distance Between Perfs	Shots	Stage 49	Distance Between Perfs	Shots	Stage 50	Distance Between Perfs	Shots	Stage 51	Distance Between Perfs	Shots	Stage 52	Distance Between Perfs	Shots
	14,314	37	4	14,121	32	4	13,930	28	4	13,730	27	4	13,534	33	4
	14,292	20	4	14,103	26	4	13,902	21	4	13,707	24	4	13,509	24	4
	14,272	22	4	14,077	23	4	13,881	25	4	13,683	25	4	13,485	25	4
	14,250	23	4	14,054	25	4	13,856	25	4	13,658	25	4	13,460	25	4
	14,227	25	4	14,029	25	4	13,831	25	4	13,633	22	4	13,435	25	4
	14,202	25	4	14,004	24	4	13,806	24	4	13,611	27	4	13,410	19	4
	14,177	24	4	13,980	22	4	13,782	25	4	13,584	17	4	13,391	30	4
	14,153		4	13,958		4	13,757		4	13,567		4	13,361		4
	Plug to Plug	74	32	Plug to Plug	86	32	Plug to Plug	86	32	Plug to Plug	88	32	Plug to Plug	86	32
Frac Plug		14,324	Total Shots	Frac Plug	14,140	Total Shots	Frac Plug	13,942	Total Shots	Frac Plug	13,746	Total Shots	Frac Plug	13,546	Total Shots

From Bottom to Top	Stage 48	Distance Between Perfs	Shots	Stage 49	Distance Between Perfs	Shots	Stage 50	Distance Between Perfs	Shots	Stage 51	Distance Between Perfs	Shots	Stage 52	Distance Between Perfs	Shots
	13,329	32	4	13,136	27	4	12,940	28	4		12,767			0	
	13,314	27	4	13,113	24	4	12,916	25	4						
	13,287	27	4	13,089	25	4	12,891	25	4						
	13,260	23	4	13,064	25	4	12,866	25	4						
	13,237	25	4	13,039	25	4	12,841	24	4						
	13,212	24	4	13,014	24	4	12,817	21	4						
	13,188	25	4	12,990	22	4	12,796	29	4						
	13,163		4	12,968		4	12,767		4						
	Plug to Plug	79	32	Plug to Plug	87	32	Plug to Plug	87	32	Plug to Plug	0	0	Plug to Plug	0	0
Frac Plug		13,339	Total Shots	Frac Plug	13,151	Total Shots	Frac Plug	12,953	Total Shots	Frac Plug		Total Shots	Frac Plug		Total Shots

Fascinator Federal Com #601H

<u>Perfs</u>	<u>7 1/2% Acid (Gal)</u>	<u>Sand (#)</u>	<u>Fluid (Gal)</u>
1	1512	405400	456918
2	1512	399350	369264
3	1512	396400	352284
4	1512	398580	348798
5	1512	400860	345522
6	1512	399760	359520
7	1512	406810	345858
8	1512	402940	347802
9	1512	402400	353262
10	1500	404200	350058
11	1500	409170	350604
12	1512	400700	343098
13	1500	406900	347592
14	1512	400490	322014
15	1500	401200	330105
16	1512	404620	329658
17	1512	401530	336294
18	1500	400900	327168
19	1512	402100	393330
20	1500	400490	326328
21	1512	400200	430164
22	1512	400450	348852
23	1500	399000	343305
24	1512	406720	334068
25	1512	404670	344106
26	1500	398000	458254
27	1500	400840	343128
28	1512	400180	330550
29	1512	399370	357672
30	1500	400330	334812
31	1500	399700	327025
32	1512	400100	329952
33	1512	399900	343182
34	1512	400310	335748
35	1500	398550	343884
36	1512	400960	336000
37	1512	404550	338142
38	1512	400630	333732
39	1512	397750	333732
40	1512	397060	340326
41	1512	394370	326508
42	1512	400230	323526
43	1500	400620	350982
44	1512	397790	330036
45	1500	399500	342498
46	1500	402900	337668
47	1512	401100	340284
48	1512	401220	358092
Totals	70881.3	19,251,800	16,731,703