

**McVAY DRILLING COMPANY**

P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

HOBBS OCD
DEC 04 2017
RECEIVED

Well Name and Num: Fascinator Fee #24-H
Location: Sec 19, T24S, R35E
Operator: COG
Drilling Contractor: McVay Drilling Company

The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
1.40	203	0.70	6538	85.36	12959	89.99	14980
1.50	566	0.80	6919	87.74	13267	83.67	15266
1.40	1214	0.90	7299	90.27	13551	92.28	15648
1.40	1585	0.90	7681	89.71	13741	88.56	15934
1.70	1965	1.00	8063	87.72	13832	88.98	16315
1.40	2344	0.70	8443	88.56	14313	88.45	13788
1.30	2724	0.90	8825	9.98	12194	88.75	17168
1.10	3105	0.70	9206	32.77	12338	84.43	17359
1.60	3486	0.60	9586	39.87	12432	87.29	17455
1.90	3869	0.30	9776	46.67	12529	90.80	17741
3.60	4250	0.80	10158	59.11	12700	89.54	18027
0.50	4631	2.40	10539	81.23	12863	87.66	18123
2.00	4823	1.00	10920	88.53	13361	87.72	18597
0.60	5204	1.00	11110	88.25	13645	86.74	19071
0.60	5585	1.50	11300	90.80	14122	88.36	19356
0.80	5966	43.42	12433	88.16	14504	86.9	19737
0.60	6347	62.51	12720	90.13	14694	86.48	19907

By: *Mark C. Cenic*

Subscribed and sworn to before me this 20th day of September, 2017

Tina FLEMENS

Notary Public, Lea County, New Mexico





CONCHO

COG Operating L L C

Lea County, NM (NAD27 NME)

Sec. 19, T 24 S., R 35 E

Fascinator Fee 24H

Wellbore #2

Design: Wellbore #2

Survey Report - Geographic

25 September, 2017

HOBBS OCD
DEC 04 2017
RECEIVED



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Project	Lea County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Sec. 19, T 24 S., R 35 E		
Site Position:		Northing:	438,901.4000 usft
From:	Map	Easting:	786,129.4000 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "
		Latitude:	32.203273
		Longitude:	-103.408291
		Grid Convergence:	0.49 °

Well	Fascinator Fee 24H, ACTIVE		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	Easting:
Position Uncertainty	0.00 ft	Wellhead Elevation:	0.00 ft
		Latitude:	32.202277
		Longitude:	-103.404740
		Ground Level:	3,340.00 ft

Wellbore	Wellbore #2				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/25/2017	6.80	59.93	48,088

Design	Wellbore #2				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	11,990.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	180.20	

Survey Program	Date 9/25/2017				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	11,763.00	Gyro Survey (Wellbore #1)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
11,904.00	11,990.00	MWD Surveys (Wellbore #1)	MWD	MWD - Standard	
12,068.00	19,971.00	MWD Surveys (Wellbore #2)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	438,548.6000	787,230.7000	32.202277	-103.404740	
100.00	1.17	128.97	99.99	-0.64	0.79	438,547.9579	787,231.4938	32.202275	-103.404738	
125.00	1.24	123.76	124.99	-0.95	1.22	438,547.6470	787,231.9171	32.202275	-103.404736	
150.00	1.11	134.35	149.98	-1.27	1.62	438,547.3274	787,232.3152	32.202274	-103.404735	
175.00	1.30	119.56	174.98	-1.58	2.04	438,547.0183	787,232.7350	32.202273	-103.404734	
200.00	1.21	122.78	199.97	-1.86	2.50	438,546.7354	787,233.2036	32.202272	-103.404732	
225.00	1.22	124.50	224.97	-2.16	2.94	438,546.4418	787,233.6449	32.202271	-103.404731	
250.00	1.28	115.97	249.96	-2.43	3.42	438,546.1688	787,234.1152	32.202270	-103.404729	
275.00	1.27	113.55	274.95	-2.66	3.92	438,545.9358	787,234.6202	32.202270	-103.404728	
300.00	1.27	111.60	299.95	-2.88	4.43	438,545.7231	787,235.1318	32.202269	-103.404726	



