



COG Operating, LLC

Lea County, NM

Sec 30, T24-S,R35E

Fascinator Fed Com #701H

Wellbore #1

Design: Wellbore #1

QES Survey Report

20 March, 2019

HOBBS OCD

OCT 23 2019

RECEIVED





Survey Report



Company: COG Operating, LLC
Project: Lea County, NM
Site: Sec 30, T24-S,R35E
Well: Fascinator Fed Com #701H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Fascinator Fed Com #701H
TVD Reference: RKB @ 3374.0usft (Noram #21)
MD Reference: RKB @ 3374.0usft (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 #701H

Well Position: +N/-S 0.0 usft Northing: 435,910.70 usft Latitude: 32° 11' 42.172 N
+E/-W 0.0 usft Easting: 786,335.10 usft Longitude: 103° 24' 27.751 W
Position Uncertainty: 0.0 usft Wellhead Elevation: usft Ground Level: 3,345.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	2/18/2019	6.69	59.88	47,890.00000000

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	178.55

Survey Program Date 3/20/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	11,800.0	Standard Keeper Gyros (Wellbore #1)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
11,950.0	22,543.0	GT Surveys (Wellbore #1)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

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	0.56	64.90	100.0	0.2	0.4	-0.2	0.56	0.56	0.00
125.0	0.72	52.79	125.0	0.4	0.7	-0.3	0.83	0.64	-48.44
150.0	0.81	50.54	150.0	0.6	0.9	-0.5	0.38	0.36	-9.00
175.0	0.61	54.81	175.0	0.8	1.2	-0.7	0.83	-0.80	17.08
200.0	0.62	57.06	200.0	0.9	1.4	-0.9	0.10	0.04	9.00
225.0	0.55	58.98	225.0	1.0	1.6	-1.0	0.29	-0.28	7.68
250.0	0.54	58.63	250.0	1.2	1.8	-1.1	0.04	-0.04	-1.40
275.0	0.59	67.27	275.0	1.3	2.0	-1.2	0.39	0.20	34.56
300.0	0.69	60.19	300.0	1.4	2.3	-1.3	0.51	0.40	-28.32

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Local Co-ordinate Reference: Well Fascinator Fed Com #701H
 TVD Reference: RKB @ 3374.0usft (Noram #21)
 MD Reference: RKB @ 3374.0usft (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)
325.0	0.72	55.59	325.0	1.6	2.6	-1.5	0.26	0.12	-18.40
350.0	0.72	53.50	350.0	1.7	2.8	-1.7	0.11	0.00	-8.36
375.0	0.64	53.07	375.0	1.9	3.0	-1.8	0.32	-0.32	-1.72
400.0	0.61	50.70	400.0	2.1	3.3	-2.0	0.16	-0.12	-9.48
425.0	0.70	43.53	425.0	2.3	3.5	-2.2	0.49	0.36	-28.68
450.0	0.67	49.42	450.0	2.5	3.7	-2.4	0.31	-0.12	23.56
475.0	0.61	49.66	475.0	2.7	3.9	-2.6	0.24	-0.24	0.96
500.0	0.61	57.78	500.0	2.8	4.1	-2.7	0.35	0.00	32.48
525.0	0.57	65.16	525.0	2.9	4.3	-2.8	0.34	-0.16	29.52
550.0	0.60	68.42	550.0	3.0	4.6	-2.9	0.18	0.12	13.04
575.0	0.69	66.18	575.0	3.2	4.8	-3.0	0.37	0.36	-8.96
600.0	0.65	59.99	600.0	3.3	5.1	-3.2	0.33	-0.16	-24.76
625.0	0.76	53.33	625.0	3.5	5.4	-3.3	0.55	0.44	-26.64
650.0	0.79	60.67	650.0	3.6	5.6	-3.5	0.41	0.12	29.36
675.0	0.70	57.63	675.0	3.8	5.9	-3.7	0.39	-0.36	-12.16
700.0	0.70	51.80	700.0	4.0	6.2	-3.8	0.28	0.00	-23.32
725.0	0.65	53.88	725.0	4.2	6.4	-4.0	0.22	-0.20	8.32
750.0	0.59	57.42	750.0	4.3	6.6	-4.1	0.28	-0.24	14.16
775.0	0.66	33.15	775.0	4.5	6.8	-4.3	1.09	0.28	-97.08
800.0	0.46	16.46	800.0	4.7	6.9	-4.5	1.02	-0.80	-66.76
825.0	0.54	71.50	825.0	4.9	7.1	-4.7	1.87	0.32	220.16
850.0	0.69	57.55	850.0	5.0	7.3	-4.8	0.84	0.60	-55.80
875.0	0.71	54.61	874.9	5.1	7.5	-5.0	0.16	0.08	-11.76
900.0	0.62	60.06	899.9	5.3	7.8	-5.1	0.44	-0.36	21.80
925.0	0.66	54.90	924.9	5.5	8.0	-5.2	0.28	0.16	-20.64
950.0	0.66	58.84	949.9	5.6	8.3	-5.4	0.18	0.00	15.76
975.0	0.67	53.12	974.9	5.8	8.5	-5.6	0.27	0.04	-22.88
1,000.0	0.61	52.55	999.9	5.9	8.7	-5.7	0.24	-0.24	-2.28
1,025.0	0.80	43.84	1,024.9	6.1	9.0	-5.9	0.87	0.76	-34.84
1,050.0	0.89	35.51	1,049.9	6.4	9.2	-6.2	0.61	0.36	-33.32
1,075.0	1.10	21.71	1,074.9	6.8	9.4	-6.6	1.27	0.84	-55.20
1,100.0	1.27	25.25	1,099.9	7.3	9.6	-7.0	0.74	0.68	14.16
1,125.0	1.44	27.16	1,124.9	7.8	9.9	-7.6	0.70	0.68	7.64
1,150.0	1.47	23.24	1,149.9	8.4	10.1	-8.1	0.42	0.12	-15.68
1,175.0	1.34	22.92	1,174.9	9.0	10.4	-8.7	0.52	-0.52	-1.28
1,200.0	1.47	21.95	1,199.9	9.5	10.6	-9.2	0.53	0.52	-3.88
1,225.0	1.43	21.28	1,224.9	10.1	10.8	-9.8	0.17	-0.16	-2.68
1,250.0	1.36	22.90	1,249.9	10.7	11.1	-10.4	0.32	-0.28	6.48
1,275.0	1.34	34.57	1,274.9	11.2	11.3	-10.9	1.10	-0.08	46.68
1,300.0	1.22	26.49	1,299.9	11.7	11.6	-11.4	0.87	-0.48	-32.32
1,325.0	0.89	20.48	1,324.9	12.1	11.8	-11.8	1.39	-1.32	-24.04
1,350.0	0.82	18.76	1,349.9	12.4	11.9	-12.1	0.30	-0.28	-6.88
1,375.0	0.59	14.75	1,374.9	12.7	12.0	-12.4	0.94	-0.92	-16.04



Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #701H
Project:	Lea County, NM	TVD Reference:	RKB @ 3374.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3374.0usft (Noram #21)
Well:	Fascinator Fed Com #701H	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)
1,400.0	0.44	6.49	1,399.9	13.0	12.1	-12.6	0.67	-0.60	-33.04
1,425.0	0.43	5.65	1,424.9	13.1	12.1	-12.8	0.05	-0.04	-3.36
1,450.0	0.37	9.11	1,449.9	13.3	12.1	-13.0	0.26	-0.24	13.84
1,475.0	0.37	14.44	1,474.9	13.5	12.2	-13.2	0.14	0.00	21.32
1,500.0	0.63	59.43	1,499.9	13.6	12.3	-13.3	1.81	1.04	179.96
1,525.0	0.48	18.21	1,524.9	13.8	12.4	-13.5	1.66	-0.60	-164.88
1,550.0	0.36	15.40	1,549.9	14.0	12.5	-13.6	0.49	-0.48	-11.24
1,575.0	0.41	9.40	1,574.9	14.1	12.5	-13.8	0.26	0.20	-24.00
1,600.0	0.50	12.59	1,599.9	14.3	12.6	-14.0	0.37	0.36	12.76
1,625.0	0.46	7.25	1,624.9	14.5	12.6	-14.2	0.24	-0.16	-21.36
1,650.0	0.39	2.25	1,649.9	14.7	12.6	-14.4	0.32	-0.28	-20.00
1,675.0	0.33	3.55	1,674.9	14.9	12.6	-14.5	0.24	-0.24	5.20
1,700.0	0.39	26.29	1,699.8	15.0	12.7	-14.7	0.61	0.24	90.96
1,725.0	0.23	26.94	1,724.8	15.1	12.7	-14.8	0.64	-0.64	2.60
1,750.0	0.31	29.74	1,749.8	15.2	12.8	-14.9	0.32	0.32	11.20
1,775.0	0.23	41.96	1,774.8	15.3	12.9	-15.0	0.39	-0.32	48.88
1,800.0	0.32	18.73	1,799.8	15.4	12.9	-15.1	0.57	0.36	-92.92
1,825.0	0.28	38.29	1,824.8	15.6	13.0	-15.2	0.44	-0.16	78.24
1,850.0	0.40	44.42	1,849.8	15.7	13.1	-15.3	0.50	0.48	24.52
1,875.0	0.42	21.32	1,874.8	15.8	13.2	-15.5	0.66	0.08	-92.40
1,900.0	0.22	18.02	1,899.8	15.9	13.2	-15.6	0.80	-0.80	-13.20
1,925.0	0.32	15.09	1,924.8	16.1	13.2	-15.7	0.40	0.40	-11.72
1,950.0	0.22	24.81	1,949.8	16.2	13.3	-15.8	0.44	-0.40	38.88
1,975.0	0.23	15.33	1,974.8	16.3	13.3	-15.9	0.15	0.04	-37.92
2,000.0	0.30	26.84	1,999.8	16.4	13.4	-16.0	0.35	0.28	46.04
2,025.0	0.29	12.49	2,024.8	16.5	13.4	-16.1	0.30	-0.04	-57.40
2,050.0	0.29	36.03	2,049.8	16.6	13.5	-16.3	0.47	0.00	94.16
2,075.0	0.34	41.32	2,074.8	16.7	13.5	-16.4	0.23	0.20	21.16
2,100.0	0.37	31.00	2,099.8	16.8	13.6	-16.5	0.28	0.12	-41.28
2,125.0	0.28	29.07	2,124.8	17.0	13.7	-16.6	0.36	-0.36	-7.72
2,150.0	0.28	34.27	2,149.8	17.1	13.8	-16.7	0.10	0.00	20.80
2,175.0	0.29	28.50	2,174.8	17.2	13.8	-16.8	0.12	0.04	-23.08
2,200.0	0.42	21.27	2,199.8	17.3	13.9	-16.9	0.55	0.52	-28.92
2,225.0	0.34	27.99	2,224.8	17.5	14.0	-17.1	0.37	-0.32	26.88
2,250.0	0.34	10.53	2,249.8	17.6	14.0	-17.2	0.41	0.00	-69.84
2,275.0	0.19	44.83	2,274.8	17.7	14.1	-17.3	0.85	-0.60	137.20
2,300.0	0.28	43.54	2,299.8	17.8	14.1	-17.4	0.36	0.36	-5.16
2,325.0	0.22	57.65	2,324.8	17.8	14.2	-17.5	0.34	-0.24	56.44
2,350.0	0.44	62.54	2,349.8	17.9	14.3	-17.5	0.89	0.88	19.56
2,375.0	0.32	93.27	2,374.8	18.0	14.5	-17.6	0.93	-0.48	122.92
2,400.0	0.26	114.33	2,399.8	17.9	14.6	-17.5	0.49	-0.24	84.24
2,425.0	0.21	112.92	2,424.8	17.9	14.7	-17.5	0.20	-0.20	-5.64
2,450.0	0.35	124.47	2,449.8	17.8	14.8	-17.4	0.60	0.56	46.20