Integrity Directional Services, LLC
Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
325.00	1.34	108.51	324.94	-3.07	4.97	438,545.5283	787,235.6666	32.202269	-103.404724
350.00	1.26	107.44	349.93	-3.25	5.51	438,545.3531	787,236.2060	32.202268	-103.404723
375.00	1.30	106.55	374.93	-3.41	6.04	438,545.1900	787,236.7401	32.202268	-103.404721
400.00	1.28	106.44	399.92	-3.57	6.58	438,545.0302	787,237.2797	32.202267	-103.404719
425.00	1.35	103.33	424.91	-3.72	7.13	438,544.8832	787,237.8341	32.202267	-103.404717
450.00	1.34	101.09	449.91	-3.84	7.71	438,544.7591	787,238.4075	32.202267	-103.404716
475.00	1.27	100.18	474.90	-3.95	8.27	438,544.6539	787,238.9671	32.202266	-103.404714
500.00	1.41	97.41	499.89	-4.03	8.84	438,544.5653	787,239.5448	32.202266	-103.404712
525.00	1.37	94.74	524.89	-4.10	9.45	438,544.5009	787,240.1476	32.202266	-103.404710
550.00	1.35	92.24	549.88	-4.14	10.04	438,544.4647	787,240.7397	32.202266	-103.404708
575.00	1.42	91.93	574.87	-4.16	10.64	438,544.4428	787,241.3436	32.202266	-103.404706
600.00	1.45	89.82	599.87	-4.17	11.27	438,544.4333	787,241.9695	32.202266	-103.404704
625.00	1.44	86.55	624.86	-4.15	11.90	438,544.4532	787,242.5993	32.202266	-103.404702
650.00	1.39	85.17	649.85	-4.10	12.52	438,544.4977	787,243.2150	32.202266	-103.404700
675.00	1.48	84.22	674.84	-4.04	13.14	438,544.5557	787,243.8384	32.202266	-103.404698
700.00	1.52	82.79	699.83	-3.97	13.79	438,544.6298	787,244.4886	32.202266	-103.404696
725.00	1.50	80.86	724.82	-3.88	14.44	438,544.7234	787,245.1406	32.202266	-103.404694
750.00	1.45	82.11	749.82	-3.78	15.08	438,544.8188	787,245.7769	32.202267	-103.404692
775.00	1.52	82.21	774.81	-3.69	15.72	438,544.9072	787,246.4188	32.202267	-103.404690
800.00	1.59	80.96	799.80	-3.59	16.39	438,545.0066	787,247.0898	32.202267	-103.404688
825.00	1.49	81.40	824.79	-3.49	17.05	438,545.1097	787,247.7537	32.202267	-103.404685
850.00	1.52	82.91	849.78	-3.40	17.70	438,545.1993	787,248.4041	32.202267	-103.404683
875.00	1.57	82.88	874.77	-3.32	18.37	438,545.2826	787,249.0730	32.202268	-103.404681
900.00	1.58	80.24	899.76	-3.22	19.05	438,545.3835	787,249.7525	32.202268	-103.404679
925.00	1.50	80.35	924.75	-3.10	19.71	438,545.4968	787,250.4148	32.202268	-103.404677
950.00	1.52	82.14	949.74	-3.00	20.37	438,545.5970	787,251.0658	32.202269	-103.404675
975.00	1.54	83.39	974.74	-2.92	21.03	438,545.6810	787,251.7280	32.202269	-103.404673
1,000.00	1.67	81.07	999.73	-2.82	21.72	438,545.7762	787,252.4215	32.202269	-103.404670
1,025.00	1.63	80.37	1,024.72	-2.71	22.43	438,545.8922	787,253.1319	32.202269	-103.404668
1,050.00	1.46	82.95	1,049.71	-2.61	23.10	438,545.9908	787,253.7986	32.202270	-103.404666
1,075.00	1.53	83.73	1,074.70	-2.53	23.75	438,546.0664	787,254.4464	32.202270	-103.404664
1,100.00	1.63	81.34	1,099.69	-2.44	24.43	438,546.1563	787,255.1297	32.202270	-103.404661
1,125.00	1.56	79.60	1,124.68	-2.33	25.12	438,546.2713	787,255.8159	32.202270	-103.404659
1,150.00	1.37	83.84	1,149.67	-2.24	25.75	438,546.3648	787,256.4477	32.202271	-103.404657
1,175.00	1.43	84.88	1,174.66	-2.18	26.36	438,546.4247	787,257.0556	32.202271	-103.404655
1,200.00	1.60	82.37	1,199.65	-2.10	27.01	438,546.4989	787,257.7122	32.202271	-103.404653
1,225.00	1.59	81.09	1,224.64	-2.00	27.70	438,546.5990	787,258.4008	32.202271	-103.404651
1,250.00	1.48	83.20	1,249.64	-1.91	28.36	438,546.6909	787,259.0640	32.202271	-103.404649
1,275.00	1.47	84.85	1,274.63	-1.84	29.00	438,546.7579	787,259.7040	32.202272	-103.404647
1,300.00	1.54	82.88	1,299.62	-1.77	29.66	438,546.8283	787,260.3567	32.202272	-103.404645
1,325.00	1.48	81.99	1,324.61	-1.69	30.31	438,546.9150	787,261.0097	32.202272	-103.404642
1,350.00	1.47	84.88	1,349.60	-1.61	30.95	438,546.9886	787,261.6488	32.202272	-103.404640
1,375.00	1.48	84.35	1,374.59	-1.55	31.59	438,547.0490	787,262.2895	32.202272	-103.404638
1,400.00	1.50	83.00	1,399.59	-1.48	32.24	438,547.1206	787,262.9355	32.202272	-103.404636
1,425.00	1.44	83.41	1,424.58	-1.40	32.87	438,547.1966	787,263.5724	32.202273	-103.404634
1,450.00	1.41	86.83	1,449.57	-1.35	33.49	438,547.2496	787,264.1915	32.202273	-103.404632
1,475.00	1.39	88.10	1,474.56	-1.32	34.10	438,547.2767	787,264.8017	32.202273	-103.404630
1,500.00	1.41	87.56	1,499.55	-1.30	34.71	438,547.2998	787,265.4120	32.202273	-103.404628
1,525.00	1.37	87.90	1,524.55	-1.28	35.32	438,547.3239	787,266.0180	32.202273	-103.404626
1,550.00	1.34	89.63	1,549.54	-1.26	35.91	438,547.3367	787,266.6090	32.202273	-103.404624
1,575.00	1.41	88.67	1,574.53	-1.25	36.51	438,547.3457	787,267.2088	32.202273	-103.404622
1,600.00	1.44	88.04	1,599.53	-1.24	37.13	438,547.3636	787,267.8302	32.202273	-103.404620
1,625.00	1.43	86.69	1,624.52	-1.21	37.76	438,547.3924	787,268.4556	32.202273	-103.404618
1,650.00	1.32	89.33	1,649.51	-1.19	38.36	438,547.4138	787,269.0550	32.202273	-103.404616
1,675.00	1.37	88.43	1,674.50	-1.17	38.94	438,547.4253	787,269.6416	32.202273	-103.404615

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,700.00	1.40	88.34	1,699.50	-1.16	39.55	438,547.4423	787,270.2457	32.202273	-103.404613
1,725.00	1.37	89.76	1,724.49	-1.15	40.15	438,547.4524	787,270.8498	32.202273	-103.404611
1,750.00	1.38	86.49	1,749.48	-1.13	40.75	438,547.4721	787,271.4491	32.202273	-103.404609
1,775.00	1.43	88.48	1,774.47	-1.10	41.36	438,547.4988	787,272.0614	32.202273	-103.404607
1,800.00	1.53	86.95	1,799.47	-1.08	42.01	438,547.5249	787,272.7065	32.202273	-103.404605
1,825.00	1.52	75.55	1,824.46	-0.97	42.66	438,547.6254	787,273.3609	32.202274	-103.404603
1,850.00	1.37	39.08	1,849.45	-0.66	43.17	438,547.9401	787,273.8704	32.202274	-103.404601
1,875.00	1.45	31.36	1,874.44	-0.16	43.52	438,548.4422	787,274.2234	32.202276	-103.404600
1,900.00	1.46	29.94	1,899.43	0.39	43.85	438,548.9883	787,274.5470	32.202277	-103.404599
1,925.00	1.50	28.66	1,924.43	0.95	44.16	438,549.5514	787,274.8629	32.202279	-103.404598
1,950.00	1.52	29.21	1,949.42	1.53	44.48	438,550.1279	787,275.1816	32.202280	-103.404597
1,975.00	1.55	27.17	1,974.41	2.12	44.80	438,550.7181	787,275.4978	32.202282	-103.404596
2,000.00	1.30	17.19	1,999.40	2.69	45.04	438,551.2899	787,275.7360	32.202284	-103.404595
2,025.00	1.06	351.76	2,024.39	3.19	45.09	438,551.7896	787,275.7867	32.202285	-103.404595
2,050.00	1.09	328.45	2,049.39	3.62	44.93	438,552.2211	787,275.6291	32.202286	-103.404595
2,075.00	1.23	317.31	2,074.39	4.02	44.62	438,552.6210	787,275.3228	32.202287	-103.404596
2,100.00	1.23	317.21	2,099.38	4.42	44.26	438,553.0151	787,274.9586	32.202288	-103.404597
2,125.00	1.18	314.63	2,124.37	4.79	43.89	438,553.3929	787,274.5931	32.202289	-103.404598
2,150.00	1.18	316.80	2,149.37	5.16	43.53	438,553.7614	787,274.2337	32.202290	-103.404600
2,175.00	1.20	318.44	2,174.36	5.54	43.18	438,554.1449	787,273.8838	32.202291	-103.404601
2,200.00	1.22	316.78	2,199.36	5.93	42.83	438,554.5347	787,273.5279	32.202293	-103.404602
2,225.00	1.17	316.99	2,224.35	6.32	42.47	438,554.9153	787,273.1715	32.202294	-103.404603
2,250.00	1.15	317.76	2,249.35	6.69	42.13	438,555.2877	787,272.8288	32.202295	-103.404604
2,275.00	1.19	317.96	2,274.34	7.07	41.79	438,555.6662	787,272.4863	32.202296	-103.404605
2,300.00	1.25	319.21	2,299.34	7.47	41.43	438,556.0655	787,272.1343	32.202297	-103.404606
2,325.00	1.23	317.43	2,324.33	7.87	41.07	438,556.4695	787,271.7747	32.202298	-103.404607
2,350.00	1.22	319.79	2,349.32	8.27	40.72	438,556.8704	787,271.4213	32.202299	-103.404609
2,375.00	1.24	324.16	2,374.32	8.69	40.39	438,557.2929	787,271.0911	32.202300	-103.404610
2,400.00	1.29	327.49	2,399.31	9.15	40.08	438,557.7495	787,270.7815	32.202301	-103.404611
2,425.00	1.38	328.43	2,424.31	9.64	39.77	438,558.2433	787,270.4726	32.202303	-103.404612
2,450.00	1.37	330.21	2,449.30	10.16	39.47	438,558.7592	787,270.1666	32.202304	-103.404613
2,475.00	1.38	332.45	2,474.29	10.69	39.18	438,559.2854	787,269.8788	32.202306	-103.404613
2,500.00	1.39	334.30	2,499.28	11.23	38.91	438,559.8256	787,269.6081	32.202307	-103.404614
2,525.00	1.33	335.02	2,524.28	11.76	38.65	438,560.3618	787,269.3541	32.202309	-103.404615
2,550.00	1.32	338.71	2,549.27	12.29	38.43	438,560.8931	787,269.1270	32.202310	-103.404616
2,575.00	1.35	342.30	2,574.26	12.84	38.23	438,561.4419	787,268.9329	32.202312	-103.404616
2,600.00	1.35	342.95	2,599.26	13.40	38.06	438,562.0040	787,268.7570	32.202313	-103.404617
2,625.00	1.36	341.31	2,624.25	13.97	37.88	438,562.5666	787,268.5756	32.202315	-103.404618
2,650.00	1.29	345.68	2,649.24	14.52	37.71	438,563.1203	787,268.4109	32.202316	-103.404618
2,675.00	1.29	2.40	2,674.24	15.07	37.65	438,563.6742	787,268.3531	32.202318	-103.404618
2,700.00	1.33	7.25	2,699.23	15.64	37.70	438,564.2431	787,268.4015	32.202319	-103.404618
2,725.00	1.34	4.73	2,724.22	16.22	37.76	438,564.8223	787,268.4622	32.202321	-103.404618
2,750.00	1.35	5.75	2,749.22	16.81	37.82	438,565.4066	787,268.5159	32.202323	-103.404618
2,775.00	1.36	9.73	2,774.21	17.39	37.90	438,565.9920	787,268.5955	32.202324	-103.404617
2,800.00	1.32	13.34	2,799.20	17.96	38.01	438,566.5646	787,268.7121	32.202326	-103.404617
2,825.00	1.31	14.66	2,824.20	18.52	38.15	438,567.1213	787,268.8508	32.202327	-103.404617
2,850.00	1.36	16.20	2,849.19	19.08	38.31	438,567.6826	787,269.0059	32.202329	-103.404616
2,875.00	1.35	17.11	2,874.18	19.65	38.48	438,568.2490	787,269.1754	32.202330	-103.404615
2,900.00	1.39	15.85	2,899.18	20.22	38.64	438,568.8222	787,269.3448	32.202332	-103.404615
2,925.00	1.36	15.97	2,924.17	20.80	38.81	438,569.3991	787,269.5093	32.202334	-103.404614
2,950.00	1.24	9.70	2,949.16	21.35	38.94	438,569.9509	787,269.6365	32.202335	-103.404614
2,975.00	1.03	349.85	2,974.16	21.84	38.94	438,570.4388	787,269.6424	32.202336	-103.404614
3,000.00	0.94	325.54	2,999.15	22.23	38.79	438,570.8290	787,269.4868	32.202337	-103.404614
3,025.00	0.95	323.04	3,024.15	22.56	38.55	438,571.1637	787,269.2462	32.202338	-103.404615
3,050.00	0.94	325.57	3,049.15	22.90	38.31	438,571.4985	787,269.0056	32.202339	-103.404616