Survey Report



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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)
2,475.0	0.39	122.75	2,474.8	17.7	14.9	-17.3	0.17	0.16	-6.88
2,500.0	0.34	119.48	2,499.8	17.6	15.1	-17.3	0.22	-0.20	-13.08
2,525.0	0.39	110.46	2,524.8	17.6	15.2	-17.2	0.30	0.20	-36.08
2,550.0	0.43	110.19	2,549.8	17.5	15.4	-17.1	0.16	0.16	-1.08
2,575.0	0.61	113.11	2,574.8	17.4	15.6	-17.0	0.73	0.72	11.68
2,600.0	0.43	110.98	2,599.8	17.4	15.8	-16.9	0.72	-0.72	-8.52
2,625.0	0.54	100.56	2,624.8	17.3	16.0	-16.9	0.56	0.44	-41.68
2,650.0	0.49	116.84	2,649.8	17.2	16.2	-16.8	0.62	-0.20	65.12
2,675.0	0.49	113.64	2,674.8	17.1	16.4	-16.7	0.11	0.00	-12.80
2,700.0	0.58	116.49	2,699.8	17.0	16.6	-16.6	0.38	0.36	11.40
2,725.0	0.62	128.67	2,724.8	16.9	16.8	-16.5	0.53	0.16	48.72
2,750.0	0.84	111.70	2,749.8	16.7	17.1	-16.3	1.22	0.88	-67.88
2,775.0	0.66	104.68	2,774.8	16.6	17.4	-16.2	0.81	-0.72	-28.08
2,800.0	0.80	105.84	2,799.8	16.6	17.7	-16.1	0.56	0.56	4.64
2,825.0	0.69	99.10	2,824.8	16.5	18.1	-16.0	0.56	-0.44	-26.96
2,850.0	0.96	94.63	2,849.8	16.4	18.4	-16.0	1.11	1.08	-17.88
2,875.0	0.70	107.19	2,874.8	16.4	18.8	-15.9	1.26	-1.04	50.24
2,900.0	0.70	108.29	2,899.8	16.3	19.1	-15.8	0.05	0.00	4.40
2,925.0	0.67	108.35	2,924.8	16.2	19.3	-15.7	0.12	-0.12	0.24
2,950.0	0.95	108.75	2,949.8	16.1	19.7	-15.6	1.12	1.12	1.60
2,975.0	0.87	102.94	2,974.8	16.0	20.1	-15.5	0.49	-0.32	-23.24
3,000.0	0.72	111.85	2,999.8	15.9	20.4	-15.3	0.78	-0.60	35.64
3,025.0	0.73	113.42	3,024.8	15.7	20.7	-15.2	0.09	0.04	6.28
3,050.0	0.76	104.42	3,049.8	15.6	21.0	-15.1	0.48	0.12	-36.00
3,075.0	1.24	86.08	3,074.8	15.6	21.4	-15.1	2.28	1.92	-73.36
3,100.0	0.78	90.92	3,099.8	15.6	21.9	-15.1	1.87	-1.84	19.36
3,125.0	0.58	103.58	3,124.8	15.6	22.2	-15.0	1.00	-0.80	50.64
3,150.0	0.73	97.95	3,149.8	15.6	22.4	-15.0	0.65	0.60	-22.52
3,175.0	0.73	83.67	3,174.8	15.5	22.8	-15.0	0.73	0.00	-57.12
3,200.0	0.66	118.85	3,199.8	15.5	23.0	-14.9	1.70	-0.28	140.72
3,225.0	0.75	91.42	3,224.8	15.4	23.3	-14.8	1.38	0.36	-109.72
3,250.0	0.72	94.35	3,249.8	15.4	23.6	-14.8	0.19	-0.12	11.72
3,275.0	0.96	86.83	3,274.8	15.4	24.0	-14.8	1.05	0.96	-30.08
3,300.0	0.63	82.29	3,299.8	15.4	24.4	-14.8	1.34	-1.32	-18.16
3,325.0	0.63	89.06	3,324.8	15.5	24.6	-14.8	0.30	0.00	27.08
3,350.0	0.71	84.65	3,349.8	15.5	24.9	-14.8	0.38	0.32	-17.64
3,375.0	0.57	82.14	3,374.8	15.5	25.2	-14.9	0.57	-0.56	-10.04
3,400.0	0.62	84.28	3,399.8	15.5	25.5	-14.9	0.22	0.20	8.56
3,425.0	0.69	59.90	3,424.8	15.6	25.7	-15.0	1.14	0.28	-97.52
3,450.0	0.87	75.81	3,449.8	15.7	26.0	-15.1	1.12	0.72	63.64
3,475.0	0.59	91.91	3,474.8	15.8	26.3	-15.1	1.38	-1.12	64.40
3,500.0	0.63	84.85	3,499.8	15.8	26.6	-15.1	0.34	0.16	-28.24
3,525.0	0.58	88.43	3,524.8	15.8	26.9	-15.1	0.25	-0.20	14.32
3,550.0	0.51	95.01	3,549.8	15.8	27.1	-15.1	0.38	-0.28	26.32

Company: COG Operating, LLC
Project: Lea County, NM
Site: Sec 30, T24-S,R35E
Well: Fascinator Fed Com #701H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Fascinator Fed Com #701H
TVD Reference: RKB @ 3374.0usft (Noram #21)
MD Reference: RKB @ 3374.0usft (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)
3,575.0	0.48	93.55	3,574.8	15.8	27.3	-15.1	0.13	-0.12	-5.84
3,600.0	0.40	139.86	3,599.8	15.7	27.5	-15.0	1.42	-0.32	185.24
3,625.0	0.38	158.16	3,624.8	15.6	27.6	-14.9	0.50	-0.08	73.20
3,650.0	0.41	159.01	3,649.8	15.4	27.6	-14.7	0.12	0.12	3.40
3,675.0	0.43	172.17	3,674.8	15.2	27.7	-14.5	0.39	0.08	52.64
3,700.0	0.43	161.19	3,699.8	15.1	27.7	-14.3	0.33	0.00	-43.92
3,725.0	0.37	167.27	3,724.8	14.9	27.8	-14.2	0.29	-0.24	24.32
3,750.0	0.40	171.48	3,749.8	14.7	27.8	-14.0	0.16	0.12	16.84
3,775.0	0.38	197.57	3,774.8	14.6	27.8	-13.8	0.71	-0.08	104.36
3,800.0	0.82	183.61	3,799.8	14.3	27.8	-13.6	1.84	1.76	-55.84
3,825.0	0.54	180.29	3,824.8	14.0	27.7	-13.3	1.13	-1.12	-13.28
3,850.0	0.48	174.33	3,849.8	13.8	27.8	-13.1	0.32	-0.24	-23.84
3,875.0	0.46	181.12	3,874.7	13.6	27.8	-12.9	0.24	-0.08	27.16
3,900.0	0.71	170.17	3,899.7	13.3	27.8	-12.6	1.09	1.00	-43.80
3,925.0	0.58	170.60	3,924.7	13.0	27.8	-12.3	0.52	-0.52	1.72
3,950.0	0.49	171.26	3,949.7	12.8	27.9	-12.1	0.36	-0.36	2.64
3,975.0	0.32	175.54	3,974.7	12.6	27.9	-11.9	0.69	-0.68	17.12
4,000.0	0.37	169.28	3,999.7	12.5	27.9	-11.8	0.25	0.20	-25.04
4,025.0	0.24	168.90	4,024.7	12.4	27.9	-11.6	0.52	-0.52	-1.52
4,050.0	0.25	233.68	4,049.7	12.3	27.9	-11.6	1.05	0.04	259.12
4,075.0	0.22	171.04	4,074.7	12.2	27.9	-11.5	0.98	-0.12	-250.56
4,100.0	0.16	168.57	4,099.7	12.1	27.9	-11.4	0.24	-0.24	-9.88
4,125.0	0.36	164.46	4,124.7	12.0	27.9	-11.3	0.80	0.80	-16.44
4,150.0	0.60	151.72	4,149.7	11.8	28.0	-11.1	1.04	0.96	-50.96
4,175.0	0.19	170.56	4,174.7	11.7	28.1	-10.9	1.70	-1.64	75.36
4,200.0	0.29	186.26	4,199.7	11.6	28.1	-10.8	0.48	0.40	62.80
4,225.0	0.33	150.82	4,224.7	11.4	28.1	-10.7	0.77	0.16	-141.76
4,250.0	0.05	144.22	4,249.7	11.4	28.1	-10.6	1.12	-1.12	-26.40
4,275.0	0.14	277.86	4,274.7	11.4	28.1	-10.6	0.71	0.36	534.56
4,300.0	0.25	155.96	4,299.7	11.3	28.1	-10.6	1.38	0.44	-487.60
4,325.0	0.53	128.34	4,324.7	11.2	28.2	-10.5	1.32	1.12	-110.48
4,350.0	0.73	117.49	4,349.7	11.0	28.4	-10.3	0.93	0.80	-43.40
4,375.0	0.92	120.08	4,374.7	10.9	28.8	-10.1	0.77	0.76	10.36
4,400.0	1.03	114.54	4,399.7	10.7	29.1	-9.9	0.58	0.44	-22.16
4,425.0	0.98	113.92	4,424.7	10.5	29.5	-9.7	0.20	-0.20	-2.48
4,450.0	0.95	106.70	4,449.7	10.3	29.9	-9.6	0.50	-0.12	-28.88
4,475.0	0.87	101.40	4,474.7	10.2	30.3	-9.5	0.46	-0.32	-21.20
4,500.0	0.80	97.37	4,499.7	10.2	30.7	-9.4	0.37	-0.28	-16.12
4,525.0	0.56	79.51	4,524.7	10.2	31.0	-9.4	1.27	-0.96	-71.44
4,550.0	0.51	84.69	4,549.7	10.2	31.2	-9.4	0.28	-0.20	20.72
4,575.0	0.41	79.30	4,574.7	10.2	31.4	-9.5	0.44	-0.40	-21.56
4,600.0	0.12	63.96	4,599.7	10.3	31.5	-9.5	1.18	-1.16	-61.36
4,625.0	0.24	278.89	4,624.7	10.3	31.5	-9.5	1.38	0.48	-580.28



Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #701H
Project:	Lea County, NM	TVD Reference:	RKB @ 3374.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3374.0usft (Noram #21)
Well:	Fascinator Fed Com #701H	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)
4,650.0	0.78	296.78	4,649.7	10.4	31.3	-9.6	2.23	2.16	71.56
4,675.0	0.50	281.96	4,674.7	10.5	31.0	-9.7	1.29	-1.12	-59.28
4,700.0	0.52	275.95	4,699.7	10.5	30.8	-9.7	0.23	0.08	-24.04
4,725.0	0.53	265.57	4,724.7	10.5	30.6	-9.7	0.38	0.04	-41.52
4,750.0	0.63	258.07	4,749.7	10.5	30.3	-9.7	0.50	0.40	-30.00
4,775.0	0.49	251.62	4,774.7	10.4	30.1	-9.7	0.61	-0.56	-25.80
4,800.0	0.48	257.70	4,799.7	10.4	29.9	-9.6	0.21	-0.04	24.32
4,825.0	0.52	256.28	4,824.7	10.3	29.7	-9.6	0.17	0.16	-5.68
4,850.0	0.58	257.04	4,849.7	10.3	29.4	-9.5	0.24	0.24	3.04
4,875.0	0.73	255.13	4,874.7	10.2	29.2	-9.4	0.61	0.60	-7.64
4,900.0	0.75	254.07	4,899.7	10.1	28.9	-9.4	0.10	0.08	-4.24
4,925.0	0.55	237.21	4,924.7	10.0	28.6	-9.3	1.10	-0.80	-67.44
4,950.0	0.64	219.63	4,949.7	9.8	28.4	-9.1	0.81	0.36	-70.32
4,975.0	0.69	209.03	4,974.7	9.6	28.2	-8.9	0.53	0.20	-42.40
5,000.0	1.16	197.51	4,999.7	9.2	28.1	-8.5	2.01	1.88	-46.08
5,025.0	0.95	195.66	5,024.7	8.8	28.0	-8.1	0.85	-0.84	-7.40
5,050.0	1.04	196.08	5,049.7	8.3	27.8	-7.6	0.36	0.36	1.68
5,075.0	1.05	202.70	5,074.7	7.9	27.7	-7.2	0.48	0.04	26.48
5,100.0	1.03	201.05	5,099.7	7.5	27.5	-6.8	0.14	-0.08	-6.60
5,125.0	0.87	198.85	5,124.7	7.1	27.4	-6.4	0.66	-0.64	-8.80
5,150.0	0.73	194.08	5,149.7	6.8	27.3	-6.1	0.62	-0.56	-19.08
5,175.0	0.67	203.32	5,174.7	6.5	27.2	-5.8	0.51	-0.24	36.96
5,200.0	0.67	202.65	5,199.7	6.2	27.1	-5.5	0.03	0.00	-2.68
5,225.0	0.63	212.91	5,224.7	6.0	26.9	-5.3	0.49	-0.16	41.04
5,250.0	0.92	188.76	5,249.7	5.7	26.8	-5.0	1.72	1.16	-96.60
5,275.0	0.66	197.99	5,274.7	5.3	26.8	-4.6	1.15	-1.04	36.92
5,300.0	0.58	197.25	5,299.7	5.1	26.7	-4.4	0.32	-0.32	-2.96
5,325.0	0.66	197.92	5,324.7	4.8	26.6	-4.1	0.32	0.32	2.68
5,350.0	0.65	199.97	5,349.7	4.5	26.5	-3.9	0.10	-0.04	8.20
5,375.0	0.54	190.46	5,374.7	4.3	26.4	-3.6	0.59	-0.44	-38.04
5,400.0	0.53	171.52	5,399.7	4.1	26.4	-3.4	0.71	-0.04	-75.76
5,425.0	0.50	222.57	5,424.7	3.9	26.4	-3.2	1.78	-0.12	204.20
5,450.0	0.53	195.85	5,449.7	3.7	26.3	-3.0	0.96	0.12	-106.88
5,475.0	0.07	162.56	5,474.7	3.5	26.2	-2.9	1.89	-1.84	-133.16
5,500.0	0.10	292.84	5,499.7	3.5	26.2	-2.9	0.62	0.12	521.12
5,525.0	0.22	341.21	5,524.7	3.6	26.2	-2.9	0.68	0.48	193.48
5,550.0	0.11	326.80	5,549.7	3.7	26.2	-3.0	0.47	-0.44	-57.64
5,575.0	0.31	232.49	5,574.7	3.6	26.1	-3.0	1.35	0.80	-377.24
5,600.0	0.15	144.87	5,599.7	3.6	26.1	-2.9	1.35	-0.64	-350.48
5,625.0	0.33	61.94	5,624.7	3.6	26.1	-2.9	1.38	0.72	-331.72
5,650.0	0.15	35.29	5,649.7	3.6	26.2	-3.0	0.83	-0.72	-106.60
5,675.0	0.08	336.66	5,674.7	3.7	26.2	-3.0	0.51	-0.28	-234.52
5,700.0	0.13	319.85	5,699.7	3.7	26.2	-3.0	0.23	0.20	-67.24

Company: COG Operating, LLC
 Project: Lea County, NM
 Site: Sec 30, T24-S,R35E
 Well: Fascinator Fed Com #701H
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Fascinator Fed Com #701H
 TVD Reference: RKB @ 3374.0usft (Noram #21)
 MD Reference: RKB @ 3374.0usft (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)
5,725.0	0.15	290.25	5,724.7	3.7	26.2	-3.1	0.30	0.08	-118.40
5,750.0	0.07	240.73	5,749.7	3.8	26.1	-3.1	0.47	-0.32	-198.08
5,775.0	0.08	271.41	5,774.7	3.7	26.1	-3.1	0.16	0.04	122.72
5,800.0	0.03	279.59	5,799.7	3.7	26.1	-3.1	0.20	-0.20	32.72
5,825.0	0.52	248.54	5,824.7	3.7	25.9	-3.0	1.98	1.96	-124.20
5,850.0	0.12	59.46	5,849.7	3.7	25.9	-3.0	2.56	-1.60	683.68
5,875.0	0.13	326.94	5,874.7	3.7	25.9	-3.1	0.72	0.04	-370.08
5,900.0	0.14	316.56	5,899.7	3.8	25.8	-3.1	0.11	0.04	-41.52
5,925.0	0.11	318.16	5,924.7	3.8	25.8	-3.1	0.12	-0.12	6.40
5,950.0	0.29	236.11	5,949.7	3.8	25.7	-3.1	1.18	0.72	-328.20
5,975.0	0.04	252.89	5,974.7	3.7	25.7	-3.1	1.01	-1.00	67.12
6,000.0	0.49	174.24	5,999.6	3.6	25.7	-3.0	1.93	1.80	-314.60
6,025.0	0.18	164.29	6,024.6	3.5	25.7	-2.8	1.26	-1.24	-39.80
6,050.0	0.04	99.49	6,049.6	3.5	25.7	-2.8	0.67	-0.56	-259.20
6,075.0	0.17	87.44	6,074.6	3.5	25.8	-2.8	0.52	0.52	-48.20
6,100.0	0.06	69.93	6,099.6	3.5	25.8	-2.8	0.46	-0.44	-70.04
6,125.0	0.11	90.26	6,124.6	3.5	25.8	-2.8	0.23	0.20	81.32
6,150.0	0.07	98.80	6,149.6	3.5	25.9	-2.8	0.17	-0.16	34.16
6,175.0	0.08	157.44	6,174.6	3.4	25.9	-2.8	0.30	0.04	234.56
6,200.0	0.07	290.69	6,199.6	3.4	25.9	-2.8	0.55	-0.04	533.00
6,225.0	0.23	174.99	6,224.6	3.4	25.9	-2.7	1.07	0.64	-462.80
6,250.0	0.06	79.80	6,249.6	3.3	25.9	-2.7	0.97	-0.68	-380.76
6,275.0	0.09	114.62	6,274.6	3.3	25.9	-2.7	0.21	0.12	139.28
6,300.0	0.12	82.65	6,299.6	3.3	26.0	-2.7	0.26	0.12	-127.88
6,325.0	0.14	27.45	6,324.6	3.4	26.0	-2.7	0.49	0.08	-220.80
6,350.0	0.33	69.33	6,349.6	3.4	26.1	-2.7	0.98	0.76	167.52
6,375.0	0.06	27.65	6,374.6	3.4	26.2	-2.8	1.15	-1.08	-166.72
6,400.0	0.03	306.24	6,399.6	3.5	26.2	-2.8	0.25	-0.12	-325.64
6,425.0	0.02	299.31	6,424.6	3.5	26.2	-2.8	0.04	-0.04	-27.72
6,450.0	0.09	235.19	6,449.6	3.5	26.1	-2.8	0.33	0.28	-256.48
6,475.0	0.09	285.89	6,474.6	3.5	26.1	-2.8	0.31	0.00	202.80
6,500.0	0.10	240.34	6,499.6	3.4	26.1	-2.8	0.30	0.04	-182.20
6,525.0	0.21	35.64	6,524.6	3.5	26.1	-2.8	1.21	0.44	621.20
6,550.0	0.31	44.44	6,549.6	3.6	26.2	-2.9	0.43	0.40	35.20
6,575.0	0.36	32.82	6,574.6	3.7	26.2	-3.0	0.34	0.20	-46.48
6,600.0	0.38	49.87	6,599.6	3.8	26.3	-3.1	0.45	0.08	68.20
6,625.0	0.38	28.79	6,624.6	3.9	26.5	-3.2	0.56	0.00	-84.32
6,650.0	0.34	40.46	6,649.6	4.0	26.5	-3.4	0.33	-0.16	46.68
6,675.0	0.42	22.73	6,674.6	4.2	26.6	-3.5	0.57	0.32	-70.92
6,700.0	0.27	40.81	6,699.6	4.3	26.7	-3.6	0.73	-0.60	72.32
6,725.0	0.27	356.88	6,724.6	4.4	26.7	-3.7	0.81	0.00	-175.72
6,750.0	0.27	28.53	6,749.6	4.5	26.8	-3.9	0.59	0.00	126.60
6,775.0	0.29	41.25	6,774.6	4.6	26.8	-4.0	0.26	0.08	50.88
6,800.0	0.44	55.31	6,799.6	4.7	26.9	-4.1	0.69	0.60	56.24