Integrity Directional Services, LLC
Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,075.00	0.91	328.13	3,074.14	23.24	38.08	438,571.8362	787,268.7848	32.202340	-103.404617
3,100.00	0.88	328.45	3,099.14	23.57	37.88	438,572.1684	787,268.5796	32.202341	-103.404617
3,125.00	0.87	327.29	3,124.14	23.89	37.68	438,572.4917	787,268.3766	32.202342	-103.404618
3,150.00	0.87	325.11	3,149.13	24.21	37.47	438,572.8071	787,268.1654	32.202343	-103.404619
3,175.00	0.84	332.00	3,174.13	24.52	37.27	438,573.1246	787,267.9708	32.202344	-103.404619
3,200.00	0.77	339.12	3,199.13	24.84	37.13	438,573.4433	787,267.8249	32.202345	-103.404620
3,225.00	0.73	349.73	3,224.13	25.16	37.04	438,573.7570	787,267.7367	32.202346	-103.404620
3,250.00	0.73	349.74	3,249.13	25.47	36.98	438,574.0704	787,267.6799	32.202346	-103.404620
3,275.00	0.61	359.20	3,274.12	25.76	36.95	438,574.3602	787,267.6497	32.202347	-103.404620
3,300.00	0.57	5.94	3,299.12	26.02	36.96	438,574.6169	787,267.6607	32.202348	-103.404620
3,325.00	0.52	356.67	3,324.12	26.25	36.97	438,574.8538	787,267.6670	32.202349	-103.404620
3,350.00	0.30	284.62	3,349.12	26.38	36.90	438,574.9836	787,267.5971	32.202349	-103.404620
3,375.00	0.96	230.25	3,374.12	26.27	36.67	438,574.8662	787,267.3727	32.202349	-103.404621
3,400.00	1.22	225.24	3,399.11	25.94	36.32	438,574.5449	787,267.0227	32.202348	-103.404622
3,425.00	1.34	221.66	3,424.11	25.54	35.94	438,574.1391	787,266.6394	32.202347	-103.404624
3,450.00	1.30	220.65	3,449.10	25.11	35.56	438,573.7056	787,266.2604	32.202345	-103.404625
3,475.00	1.37	216.36	3,474.09	24.65	35.20	438,573.2497	787,265.8985	32.202344	-103.404626
3,500.00	1.37	214.44	3,499.09	24.16	34.85	438,572.7626	787,265.5523	32.202343	-103.404627
3,525.00	1.38	207.76	3,524.08	23.65	34.54	438,572.2497	787,265.2430	32.202341	-103.404628
3,550.00	1.41	201.86	3,549.07	23.10	34.29	438,571.6979	787,264.9883	32.202340	-103.404629
3,575.00	1.46	198.19	3,574.07	22.51	34.07	438,571.1098	787,264.7743	32.202338	-103.404630
3,600.00	1.48	195.00	3,599.06	21.90	33.89	438,570.4954	787,264.5914	32.202337	-103.404630
3,625.00	1.48	193.22	3,624.05	21.27	33.73	438,569.8693	787,264.4340	32.202335	-103.404631
3,650.00	1.50	194.43	3,649.04	20.64	33.58	438,569.2381	787,264.2786	32.202333	-103.404631
3,675.00	1.47	191.48	3,674.03	20.01	33.43	438,568.6069	787,264.1332	32.202331	-103.404632
3,700.00	1.48	191.22	3,699.02	19.38	33.31	438,567.9760	787,264.0066	32.202330	-103.404632
3,725.00	1.51	192.16	3,724.02	18.74	33.17	438,567.3373	787,263.8744	32.202328	-103.404633
3,750.00	1.54	191.56	3,749.01	18.09	33.04	438,566.6862	787,263.7377	32.202326	-103.404633
3,775.00	1.55	190.39	3,774.00	17.42	32.91	438,566.0245	787,263.6094	32.202324	-103.404634
3,800.00	1.57	192.00	3,798.99	16.76	32.78	438,565.3569	787,263.4772	32.202323	-103.404634
3,825.00	1.64	190.67	3,823.98	16.07	32.64	438,564.6704	787,263.3398	32.202321	-103.404634
3,850.00	1.65	188.89	3,848.97	15.36	32.52	438,563.9632	787,263.2179	32.202319	-103.404635
3,875.00	1.69	187.40	3,873.96	14.64	32.41	438,563.2421	787,263.1148	32.202317	-103.404635
3,900.00	1.71	185.70	3,898.95	13.91	32.33	438,562.5053	787,263.0303	32.202315	-103.404635
3,925.00	1.72	181.74	3,923.94	13.16	32.28	438,561.7591	787,262.9818	32.202313	-103.404636
3,950.00	1.77	178.36	3,948.92	12.40	32.28	438,560.9982	787,262.9815	32.202311	-103.404636
3,975.00	1.81	175.22	3,973.91	11.62	32.33	438,560.2188	787,263.0254	32.202308	-103.404636
4,000.00	1.83	172.21	3,998.90	10.83	32.41	438,559.4299	787,263.1124	32.202306	-103.404635
4,025.00	1.88	170.62	4,023.89	10.03	32.53	438,558.6298	787,263.2334	32.202304	-103.404635
4,050.00	1.93	165.14	4,048.87	9.22	32.71	438,557.8183	787,263.4082	32.202302	-103.404634
4,075.00	2.06	158.95	4,073.86	8.39	32.98	438,556.9920	787,263.6775	32.202300	-103.404634
4,100.00	2.20	155.48	4,098.84	7.54	33.34	438,556.1361	787,264.0381	32.202297	-103.404632
4,125.00	2.33	150.07	4,123.82	6.66	33.79	438,555.2592	787,264.4908	32.202295	-103.404631
4,150.00	2.51	147.78	4,148.80	5.76	34.34	438,554.3556	787,265.0362	32.202292	-103.404629
4,175.00	2.80	140.86	4,173.77	4.82	35.01	438,553.4189	787,265.7135	32.202290	-103.404627
4,200.00	3.07	136.44	4,198.74	3.86	35.86	438,552.4602	787,266.5603	32.202287	-103.404624
4,225.00	3.29	133.66	4,223.70	2.88	36.84	438,551.4798	787,267.5406	32.202284	-103.404621
4,250.00	3.49	130.34	4,248.66	1.89	37.94	438,550.4920	787,268.6395	32.202282	-103.404618
4,275.00	3.77	124.60	4,273.61	0.93	39.20	438,549.5327	787,269.8961	32.202279	-103.404614
4,300.00	3.72	125.19	4,298.55	0.00	40.54	438,548.5986	787,271.2354	32.202276	-103.404609
4,325.00	3.71	124.27	4,323.50	-0.92	41.87	438,547.6758	787,272.5666	32.202274	-103.404605
4,350.00	3.33	121.06	4,348.45	-1.75	43.16	438,546.8457	787,273.8570	32.202271	-103.404601
4,375.00	2.68	116.32	4,373.42	-2.39	44.30	438,546.2120	787,275.0029	32.202270	-103.404597
4,400.00	1.75	112.37	4,398.40	-2.79	45.18	438,545.8075	787,275.8798	32.202269	-103.404594
4,425.00	0.27	106.07	4,423.39	-2.95	45.59	438,545.6459	787,276.2894	32.202268	-103.404593