Company: COG Operating, LLC
 Project: Lea County, NM
 Site: Sec 30, T24-S,R35E
 Well: Fascinator Fed Com #701H
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Fascinator Fed Com #701H
 TVD Reference: RKB @ 3374.0usft (Noram #21)
 MD Reference: RKB @ 3374.0usft (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)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
6,825.0	0.33	32.13	6,824.6	4.9	27.1	-4.2	0.75	-0.44	-92.72
6,850.0	0.41	47.91	6,849.6	5.0	27.2	-4.3	0.52	0.32	63.12
6,875.0	0.37	36.38	6,874.6	5.1	27.3	-4.4	0.35	-0.16	-46.12
6,900.0	0.45	37.76	6,899.6	5.2	27.4	-4.5	0.32	0.32	5.52
6,925.0	0.64	31.45	6,924.6	5.4	27.5	-4.7	0.80	0.76	-25.24
6,950.0	0.62	27.37	6,949.6	5.7	27.7	-5.0	0.20	-0.08	-16.32
6,975.0	0.69	31.40	6,974.6	5.9	27.8	-5.2	0.34	0.28	16.12
7,000.0	0.49	35.94	6,999.6	6.1	27.9	-5.4	0.82	-0.80	18.16
7,025.0	0.47	31.42	7,024.6	6.3	28.1	-5.6	0.17	-0.08	-18.08
7,050.0	0.49	27.24	7,049.6	6.5	28.2	-5.8	0.16	0.08	-16.72
7,075.0	0.40	48.35	7,074.6	6.6	28.3	-5.9	0.74	-0.36	84.44
7,100.0	0.49	44.80	7,099.6	6.8	28.4	-6.1	0.38	0.36	-14.20
7,125.0	0.66	25.41	7,124.6	7.0	28.6	-6.3	1.02	0.68	-77.56
7,150.0	0.49	30.75	7,149.6	7.2	28.7	-6.5	0.71	-0.68	21.36
7,175.0	0.43	33.76	7,174.6	7.4	28.8	-6.6	0.26	-0.24	12.04
7,200.0	0.19	355.12	7,199.6	7.5	28.8	-6.8	1.22	-0.96	-154.56
7,225.0	0.28	49.08	7,224.6	7.6	28.9	-6.8	0.91	0.36	215.84
7,250.0	0.34	36.75	7,249.6	7.7	29.0	-6.9	0.36	0.24	-49.32
7,275.0	0.30	32.81	7,274.6	7.8	29.0	-7.1	0.18	-0.16	-15.76
7,300.0	0.48	14.53	7,299.6	8.0	29.1	-7.2	0.87	0.72	-73.12
7,325.0	0.18	9.38	7,324.6	8.1	29.1	-7.4	1.20	-1.20	-20.60
7,350.0	0.25	148.65	7,349.6	8.1	29.2	-7.3	1.62	0.28	557.08
7,375.0	0.24	32.25	7,374.6	8.1	29.2	-7.3	1.67	-0.04	-465.60
7,400.0	0.31	25.86	7,399.6	8.2	29.3	-7.4	0.31	0.28	-25.56
7,425.0	0.32	14.31	7,424.6	8.3	29.3	-7.6	0.26	0.04	-46.20
7,450.0	0.29	339.52	7,449.6	8.4	29.3	-7.7	0.74	-0.12	-139.16
7,475.0	0.13	7.92	7,474.6	8.5	29.3	-7.8	0.74	-0.64	113.60
7,500.0	0.19	15.68	7,499.6	8.6	29.3	-7.9	0.25	0.24	31.04
7,525.0	0.17	7.03	7,524.6	8.7	29.3	-7.9	0.13	-0.08	-34.60
7,550.0	0.26	300.80	7,549.6	8.7	29.3	-8.0	0.99	0.36	-264.92
7,575.0	0.13	17.14	7,574.6	8.8	29.2	-8.1	1.05	-0.52	305.36
7,600.0	0.12	78.42	7,599.6	8.8	29.3	-8.1	0.51	-0.04	245.12
7,625.0	0.22	41.45	7,624.6	8.9	29.3	-8.1	0.57	0.40	-147.88
7,650.0	0.31	32.54	7,649.6	9.0	29.4	-8.2	0.39	0.36	-35.64
7,675.0	0.23	20.88	7,674.6	9.1	29.5	-8.3	0.39	-0.32	-46.64
7,700.0	0.19	267.19	7,699.6	9.1	29.4	-8.4	1.41	-0.16	-454.76
7,725.0	0.11	75.92	7,724.6	9.1	29.4	-8.4	1.19	-0.32	674.92
7,750.0	0.15	63.11	7,749.6	9.1	29.5	-8.4	0.20	0.16	-51.24
7,775.0	0.19	35.01	7,774.6	9.2	29.5	-8.4	0.36	0.16	-112.40
7,800.0	0.19	12.33	7,799.6	9.3	29.6	-8.5	0.30	0.00	-90.72
7,825.0	0.24	2.76	7,824.6	9.4	29.6	-8.6	0.25	0.20	-38.28
7,850.0	0.10	45.32	7,849.6	9.4	29.6	-8.7	0.72	-0.56	170.24
7,875.0	0.13	358.83	7,874.6	9.5	29.6	-8.7	0.38	0.12	-185.96



Survey Report



Company: COG Operating, LLC
Project: Lea County, NM
Site: Sec 30, T24-S,R35E
Well: Fascinator Fed Com #701H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Fascinator Fed Com #701H
TVD Reference: RKB @ 3374.0usft (Noram #21)
MD Reference: RKB @ 3374.0usft (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)
7,900.0	0.02	0.35	7,899.6	9.5	29.6	-8.7	0.44	-0.44	6.08
7,925.0	0.18	47.62	7,924.6	9.5	29.6	-8.8	0.67	0.64	189.08
7,950.0	0.19	17.03	7,949.6	9.6	29.7	-8.8	0.39	0.04	-122.36
7,975.0	0.12	13.82	7,974.6	9.7	29.7	-8.9	0.28	-0.28	-12.84
8,000.0	0.13	3.05	7,999.6	9.7	29.7	-9.0	0.10	0.04	-43.08
8,025.0	0.17	4.03	8,024.6	9.8	29.7	-9.0	0.16	0.16	3.92
8,050.0	0.23	265.60	8,049.6	9.8	29.7	-9.1	1.22	0.24	-393.72
8,075.0	0.10	72.06	8,074.6	9.8	29.6	-9.1	1.31	-0.52	665.84
8,100.0	0.18	57.43	8,099.6	9.8	29.7	-9.1	0.35	0.32	-58.52
8,125.0	0.14	63.25	8,124.6	9.9	29.7	-9.1	0.17	-0.16	23.28
8,150.0	0.12	27.73	8,149.6	9.9	29.8	-9.2	0.33	-0.08	-142.08
8,175.0	0.06	208.02	8,174.6	9.9	29.8	-9.2	0.72	-0.24	-718.84
8,200.0	0.14	78.41	8,199.6	9.9	29.8	-9.2	0.74	0.32	-518.44
8,225.0	0.22	81.17	8,224.6	9.9	29.9	-9.2	0.32	0.32	11.04
8,250.0	0.14	93.61	8,249.6	9.9	30.0	-9.2	0.35	-0.32	49.76
8,275.0	0.27	79.32	8,274.6	9.9	30.1	-9.2	0.55	0.52	-57.16
8,300.0	0.20	73.01	8,299.6	10.0	30.2	-9.2	0.30	-0.28	-25.24
8,325.0	0.11	3.12	8,324.6	10.0	30.2	-9.2	0.77	-0.36	-279.56
8,350.0	0.08	131.10	8,349.6	10.0	30.2	-9.3	0.69	-0.12	511.92
8,375.0	0.21	82.26	8,374.6	10.0	30.3	-9.2	0.67	0.52	-195.36
8,400.0	0.24	85.97	8,399.6	10.0	30.4	-9.3	0.13	0.12	14.84
8,425.0	0.22	85.61	8,424.6	10.0	30.5	-9.3	0.08	-0.08	-1.44
8,450.0	0.27	88.15	8,449.6	10.0	30.6	-9.3	0.20	0.20	10.16
8,475.0	0.30	106.36	8,474.6	10.0	30.7	-9.2	0.38	0.12	72.84
8,500.0	0.46	91.36	8,499.6	10.0	30.9	-9.2	0.75	0.64	-60.00
8,525.0	0.35	96.44	8,524.6	10.0	31.0	-9.2	0.46	-0.44	20.32
8,550.0	0.39	89.01	8,549.6	10.0	31.2	-9.2	0.25	0.16	-29.72
8,575.0	0.35	87.76	8,574.6	10.0	31.4	-9.2	0.16	-0.16	-5.00
8,600.0	0.44	100.05	8,599.6	10.0	31.5	-9.2	0.49	0.36	49.16
8,625.0	0.60	83.49	8,624.6	10.0	31.8	-9.2	0.87	0.64	-66.24
8,650.0	0.61	82.31	8,649.6	10.0	32.0	-9.2	0.06	0.04	-4.72
8,675.0	0.75	76.71	8,674.6	10.1	32.3	-9.2	0.62	0.56	-22.40
8,700.0	0.80	83.26	8,699.6	10.1	32.6	-9.3	0.41	0.20	26.20
8,725.0	0.76	84.46	8,724.6	10.2	33.0	-9.3	0.17	-0.16	4.80
8,750.0	0.87	90.55	8,749.6	10.2	33.3	-9.3	0.56	0.44	24.36
8,775.0	0.69	86.75	8,774.6	10.2	33.7	-9.3	0.75	-0.72	-15.20
8,800.0	0.86	81.30	8,799.6	10.2	34.0	-9.3	0.74	0.68	-21.80
8,825.0	0.89	82.11	8,824.6	10.3	34.4	-9.4	0.13	0.12	3.24
8,850.0	0.94	81.48	8,849.6	10.3	34.8	-9.4	0.20	0.20	-2.52
8,875.0	1.03	77.94	8,874.6	10.4	35.2	-9.5	0.43	0.36	-14.16
8,900.0	0.90	76.10	8,899.6	10.5	35.6	-9.6	0.53	-0.52	-7.36
8,925.0	0.87	72.51	8,924.6	10.6	36.0	-9.7	0.25	-0.12	-14.36
8,950.0	0.96	76.24	8,949.6	10.7	36.4	-9.8	0.43	0.36	14.92