Integrity Directional Services, LLC

Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,450.00	0.30	291.94	4,448.39	-2.95	45.59	438,545.6541	787,276.2853	32.202268	-103.404593
4,475.00	0.47	296.49	4,473.39	-2.88	45.43	438,545.7243	787,276.1328	32.202268	-103.404594
4,500.00	0.42	299.35	4,498.39	-2.79	45.26	438,545.8149	787,275.9612	32.202269	-103.404594
4,525.00	0.43	299.42	4,523.39	-2.69	45.10	438,545.9059	787,275.7996	32.202269	-103.404595
4,550.00	0.39	314.83	4,548.39	-2.59	44.96	438,546.0120	787,275.6575	32.202269	-103.404595
4,575.00	0.33	335.93	4,573.39	-2.46	44.87	438,546.1377	787,275.5678	32.202269	-103.404595
4,600.00	0.31	350.27	4,598.39	-2.33	44.83	438,546.2701	787,275.5270	32.202270	-103.404596
4,625.00	0.46	37.41	4,623.39	-2.18	44.88	438,546.4165	787,275.5766	32.202270	-103.404595
4,650.00	0.74	52.10	4,648.39	-2.00	45.07	438,546.5953	787,275.7649	32.202271	-103.404595
4,675.00	0.96	59.49	4,673.39	-1.80	45.37	438,546.8008	787,276.0728	32.202271	-103.404594
4,700.00	1.23	63.45	4,698.38	-1.57	45.79	438,547.0271	787,276.4932	32.202272	-103.404592
4,725.00	1.39	68.33	4,723.38	-1.34	46.32	438,547.2590	787,277.0150	32.202272	-103.404591
4,750.00	1.55	70.94	4,748.37	-1.12	46.92	438,547.4814	787,277.6164	32.202273	-103.404589
4,775.00	1.59	71.25	4,773.36	-0.90	47.56	438,547.7033	787,278.2644	32.202274	-103.404587
4,800.00	1.61	69.92	4,798.35	-0.66	48.22	438,547.9353	787,278.9227	32.202274	-103.404585
4,825.00	1.55	71.00	4,823.34	-0.43	48.87	438,548.1660	787,279.5723	32.202275	-103.404582
4,850.00	1.65	70.54	4,848.33	-0.20	49.53	438,548.3960	787,280.2313	32.202276	-103.404580
4,875.00	1.58	70.38	4,873.32	0.03	50.20	438,548.6316	787,280.8953	32.202276	-103.404578
4,900.00	1.17	72.63	4,898.31	0.22	50.76	438,548.8236	787,281.4636	32.202277	-103.404576
4,925.00	1.10	72.00	4,923.31	0.37	51.24	438,548.9739	787,281.9354	32.202277	-103.404575
4,950.00	1.06	73.04	4,948.30	0.52	51.68	438,549.1155	787,282.3848	32.202277	-103.404573
4,975.00	1.04	74.86	4,973.30	0.64	52.13	438,549.2422	787,282.8250	32.202278	-103.404572
5,000.00	1.09	75.24	4,998.29	0.76	52.57	438,549.3621	787,283.2739	32.202278	-103.404570
5,025.00	1.09	74.03	5,023.29	0.89	53.03	438,549.4881	787,283.7325	32.202278	-103.404569
5,050.00	1.04	73.95	5,048.28	1.02	53.48	438,549.6162	787,284.1791	32.202279	-103.404567
5,075.00	0.98	74.54	5,073.28	1.14	53.90	438,549.7359	787,284.6032	32.202279	-103.404566
5,100.00	0.38	32.38	5,098.28	1.26	54.15	438,549.8629	787,284.8537	32.202279	-103.404565