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #701H
Project:	Lea County, NM	TVD Reference:	RKB @ 3374.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3374.0usft (Noram #21)
Well:	Fascinator Fed Com #701H	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)
8,975.0	0.92	81.98	8,974.6	10.8	36.8	-9.8	0.41	-0.16	22.96
9,000.0	1.27	77.47	8,999.6	10.9	37.2	-9.9	1.44	1.40	-18.04
9,025.0	1.00	77.38	9,024.6	11.0	37.7	-10.0	1.08	-1.08	-0.36
9,050.0	1.03	84.64	9,049.6	11.0	38.2	-10.1	0.53	0.12	29.04
9,075.0	0.98	76.52	9,074.6	11.1	38.6	-10.1	0.60	-0.20	-32.48
9,100.0	1.09	84.88	9,099.6	11.2	39.0	-10.2	0.75	0.44	33.44
9,125.0	0.98	85.44	9,124.6	11.2	39.5	-10.2	0.44	-0.44	2.24
9,150.0	1.13	81.13	9,149.5	11.3	39.9	-10.3	0.68	0.60	-17.24
9,175.0	1.04	81.54	9,174.5	11.4	40.4	-10.3	0.36	-0.36	1.64
9,200.0	1.11	82.05	9,199.5	11.4	40.9	-10.4	0.28	0.28	2.04
9,225.0	1.12	87.41	9,224.5	11.5	41.4	-10.4	0.42	0.04	21.44
9,250.0	1.20	83.48	9,249.5	11.5	41.9	-10.4	0.45	0.32	-15.72
9,275.0	1.42	84.95	9,274.5	11.6	42.4	-10.5	0.89	0.88	5.88
9,300.0	1.64	90.09	9,299.5	11.6	43.1	-10.5	1.04	0.88	20.56
9,325.0	1.88	91.58	9,324.5	11.6	43.9	-10.5	0.98	0.96	5.96
9,350.0	2.36	93.23	9,349.5	11.5	44.8	-10.4	1.94	1.92	6.60
9,375.0	2.63	98.87	9,374.5	11.4	45.9	-10.3	1.46	1.08	22.56
9,400.0	2.91	101.94	9,399.4	11.2	47.1	-10.0	1.27	1.12	12.28
9,425.0	3.03	101.89	9,424.4	10.9	48.3	-9.7	0.48	0.48	-0.20
9,450.0	3.30	104.14	9,449.4	10.6	49.7	-9.4	1.19	1.08	9.00
9,475.0	3.45	109.73	9,474.3	10.2	51.1	-8.9	1.45	0.60	22.36
9,500.0	3.58	110.80	9,499.3	9.7	52.5	-8.3	0.58	0.52	4.28
9,525.0	3.62	113.62	9,524.2	9.1	54.0	-7.7	0.73	0.16	11.28
9,550.0	3.46	117.13	9,549.2	8.4	55.4	-7.0	1.08	-0.64	14.04
9,575.0	3.39	119.31	9,574.1	7.7	56.7	-6.3	0.59	-0.28	8.72
9,600.0	3.34	120.08	9,599.1	7.0	58.0	-5.5	0.27	-0.20	3.08
9,625.0	3.35	118.57	9,624.0	6.3	59.2	-4.8	0.35	0.04	-6.04
9,650.0	3.08	122.55	9,649.0	5.5	60.4	-4.0	1.40	-1.08	15.92
9,675.0	2.98	122.34	9,674.0	4.8	61.5	-3.3	0.40	-0.40	-0.84
9,700.0	2.82	121.88	9,698.9	4.2	62.6	-2.6	0.65	-0.64	-1.84
9,725.0	2.42	118.99	9,723.9	3.6	63.6	-2.0	1.68	-1.60	-11.56
9,750.0	2.32	120.54	9,748.9	3.1	64.5	-1.4	0.48	-0.40	6.20
9,775.0	2.30	120.60	9,773.9	2.6	65.4	-0.9	0.08	-0.08	0.24
9,800.0	2.32	121.62	9,798.8	2.0	66.2	-0.4	0.18	0.08	4.08
9,825.0	2.35	117.93	9,823.8	1.5	67.1	0.2	0.61	0.12	-14.76
9,850.0	2.35	114.68	9,848.8	1.1	68.0	0.6	0.53	0.00	-13.00
9,875.0	2.40	117.85	9,873.8	0.6	69.0	1.1	0.56	0.20	12.68
9,900.0	2.37	116.48	9,898.8	0.1	69.9	1.6	0.26	-0.12	-5.48
9,925.0	2.39	115.43	9,923.7	-0.3	70.8	2.1	0.19	0.08	-4.20
9,950.0	2.35	116.12	9,948.7	-0.8	71.8	2.6	0.20	-0.16	2.76
9,975.0	2.56	114.25	9,973.7	-1.2	72.7	3.1	0.90	0.84	-7.48
10,000.0	2.33	113.86	9,998.7	-1.6	73.7	3.5	0.92	-0.92	-1.56
10,025.0	2.47	110.31	10,023.7	-2.0	74.7	3.9	0.82	0.56	-14.20
10,050.0	2.46	109.93	10,048.6	-2.4	75.7	4.3	0.08	-0.04	-1.52

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #701H
Project:	Lea County, NM	TVD Reference:	RKB @ 3374.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3374.0usft (Noram #21)
Well:	Fascinator Fed Com #701H	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)
10,075.0	2.56	106.31	10,073.6	-2.7	76.7	4.7	0.75	0.40	-14.48
10,100.0	2.78	100.15	10,098.6	-3.0	77.8	5.0	1.45	0.88	-24.64
10,125.0	2.60	100.56	10,123.6	-3.2	79.0	5.2	0.72	-0.72	1.64
10,150.0	2.65	101.11	10,148.5	-3.4	80.1	5.5	0.22	0.20	2.20
10,175.0	2.79	97.42	10,173.5	-3.6	81.3	5.7	0.90	0.56	-14.76
10,200.0	2.78	95.44	10,198.5	-3.8	82.5	5.9	0.39	-0.04	-7.92
10,225.0	2.81	92.91	10,223.4	-3.9	83.7	6.0	0.51	0.12	-10.12
10,250.0	2.76	91.88	10,248.4	-3.9	84.9	6.1	0.28	-0.20	-4.12
10,275.0	2.75	93.61	10,273.4	-4.0	86.1	6.1	0.33	-0.04	6.92
10,300.0	2.56	91.23	10,298.4	-4.0	87.3	6.2	0.88	-0.76	-9.52
10,325.0	2.11	87.40	10,323.3	-4.0	88.3	6.2	1.90	-1.80	-15.32
10,350.0	1.97	82.01	10,348.3	-3.9	89.2	6.2	0.95	-0.56	-21.56
10,375.0	1.84	85.90	10,373.3	-3.8	90.0	6.1	0.73	-0.52	15.56
10,400.0	1.71	76.22	10,398.3	-3.7	90.8	6.0	1.31	-0.52	-38.72
10,425.0	1.56	67.00	10,423.3	-3.5	91.5	5.8	1.21	-0.60	-36.88
10,450.0	1.58	68.87	10,448.3	-3.2	92.1	5.6	0.22	0.08	7.48
10,475.0	1.61	61.81	10,473.3	-2.9	92.7	5.3	0.79	0.12	-28.24
10,500.0	1.46	61.57	10,498.3	-2.6	93.3	5.0	0.60	-0.60	-0.96
10,525.0	1.41	45.31	10,523.2	-2.3	93.8	4.6	1.64	-0.20	-65.04
10,550.0	1.26	29.97	10,548.2	-1.8	94.2	4.2	1.54	-0.60	-61.36
10,575.0	1.37	29.25	10,573.2	-1.3	94.4	3.7	0.44	0.44	-2.88
10,600.0	1.42	30.41	10,598.2	-0.8	94.8	3.2	0.23	0.20	4.64
10,625.0	1.47	27.78	10,623.2	-0.2	95.1	2.6	0.33	0.20	-10.52
10,650.0	1.55	23.87	10,648.2	0.4	95.3	2.0	0.52	0.32	-15.64
10,675.0	1.56	21.43	10,673.2	1.0	95.6	1.4	0.27	0.04	-9.76
10,700.0	1.51	23.41	10,698.2	1.6	95.9	0.8	0.29	-0.20	7.92
10,725.0	1.53	27.04	10,723.2	2.2	96.1	0.2	0.39	0.08	14.52
10,750.0	1.54	24.35	10,748.2	2.8	96.4	-0.4	0.29	0.04	-10.76
10,775.0	1.70	22.71	10,773.2	3.5	96.7	-1.0	0.67	0.64	-6.56
10,800.0	1.65	17.37	10,798.2	4.1	97.0	-1.7	0.66	-0.20	-21.36
10,825.0	1.67	7.21	10,823.1	4.9	97.1	-2.4	1.18	0.08	-40.64
10,850.0	1.52	344.91	10,848.1	5.5	97.1	-3.1	2.54	-0.60	-89.20
10,875.0	1.43	1.04	10,873.1	6.2	97.0	-3.7	1.69	-0.36	64.52
10,900.0	1.31	359.61	10,898.1	6.8	97.0	-4.3	0.50	-0.48	-5.72
10,925.0	1.28	0.61	10,923.1	7.3	97.0	-4.9	0.15	-0.12	4.00
10,950.0	1.25	356.89	10,948.1	7.9	97.0	-5.4	0.35	-0.12	-14.88
10,975.0	1.21	354.91	10,973.1	8.4	97.0	-6.0	0.23	-0.16	-7.92
11,000.0	1.06	355.82	10,998.1	8.9	96.9	-6.5	0.60	-0.60	3.64
11,025.0	1.03	352.94	11,023.1	9.4	96.9	-6.9	0.24	-0.12	-11.52
11,050.0	0.94	351.96	11,048.1	9.8	96.8	-7.3	0.37	-0.36	-3.92
11,075.0	0.79	357.62	11,073.1	10.2	96.8	-7.7	0.69	-0.60	22.64
11,100.0	0.67	353.61	11,098.1	10.5	96.8	-8.0	0.52	-0.48	-16.04
11,125.0	0.71	3.89	11,123.1	10.8	96.7	-8.3	0.52	0.16	41.12

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #701H
Project:	Lea County, NM	TVD Reference:	RKB @ 3374.0usft (Noram #21)
Site:	Sec 30, T24-S.R35E	MD Reference:	RKB @ 3374.0usft (Noram #21)
Well:	Fascinator Fed Com #701H	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)
11,150.0	0.71	358.31	11,148.1	11.1	96.8	-8.6	0.28	0.00	-22.32
11,175.0	0.74	352.08	11,173.1	11.4	96.7	-9.0	0.34	0.12	-24.92
11,200.0	0.80	354.72	11,198.1	11.7	96.7	-9.3	0.28	0.24	10.56
11,225.0	0.78	343.72	11,223.1	12.1	96.6	-9.6	0.61	-0.08	-44.00
11,250.0	0.67	333.63	11,248.1	12.4	96.5	-9.9	0.67	-0.44	-40.36
11,275.0	0.59	320.79	11,273.1	12.6	96.4	-10.2	0.65	-0.32	-51.36
11,300.0	0.56	313.29	11,298.1	12.8	96.2	-10.3	0.32	-0.12	-30.00
11,325.0	0.55	311.23	11,323.1	12.9	96.0	-10.5	0.09	-0.04	-8.24
11,350.0	0.56	312.14	11,348.1	13.1	95.8	-10.7	0.05	0.04	3.64
11,375.0	0.51	314.39	11,373.1	13.3	95.7	-10.8	0.22	-0.20	9.00
11,400.0	0.58	316.91	11,398.1	13.4	95.5	-11.0	0.30	0.28	10.08
11,425.0	0.68	308.21	11,423.1	13.6	95.3	-11.2	0.55	0.40	-34.80
11,450.0	0.64	302.80	11,448.1	13.8	95.1	-11.4	0.30	-0.16	-21.64
11,475.0	0.67	301.76	11,473.1	13.9	94.8	-11.5	0.13	0.12	-4.16
11,500.0	0.70	302.51	11,498.1	14.1	94.6	-11.7	0.13	0.12	3.00
11,525.0	0.71	302.52	11,523.1	14.3	94.3	-11.9	0.04	0.04	0.04
11,550.0	0.63	299.80	11,548.1	14.4	94.1	-12.0	0.34	-0.32	-10.88
11,575.0	0.63	301.48	11,573.0	14.6	93.8	-12.2	0.07	0.00	6.72
11,600.0	0.55	299.95	11,598.0	14.7	93.6	-12.3	0.33	-0.32	-6.12
11,625.0	0.67	299.82	11,623.0	14.8	93.4	-12.5	0.48	0.48	-0.52
11,650.0	0.64	294.15	11,648.0	15.0	93.1	-12.6	0.29	-0.12	-22.68
11,675.0	0.78	297.91	11,673.0	15.1	92.8	-12.7	0.59	0.56	15.04
11,700.0	0.98	299.03	11,698.0	15.3	92.5	-12.9	0.80	0.80	4.48
11,725.0	1.21	286.95	11,723.0	15.5	92.1	-13.1	1.30	0.92	-48.32
11,750.0	1.10	286.06	11,748.0	15.6	91.6	-13.3	0.45	-0.44	-3.56
11,775.0	1.45	278.30	11,773.0	15.7	91.0	-13.4	1.56	1.40	-31.04
Gyro Tie In @ 11800.0' MD / 11798.0' TVD									
11,800.0	1.12	287.52	11,798.0	15.8	90.5	-13.5	1.55	-1.32	36.88
11,950.0	1.08	277.87	11,948.0	16.5	87.7	-14.2	0.13	-0.03	-6.43
11,982.0	1.24	263.61	11,980.0	16.5	87.0	-14.3	1.03	0.50	-44.56
12,014.0	2.00	237.82	12,012.0	16.1	86.2	-13.9	3.23	2.38	-80.59
12,046.0	4.12	212.17	12,043.9	14.9	85.1	-12.7	7.73	6.63	-80.16
12,077.0	8.07	198.05	12,074.7	11.8	83.9	-9.7	13.53	12.74	-45.55
12,109.0	10.61	194.99	12,106.3	6.9	82.4	-4.8	8.09	7.94	-9.56
12,139.0	13.99	195.88	12,135.6	0.7	80.7	1.3	11.28	11.27	2.97
12,171.0	17.27	189.68	12,166.4	-7.7	78.9	9.7	11.49	10.25	-19.38
12,203.0	20.00	176.29	12,196.8	-17.9	78.4	19.8	15.81	8.53	-41.84
12,234.0	22.91	169.23	12,225.6	-29.1	79.9	31.1	12.54	9.39	-22.77
12,266.0	25.21	173.62	12,254.8	-42.0	81.8	44.0	9.10	7.19	13.72
12,297.0	28.48	177.21	12,282.5	-55.9	82.9	58.0	11.77	10.55	11.58
12,329.0	32.30	177.17	12,310.1	-72.1	83.7	74.2	11.94	11.94	-0.13
12,360.0	35.34	176.08	12,335.9	-89.3	84.7	91.4	10.00	9.81	-3.52
12,392.0	38.34	175.43	12,361.5	-108.4	86.1	110.6	9.45	9.38	-2.03

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #701H
Project:	Lea County, NM	TVD Reference:	RKB @ 3374.0usft (Noram #21)
Site:	Sec 30, T24-S.R35E	MD Reference:	RKB @ 3374.0usft (Noram #21)
Well:	Fascinator Fed Com #701H	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)
FTP Crossed @ 12409.1' MD / 12374.7' TVD									
12,409.1	39.78	174.77	12,374.7	-119.2	87.1	121.3	8.77	8.43	-3.85
12,424.0	41.04	174.23	12,386.1	-128.8	88.0	131.0	8.77	8.45	-3.64
12,455.0	43.21	175.70	12,409.1	-149.5	89.8	151.7	7.69	7.00	4.74
12,486.0	46.16	175.21	12,431.1	-171.2	91.5	173.5	9.58	9.52	-1.58
12,518.0	48.86	174.10	12,452.7	-194.7	93.7	197.0	8.82	8.44	-3.47
12,549.0	50.98	173.46	12,472.7	-218.3	96.3	220.7	7.02	6.84	-2.06
12,581.0	52.69	172.05	12,492.5	-243.2	99.5	245.7	6.37	5.34	-4.41
12,613.0	55.33	171.16	12,511.3	-268.9	103.3	271.4	8.55	8.25	-2.78
12,645.0	58.18	172.88	12,528.8	-295.4	107.0	298.0	9.98	8.91	5.38
12,676.0	60.69	173.65	12,544.6	-321.9	110.1	324.5	8.37	8.10	2.48
12,707.0	63.38	175.40	12,559.1	-349.1	112.7	351.9	10.01	8.68	5.65
12,739.0	66.36	176.30	12,572.7	-378.0	114.8	380.8	9.65	9.31	2.81
12,770.0	69.83	176.88	12,584.3	-406.7	116.5	409.5	11.33	11.19	1.87
12,801.0	74.31	176.69	12,593.8	-436.2	118.2	439.0	14.46	14.45	-0.61
12,833.0	77.65	176.04	12,601.5	-467.1	120.1	470.0	10.62	10.44	-2.03
12,864.0	82.07	175.16	12,607.0	-497.6	122.5	500.5	14.53	14.26	-2.84
12,937.0	89.16	176.21	12,612.6	-570.1	127.9	573.1	9.82	9.71	1.44
13,031.0	90.17	177.15	12,613.1	-663.9	133.4	667.1	1.47	1.07	1.00
13,126.0	88.43	178.92	12,614.3	-758.9	136.6	762.1	2.61	-1.83	1.86
13,220.0	89.86	178.94	12,615.7	-852.8	138.4	856.1	1.52	1.52	0.02
13,315.0	88.04	177.41	12,617.4	-947.8	141.4	951.0	2.50	-1.92	-1.61
13,409.0	88.01	176.87	12,620.7	-1,041.6	146.1	1,044.9	0.58	-0.03	-0.57
13,504.0	87.03	175.74	12,624.8	-1,136.3	152.2	1,139.8	1.57	-1.03	-1.19
13,598.0	86.58	174.58	12,630.0	-1,229.8	160.1	1,233.5	1.32	-0.48	-1.23
13,692.0	92.44	176.92	12,630.8	-1,323.5	167.1	1,327.3	6.71	6.23	2.49
13,787.0	93.08	177.42	12,626.3	-1,418.3	171.8	1,422.2	0.85	0.67	0.53
13,881.0	90.22	178.83	12,623.5	-1,512.2	174.9	1,516.1	3.39	-3.04	1.50
13,975.0	90.20	179.05	12,623.2	-1,606.2	176.6	1,610.1	0.24	-0.02	0.23
14,070.0	90.98	179.06	12,622.2	-1,701.1	178.2	1,705.1	0.82	0.82	0.01
14,165.0	89.58	180.38	12,621.8	-1,796.1	178.6	1,800.1	2.03	-1.47	1.39
14,260.0	88.63	181.64	12,623.2	-1,891.1	177.0	1,895.0	1.66	-1.00	1.33
14,354.0	88.54	181.59	12,625.6	-1,985.0	174.3	1,988.8	0.11	-0.10	-0.05
14,449.0	88.38	181.76	12,628.1	-2,080.0	171.5	2,083.6	0.25	-0.17	0.18
14,543.0	88.60	182.02	12,630.6	-2,173.9	168.4	2,177.4	0.36	0.23	0.28
14,638.0	88.01	181.22	12,633.4	-2,268.8	165.8	2,272.3	1.05	-0.62	-0.84
14,732.0	88.35	179.18	12,636.4	-2,362.7	165.4	2,366.2	2.20	0.36	-2.17
14,826.0	87.82	179.03	12,639.5	-2,456.7	166.9	2,460.1	0.59	-0.56	-0.16
14,921.0	89.66	179.56	12,641.6	-2,551.6	168.1	2,555.1	2.02	1.94	0.56
15,015.0	89.92	179.66	12,642.0	-2,645.6	168.7	2,649.1	0.30	0.28	0.11
15,109.0	90.53	179.80	12,641.6	-2,739.6	169.1	2,743.0	0.67	0.65	0.15
15,204.0	91.12	179.88	12,640.2	-2,834.6	169.4	2,838.0	0.63	0.62	0.08
15,298.0	89.72	178.23	12,639.5	-2,928.6	171.0	2,932.0	2.30	-1.49	-1.76
15,393.0	90.17	178.63	12,639.6	-3,023.6	173.6	3,027.0	0.63	0.47	0.42