5,125.00	0.42	310.40	5,123.28	1.39	54.13	438,549.9923	787,284.8283	32.202280	-103.404565
5,150.00	0.53	298.10	5,148.28	1.51	53.96	438,550.1062	787,284.6565	32.202280	-103.404566
5,175.00	0.54	296.74	5,173.28	1.61	53.75	438,550.2137	787,284.4493	32.202280	-103.404567
5,200.00	0.53	294.69	5,198.28	1.71	53.54	438,550.3150	787,284.2390	32.202281	-103.404567
5,225.00	0.50	302.74	5,223.27	1.82	53.34	438,550.4223	787,284.0422	32.202281	-103.404568
5,250.00	0.49	298.46	5,248.27	1.93	53.16	438,550.5322	787,283.8565	32.202281	-103.404569
5,275.00	0.47	301.74	5,273.27	2.04	52.98	438,550.6371	787,283.6753	32.202282	-103.404569
5,300.00	0.49	299.70	5,298.27	2.14	52.80	438,550.7440	787,283.4953	32.202282	-103.404570
5,325.00	0.51	296.14	5,323.27	2.25	52.60	438,550.8460	787,283.3025	32.202282	-103.404570
5,350.00	0.46	300.13	5,348.27	2.35	52.42	438,550.9454	787,283.1158	32.202282	-103.404571
5,375.00	0.49	289.83	5,373.27	2.43	52.23	438,551.0320	787,282.9285	32.202283	-103.404571
5,400.00	0.47	291.91	5,398.27	2.51	52.03	438,551.1065	787,282.7328	32.202283	-103.404572
5,425.00	0.46	284.86	5,423.27	2.57	51.84	438,551.1705	787,282.5407	32.202283	-103.404573
5,450.00	0.46	272.67	5,448.27	2.60	51.64	438,551.2009	787,282.3434	32.202283	-103.404573
5,475.00	0.45	259.94	5,473.27	2.59	51.45	438,551.1885	787,282.1465	32.202283	-103.404574
5,500.00	0.41	255.85	5,498.27	2.55	51.26	438,551.1494	787,281.9631	32.202283	-103.404575
5,525.00	0.49	245.53	5,523.26	2.48	51.08	438,551.0833	787,281.7791	32.202283	-103.404575
5,550.00	0.45	240.33	5,548.26	2.39	50.90	438,550.9904	787,281.5965	32.202283	-103.404576
5,575.00	0.53	240.80	5,573.26	2.29	50.71	438,550.8854	787,281.4102	32.202282	-103.404576
5,600.00	0.55	238.23	5,598.26	2.17	50.51	438,550.7658	787,281.2073	32.202282	-103.404577
5,625.00	0.47	236.35	5,623.26	2.05	50.32	438,550.6458	787,281.0199	32.202282	-103.404578
5,650.00	0.57	240.87	5,648.26	1.93	50.13	438,550.5285	787,280.8260	32.202281	-103.404578
5,675.00	0.56	238.57	5,673.26	1.80	49.91	438,550.4042	787,280.6131	32.202281	-103.404579
5,700.00	0.53	239.80	5,698.26	1.68	49.71	438,550.2824	787,280.4089	32.202281	-103.404580
5,725.00	0.52	240.36	5,723.26	1.57	49.51	438,550.1681	787,280.2104	32.202280	-103.404580
5,750.00	0.59	241.26	5,748.25	1.45	49.30	438,550.0501	787,279.9989	32.202280	-103.404581
5,775.00	0.66	237.58	5,773.25	1.31	49.06	438,549.9110	787,279.7645	32.202280	-103.404582
5,800.00	0.40	229.68	5,798.25	1.18	48.88	438,549.7774	787,279.5764	32.202279	-103.404582