Survey Report



Company: COG Operating, LLC
Project: Lea County, NM
Site: Sec 30, T24-S,R35E
Well: Fascinator Fed Com #701H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Fascinator Fed Com #701H
TVD Reference: RKB @ 3374.0usft (Noram #21)
MD Reference: RKB @ 3374.0usft (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)
15,487.0	89.89	179.44	12,639.6	-3,117.6	175.1	3,121.0	0.91	-0.30	0.86
15,581.0	88.12	179.21	12,641.2	-3,211.5	176.3	3,215.0	1.90	-1.88	-0.24
15,676.0	88.68	178.75	12,643.9	-3,306.5	177.9	3,309.9	0.76	0.59	-0.48
15,770.0	89.75	178.45	12,645.2	-3,400.4	180.2	3,403.9	1.18	1.14	-0.32
15,864.0	90.20	178.70	12,645.2	-3,494.4	182.6	3,497.9	0.55	0.48	0.27
15,959.0	91.12	178.31	12,644.1	-3,589.4	185.1	3,592.9	1.05	0.97	-0.41
16,053.0	89.24	178.16	12,643.8	-3,683.3	188.0	3,686.9	2.01	-2.00	-0.16
16,148.0	88.52	178.24	12,645.7	-3,778.3	190.9	3,781.9	0.76	-0.76	0.08
16,243.0	87.93	178.16	12,648.6	-3,873.2	193.9	3,876.8	0.63	-0.62	-0.08
16,338.0	88.15	178.23	12,651.9	-3,968.1	196.9	3,971.8	0.24	0.23	0.07
16,432.0	88.52	178.57	12,654.6	-4,062.0	199.5	4,065.7	0.53	0.39	0.36
16,527.0	88.69	179.23	12,656.9	-4,156.9	201.4	4,160.7	0.72	0.18	0.69
16,621.0	87.76	179.81	12,659.8	-4,250.9	202.1	4,254.6	1.17	-0.99	0.62
16,716.0	87.85	179.74	12,663.4	-4,345.8	202.5	4,349.5	0.12	0.09	-0.07
16,810.0	87.42	179.06	12,667.3	-4,439.7	203.5	4,443.5	0.86	-0.46	-0.72
16,905.0	87.56	178.86	12,671.5	-4,534.6	205.2	4,538.4	0.26	0.15	-0.21
17,000.0	88.38	179.65	12,674.9	-4,629.6	206.5	4,633.3	1.20	0.86	0.83
17,094.0	87.71	179.06	12,678.1	-4,723.5	207.5	4,727.2	0.95	-0.71	-0.63
17,188.0	87.93	178.63	12,681.6	-4,817.4	209.4	4,821.2	0.51	0.23	-0.46
17,282.0	88.94	178.27	12,684.2	-4,911.3	211.9	4,915.1	1.14	1.07	-0.38
17,376.0	89.33	178.32	12,685.6	-5,005.3	214.7	5,009.1	0.42	0.41	0.05
17,470.0	89.50	177.74	12,686.6	-5,099.2	218.0	5,103.1	0.64	0.18	-0.62
17,565.0	89.78	179.85	12,687.2	-5,194.2	220.0	5,198.1	2.24	0.29	2.22
17,659.0	89.92	179.39	12,687.4	-5,288.2	220.6	5,292.1	0.51	0.15	-0.49
17,753.0	88.24	180.17	12,688.9	-5,382.2	221.0	5,386.0	1.97	-1.79	0.83
17,848.0	88.69	180.05	12,691.5	-5,477.1	220.8	5,481.0	0.49	0.47	-0.13
17,943.0	88.94	180.01	12,693.4	-5,572.1	220.7	5,575.9	0.27	0.26	-0.04
18,037.0	89.97	180.18	12,694.3	-5,666.1	220.6	5,669.9	1.11	1.10	0.18
18,132.0	90.28	180.17	12,694.1	-5,761.1	220.3	5,764.8	0.33	0.33	-0.01
18,227.0	88.74	179.78	12,694.9	-5,856.1	220.3	5,859.8	1.67	-1.62	-0.41
18,322.0	87.62	179.77	12,698.0	-5,951.1	220.7	5,954.7	1.18	-1.18	-0.01
18,416.0	88.85	180.08	12,700.9	-6,045.0	220.8	6,048.7	1.35	1.31	0.33
18,511.0	87.87	180.75	12,703.6	-6,140.0	220.1	6,143.6	1.25	-1.03	0.71
18,605.0	89.22	180.52	12,706.0	-6,233.9	219.1	6,237.5	1.46	1.44	-0.24
18,700.0	89.92	181.15	12,706.7	-6,328.9	217.7	6,332.4	0.99	0.74	0.66
18,795.0	88.32	182.70	12,708.1	-6,423.8	214.5	6,427.2	2.34	-1.68	1.63
18,889.0	88.26	182.64	12,710.9	-6,517.7	210.1	6,520.9	0.09	-0.06	-0.06
18,984.0	86.86	181.48	12,715.0	-6,612.5	206.7	6,615.7	1.91	-1.47	-1.22
19,079.0	87.03	181.15	12,720.0	-6,707.4	204.5	6,710.4	0.39	0.18	-0.35
19,173.0	88.10	181.04	12,724.0	-6,801.3	202.8	6,804.2	1.14	1.14	-0.12
19,268.0	89.24	180.98	12,726.2	-6,896.2	201.1	6,899.1	1.20	1.20	-0.06
19,363.0	88.04	179.51	12,728.5	-6,991.2	200.7	6,994.0	2.00	-1.26	-1.55
19,458.0	88.52	179.78	12,731.4	-7,086.2	201.3	7,089.0	0.58	0.51	0.28

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #701H
Project:	Lea County, NM	TVD Reference:	RKB @ 3374.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3374.0usft (Noram #21)
Well:	Fascinator Fed Com #701H	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)
19,552.0	87.65	180.31	12,734.5	-7,180.1	201.2	7,182.9	1.08	-0.93	0.56
19,646.0	86.67	178.37	12,739.2	-7,274.0	202.3	7,276.8	2.31	-1.04	-2.06
19,741.0	87.84	178.66	12,743.7	-7,368.8	204.7	7,371.7	1.27	1.23	0.31
19,831.0	90.36	179.06	12,745.1	-7,458.8	206.5	7,461.6	2.84	2.80	0.44
19,931.0	89.97	178.12	12,744.8	-7,558.8	209.0	7,561.6	1.02	-0.39	-0.94
20,026.0	87.23	177.53	12,747.1	-7,653.7	212.6	7,656.6	2.95	-2.88	-0.62
20,121.0	87.84	177.38	12,751.2	-7,748.5	216.8	7,751.5	0.66	0.64	-0.16
20,216.0	89.30	177.10	12,753.6	-7,843.3	221.4	7,846.4	1.56	1.54	-0.29
20,311.0	87.54	179.12	12,756.2	-7,938.2	224.5	7,941.4	2.82	-1.85	2.13
20,405.0	87.90	179.33	12,760.0	-8,032.2	225.8	8,035.3	0.44	0.38	0.22
20,501.0	88.85	179.42	12,762.7	-8,128.1	226.8	8,131.3	0.99	0.99	0.09
20,596.0	88.96	179.26	12,764.5	-8,223.1	227.9	8,226.2	0.20	0.12	-0.17
20,691.0	88.26	178.33	12,766.8	-8,318.0	229.9	8,321.2	1.23	-0.74	-0.98
20,785.0	88.77	178.37	12,769.2	-8,412.0	232.6	8,415.2	0.54	0.54	0.04
20,880.0	90.70	178.56	12,769.7	-8,506.9	235.2	8,510.2	2.04	2.03	0.20
20,974.0	89.36	178.03	12,769.6	-8,600.9	238.0	8,604.2	1.53	-1.43	-0.56
21,069.0	89.66	178.48	12,770.4	-8,695.8	240.8	8,699.2	0.57	0.32	0.47
21,164.0	90.45	178.71	12,770.4	-8,790.8	243.2	8,794.1	0.87	0.83	0.24
21,259.0	90.87	180.21	12,769.3	-8,885.8	244.1	8,889.1	1.64	0.44	1.58
21,354.0	90.14	180.49	12,768.4	-8,980.8	243.5	8,984.1	0.82	-0.77	0.29
21,449.0	90.00	181.12	12,768.3	-9,075.8	242.2	9,079.0	0.68	-0.15	0.66
21,544.0	88.60	180.93	12,769.5	-9,170.8	240.5	9,173.9	1.49	-1.47	-0.20
21,638.0	89.64	181.08	12,770.9	-9,264.7	238.8	9,267.8	1.12	1.11	0.16
21,733.0	90.95	181.32	12,770.4	-9,359.7	236.8	9,362.7	1.40	1.38	0.25
21,827.0	91.68	181.55	12,768.3	-9,453.7	234.5	9,456.6	0.81	0.78	0.24
21,922.0	90.84	182.31	12,766.2	-9,548.6	231.3	9,551.4	1.19	-0.88	0.80
22,016.0	90.14	182.91	12,765.4	-9,642.5	227.0	9,645.1	0.98	-0.74	0.64
22,111.0	87.40	183.53	12,767.4	-9,737.3	221.7	9,739.8	2.96	-2.88	0.65
22,205.0	87.12	183.72	12,771.9	-9,831.0	215.7	9,833.3	0.36	-0.30	0.20
22,300.0	87.68	184.02	12,776.2	-9,925.7	209.3	9,927.8	0.67	0.59	0.32
LTP Crossed @ 22394.8' MD / 12779.5' TVD									
22,394.8	88.35	183.73	12,779.5	-10,020.2	202.9	10,022.1	0.77	0.71	-0.31
22,395.0	88.35	183.73	12,779.5	-10,020.4	202.9	10,022.3	0.77	0.71	-0.31
22,482.0	88.99	183.98	12,781.5	-10,107.2	197.1	10,108.9	0.79	0.74	0.29
TD @ 22543.0' MD / 12782.6' TVD									
22,543.0	88.99	183.98	12,782.6	-10,168.0	192.8	10,169.7	0.00	0.00	0.00



Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Fascinator Fed Com #701H
Project:	Lea County, NM	TVD Reference:	RKB @ 3374.0usft (Noram #21)
Site:	Sec 30, T24-S,R35E	MD Reference:	RKB @ 3374.0usft (Noram #21)
Well:	Fascinator Fed Com #701H	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)	
11,800.0	11,798.0	15.8	90.5	Gyro Tie In @ 11800.0' MD / 11798.0' TVD
12,409.1	12,374.7	-119.2	87.1	FTP Crossed @ 12409.1' MD / 12374.7' TVD
22,394.8	12,779.5	-10,020.2	202.9	LTP Crossed @ 22394.8' MD / 12779.5' TVD
22,543.0	12,782.6	-10,168.0	192.8	TD @ 22543.0' MD / 12782.6' TVD

Checked By: _____	Approved By: _____	Date: _____
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From Bottom to Top		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots
	22,378	23	4	22,130	90	5	21,975	28	5	21,773	30	5	21,576	27	5
	22,355	22	4	22,120	10	5	21,953	25	5	21,753	25	5	21,555	27	5
	22,333	23	4	22,110	10	5	21,928	28	5	21,728	25	5	21,528	27	5
	22,310	23	4	22,100	22	5	21,900	22	5	21,703	25	5	21,501	23	5
	22,287	22	4	22,078	25	4	21,878		4	21,678	25	4	21,478	25	4
	22,265	23	4	22,053	25	4	21,853	25	4	21,653	25	4	21,453	25	4
	22,242	22	3	22,028	25	4	21,828	25	4	21,628	25	4	21,428	25	4
	22,220		3	22,003		4	21,803		4	21,603		4	21,403		4
	Plug to Plug	93	30	Plug to Plug	40	36	Plug to Plug	85	36	Plug to Plug	87	36	Plug to Plug	85	36
	Frac Plug	22,403	Total Shots	Frac Plug	22,140	Total Shots	Frac Plug	21,985	Total Shots	Frac Plug	21,790	Total Shots	Frac Plug	21,586	Total Shots

From Bottom to Top		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots
	21,378	25	5	21,178	25	5	20,978	25	5	20,778	25	5	20,564	39	5
	21,353	25	5	21,150	22	5	20,953	25	5	20,753	25	5	20,553	25	5
	21,328	25	5	21,128	25	5	20,928	25	5	20,728	25	5	20,528	25	5
	21,303	25	5	21,103	25	5	20,903	25	5	20,703	22	5	20,503	25	5
	21,278	25	4	21,078	25	4	20,878	25	4	20,681	28	4	20,478	29	4
	21,253	25	4	21,053	25	4	20,853	25	4	20,653	25	4	20,449	21	4
	21,228	25	4	21,028	25	4	20,828	25	4	20,628	25	4	20,428	25	4
	21,203		4	21,003		4	20,803		4	20,603		4	20,403		4
	Plug to Plug	87	36	Plug to Plug	87	36	Plug to Plug	88	36	Plug to Plug	87	36	Plug to Plug	75	36
	Frac Plug	21,390	Total Shots	Frac Plug	21,190	Total Shots	Frac Plug	20,991	Total Shots	Frac Plug	20,790	Total Shots	Frac Plug	20,578	Total Shots

From Bottom to Top		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots
	20,378	25	5	20,178	29	5	19,978	29	5	19,774	28	5	19,577	27	5
	20,353	25	5	20,153	25	5	19,953	25	5	19,752	24	5	19,548	21	5
	20,328	25	5	20,128	25	5	19,928	25	5	19,728	26	5	19,527	25	5
	20,303	25	5	20,103	25	5	19,903	26	5	19,702	25	5	19,502	25	5
	20,278	25	4	20,078	25	4	19,877	25	4	19,677	25	4	19,477	25	4
	20,253	30	4	20,053	25	4	19,852	25	4	19,652	25	4	19,452	25	4
	20,223	16	4	20,028	21	4	19,827	25	4	19,627	23	4	19,427	25	4
	20,207		4	20,007		4	19,802		4	19,604		4	19,402		4
	Plug to Plug	87	36	Plug to Plug	90	36	Plug to Plug	87	36	Plug to Plug	88	36	Plug to Plug	88	36
	Frac Plug	20,390	Total Shots	Frac Plug	20,193	Total Shots	Frac Plug	19,990	Total Shots	Frac Plug	19,790	Total Shots	Frac Plug	19,590	Total Shots

From Bottom to Top		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots
	19,377	25	5	19,170	32	5	18,977	25	5	18,777	25	5	18,574	28	5
	19,352	22	5	19,152	25	5	18,952	29	5	18,752	23	5	18,548	21	5
	19,330	28	5	19,127	22	5	18,923	21	5	18,729	27	5	18,527	25	5
	19,302	25	5	19,105	28	5	18,902	25	5	18,702	27	5	18,502	25	5
	19,277	25	4	19,077	25	4	18,877	25	4	18,675	23	4	18,477	25	4
	19,252	25	4	19,052	25	4	18,852	25	4	18,652	25	4	18,452	25	4
	19,227	25	4	19,027	25	4	18,827	25	4	18,627	25	4	18,427	25	4
	19,202		4	19,002		4	18,802		4	18,602		4	18,402		4
	Plug to Plug	88	36	Plug to Plug	75	36	Plug to Plug	88	36	Plug to Plug	88	36	Plug to Plug	82	36
	Frac Plug	19,390	Total Shots	Frac Plug	19,180	Total Shots	Frac Plug	18,990	Total Shots	Frac Plug	18,790	Total Shots	Frac Plug	18,584	Total Shots

From Bottom to Top		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots
	18,372	30	5	18,177	25	5	17,977	30	5	17,770	32	5	17,571	31	5
	18,352	25	5	18,152	25	5	17,952	25	5	17,752	25	5	17,552	25	5
	18,327	25	5	18,127	25	5	17,927	25	5	17,727	25	5	17,527	25	5
	18,302	25	5	18,102	25	5	17,902	21	5	17,702	25	5	17,502	25	5
	18,277	30	4	18,077	25	4	17,881	29	4	17,677	25	4	17,477	25	4
	18,247	20	4	18,052	25	4	17,852	25	4	17,652	25	4	17,452	25	4
	18,227	25	4	18,027	20	4	17,827	25	4	17,627	25	4	17,427	20	4
	18,202		4	18,007		4	17,802		4	17,602		4	17,407		4
	Plug to Plug	88	36	Plug to Plug	88	36	Plug to Plug	88	36	Plug to Plug	78	36	Plug to Plug	88	36
	Frac Plug	18,390	Total Shots	Frac Plug	18,190	Total Shots	Frac Plug	17,990	Total Shots	Frac Plug	17,780	Total Shots	Frac Plug	17,590	Total Shots

From Bottom to Top		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots
	17,377	30	5	17,176	26	5	16,977	25	5	16,772	30	5	16,577	27	5
	17,352	25	5	17,152	25	5	16,949	22	5	16,752	25	5	16,546	19	5
	17,327	25	5	17,127	25	5	16,927	25	5	16,727	25	5	16,527	25	5
	17,302	25	5	17,102	25	5	16,902	25	5	16,702	25	5	16,502	25	5
	17,277	25	4	17,077	25	4	16,877	25	4	16,677	25	4	16,477	25	4
	17,252	25	4	17,052	25	4	16,852	28	4	16,652	25	4	16,452	25	4
	17,227	25	4	17,027	25	4	16,824	22	4	16,627	23	4	16,427	25	4
	17,202		4	17,002		4	16,802		4	16,604		4	16,402		4
	Plug to Plug	88	36	Plug to Plug	87	36	Plug to Plug	87	36	Plug to Plug	87	36	Plug to Plug	87	36
	Frac Plug	17,390	Total Shots	Frac Plug	17,189	Total Shots	Frac Plug	16,989	Total Shots	Frac Plug	16,789	Total Shots	Frac Plug	16,589	Total Shots

From Bottom to Top		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots
	16,371	31	5	16,174	28	5	15,974	28	5	15,775	25	5	15,572	30	5
	16,352	25	5	16,147	20	5	15,952	25	5	15,752	25	5	15,552	25	5
	16,327	25	5	16,127	25	5	15,927	25	5	15,727	25	5	15,527	30	5
	16,302	25	5	16,102	25	5	15,902	25	5	15,702	23	5	15,497	20	5
	16,277	25	4	16,077	25	4	15,877	25	4	15,679	27	4	15,477	25	4
	16,252	25	4	16,052	25	4	15,852	25	4	15,652	25	4	15,452	25	4
	16,227	25	4	16,027	25	4	15,827	27	4	15,627	25	4	15,427	25	4
	16,202		4	16,002		4	15,800		4	15,602		4	15,402		4
	Plug to Plug	87	36	Plug to Plug	84	36	Plug to Plug	87	36	Plug to Plug	85	36	Plug to Plug	85	36
Frac Plug		16,389	Total Shots	Frac Plug	16,186	Total Shots	Frac Plug	15,989	Total Shots	Frac Plug	15,787	Total Shots	Frac Plug	15,582	Total Shots

From Bottom to Top		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots
	15,370	32	5	15,177	30	5	14,974	28	5	14,776	33	5	14,565	36	5
	15,352	27	5	15,152	25	5	14,952	25	5	14,751	25	5	14,551	25	5
	15,325	23	5	15,127	25	5	14,927	25	5	14,726	25	5	14,526	25	5
	15,302	25	5	15,102	25	5	14,902	26	5	14,701	30	5	14,501	25	5
	15,277	25	4	15,077	25	4	14,876	23	4	14,671	20	4	14,476	31	4
	15,252	25	4	15,052	24	4	14,853	27	4	14,651	25	4	14,445	19	4
	15,227	20	4	15,028	26	4	14,826	17	4	14,626	25	4	14,426	25	4
	15,207		4	15,002		4	14,809		4	14,601		4	14,401		4
	Plug to Plug	87	36	Plug to Plug	87	36	Plug to Plug	88	36	Plug to Plug	88	36	Plug to Plug	74	36
Frac Plug		15,389	Total Shots	Frac Plug	15,189	Total Shots	Frac Plug	14,990	Total Shots	Frac Plug	14,789	Total Shots	Frac Plug	14,575	Total Shots

From Bottom to Top		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots
	14,376	25	5	14,169	32	5	13,971	30	5	13,776	25	5	13,571	30	5
	14,351	25	5	14,151	25	5	13,951	25	5	13,751	25	5	13,545	19	5
	14,326	25	5	14,126	30	5	13,926	25	5	13,726	25	5	13,526	25	5
	14,301	30	5	14,096	20	5	13,901	25	5	13,701	29	5	13,501	25	5
	14,271	20	4	14,076	25	4	13,876	20	4	13,672	21	4	13,476	25	4
	14,251	25	4	14,051	25	4	13,856	30	4	13,651	25	4	13,451	25	4
	14,226	25	4	14,026	25	4	13,826	25	4	13,626	25	4	13,426	25	4
	14,201		4	14,001		4	13,801		4	13,601		4	13,401		4
	Plug to Plug	88	36	Plug to Plug	86	36	Plug to Plug	88	36	Plug to Plug	88	36	Plug to Plug	83	36
Frac Plug		14,389	Total Shots	Frac Plug	14,182	Total Shots	Frac Plug	13,989	Total Shots	Frac Plug	13,789	Total Shots	Frac Plug	13,584	Total Shots

From Bottom to Top		Distance Between Perfs	Shots		Distance Between Perfs	Shots		Distance Between Perfs	Shots	Stage 49	Distance Between Perfs	Shots	Stage 50	Distance Between Perfs	Shots
	13,376	25	5	13,176	25	5	12,965	36	5		12801			0	
	13,351	25	5	13,151	25	5	12,951	25	5						
	13,326	25	5	13,126	25	5	12,926	23	5						
	13,301	25	5	13,101	31	5	12,903	27	5						
	13,276	22	4	13,070	19	4	12,876	28	4						
	13,254	28	4	13,051	27	4	12,848	22	4						
	13,226	25	4	13,024	23	4	12,826	25	4						
	13,201		4	13,001		4	12,801		4						
	Plug to Plug	88	36	Plug to Plug	88	36	Plug to Plug	72	36	Plug to Plug	0	0	Plug to Plug	0	0
Frac Plug		13,389	Total Shots	Frac Plug	13,189	Total Shots	Frac Plug	12,975	Total Shots	Frac Plug		Total Shots	Frac Plug		Total Shots

Fascinator Federal Com #701H

<u>Perfs</u>	<u>7 1/2% Acid (Gal)</u>	<u>Sand (#)</u>	<u>Fluid (Gal)</u>
1	1512	403850	335538
2	1512	400450	418152
3	1512	403880	417354
4	1512	412400	448098
5	1512	399850	356076
6	1512	407200	352128
7	1512	408800	351120
8	1512	401990	326466
9	1512	400200	352926
10	1512	401540	350532
11	1512	396650	342300
12	1512	398280	353640
13	1512	407000	359268
14	1512	405410	349314
15	1512	399100	343140
16	1512	405400	349482
17	1512	401000	354102
18	1512	400940	331254
19	1512	394140	327978
20	1512	400200	332556
21	1512	400080	337638
22	1512	400550	327485
23	1512	400290	346164
24	1512	400400	335790
25	1512	400880	354354
26	1512	399400	333606
27	1512	403710	338772
28	1512	404450	325122
29	1512	400650	337848
30	1512	401550	334488
31	1512	397120	331128
32	1512	400150	396900
33	1512	400300	389088
34	1512	398170	384636
35	1512	404410	399294
36	1512	393860	399084
37	1512	399680	389340
38	1512	400000	390726
39	1512	399700	397404
40	1512	399520	397614
41	1512	405350	398664
42	1512	399650	393666
43	1512	399870	397110
44	1512	398530	366366
45	1512	396660	399672
46	1512	399000	391104
47	1512	399930	398454
48	1512	400250	411600
Totals	72576	19,252,390	17,554,541