Integrity Directional Services, LLC

Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,825.00	0.46	232.00	5,823.25	1.06	48.73	438,549.6591	787,279.4308	32.202279	-103.404583
5,850.00	0.65	233.70	5,848.25	0.91	48.54	438,549.5134	787,279.2374	32.202279	-103.404583
5,875.00	0.66	232.17	5,873.25	0.74	48.31	438,549.3411	787,279.0094	32.202278	-103.404584
5,900.00	0.69	232.79	5,898.25	0.56	48.08	438,549.1618	787,278.7758	32.202278	-103.404585
5,925.00	0.75	230.86	5,923.25	0.37	47.83	438,548.9675	787,278.5290	32.202277	-103.404586
5,950.00	0.73	229.77	5,948.24	0.16	47.58	438,548.7613	787,278.2805	32.202277	-103.404587
5,975.00	0.74	229.83	5,973.24	-0.05	47.34	438,548.5543	787,278.0356	32.202276	-103.404587
6,000.00	0.75	232.24	5,998.24	-0.25	47.08	438,548.3500	787,277.7829	32.202275	-103.404588
6,025.00	0.75	232.39	6,023.24	-0.45	46.82	438,548.1500	787,277.5239	32.202275	-103.404589
6,050.00	0.74	231.13	6,048.23	-0.65	46.57	438,547.9488	787,277.2686	32.202274	-103.404590
6,075.00	0.75	230.80	6,073.23	-0.86	46.32	438,547.7441	787,277.0161	32.202274	-103.404591
6,100.00	0.74	232.54	6,098.23	-1.06	46.06	438,547.5425	787,276.7612	32.202273	-103.404592
6,125.00	0.83	237.74	6,123.23	-1.25	45.78	438,547.3476	787,276.4799	32.202273	-103.404592
6,150.00	0.74	231.91	6,148.23	-1.45	45.50	438,547.1514	787,276.1997	32.202272	-103.404593
6,175.00	0.78	232.64	6,173.22	-1.65	45.24	438,546.9485	787,275.9374	32.202272	-103.404594
6,200.00	0.78	230.82	6,198.22	-1.86	44.97	438,546.7378	787,275.6703	32.202271	-103.404595
6,225.00	0.78	232.07	6,223.22	-2.07	44.70	438,546.5257	787,275.4041	32.202270	-103.404596
6,250.00	0.74	230.46	6,248.22	-2.28	44.45	438,546.3183	787,275.1454	32.202270	-103.404597
6,275.00	0.78	230.77	6,273.21	-2.49	44.19	438,546.1079	787,274.8891	32.202269	-103.404598
6,300.00	0.79	229.71	6,298.21	-2.71	43.93	438,545.8888	787,274.6258	32.202269	-103.404598
6,325.00	0.78	227.87	6,323.21	-2.94	43.67	438,545.6632	787,274.3682	32.202268	-103.404599
6,350.00	0.69	224.83	6,348.21	-3.16	43.44	438,545.4423	787,274.1359	32.202268	-103.404600
6,375.00	0.67	223.39	6,373.21	-3.37	43.23	438,545.2294	787,273.9293	32.202267	-103.404601
6,400.00	0.58	223.12	6,398.20	-3.57	43.04	438,545.0308	787,273.7424	32.202266	-103.404601
6,425.00	0.55	219.41	6,423.20	-3.75	42.88	438,544.8457	787,273.5798	32.202266	-103.404602
6,450.00	0.53	221.55	6,448.20	-3.93	42.73	438,544.6665	787,273.4269	32.202265	-103.404602
6,475.00	0.57	222.70	6,473.20	-4.11	42.57	438,544.4886	787,273.2659	32.202265	-103.404603
6,500.00	0.57	220.93	6,498.20	-4.30	42.40	438,544.3032	787,273.1001	32.202264	-103.404603
6,525.00	0.54	220.84	6,523.20	-4.48	42.24	438,544.1201	787,272.9416	32.202264	-103.404604
6,550.00	0.57	222.42	6,548.20	-4.66	42.08	438,543.9392	787,272.7806	32.202263	-103.404604
6,575.00	0.58	225.35	6,573.20	-4.84	41.91	438,543.7585	787,272.6067	32.202263	-103.404605
6,600.00	0.59	227.58	6,598.19	-5.02	41.72	438,543.5827	787,272.4217	32.202262	-103.404606
6,625.00	0.56	226.93	6,623.19	-5.19	41.54	438,543.4125	787,272.2374	32.202262	-103.404606
6,650.00	0.59	228.06	6,648.19	-5.36	41.35	438,543.2430	787,272.0524	32.202262	-103.404607
6,675.00	0.55	223.16	6,673.19	-5.53	41.17	438,543.0695	787,271.8746	32.202261	-103.404607
6,700.00	0.65	231.99	6,698.19	-5.71	40.98	438,542.8946	787,271.6808	32.202261	-103.404608
6,725.00	0.58	227.40	6,723.19	-5.88	40.78	438,542.7217	787,271.4759	32.202260	-103.404609
6,750.00	0.62	232.18	6,748.19	-6.05	40.58	438,542.5531	787,271.2759	32.202260	-103.404609
6,775.00	0.64	229.38	6,773.19	-6.22	40.36	438,542.3792	787,271.0631	32.202259	-103.404610
6,800.00	0.64	232.41	6,798.18	-6.40	40.15	438,542.2032	787,270.8465	32.202259	-103.404611
6,825.00	0.70	233.74	6,823.18	-6.57	39.91	438,542.0277	787,270.6127	32.202258	-103.404612
6,850.00	0.72	240.15	6,848.18	-6.74	39.65	438,541.8592	787,270.3533	32.202258	-103.404612
6,875.00	0.71	247.63	6,873.18	-6.88	39.37	438,541.7220	787,270.0739	32.202257	-103.404613
6,900.00	0.71	249.76	6,898.18	-6.99	39.09	438,541.6095	787,269.7853	32.202257	-103.404614
6,925.00	0.76	252.17	6,923.17	-7.09	38.78	438,541.5051	787,269.4821	32.202257	-103.404615
6,950.00	0.76	250.63	6,948.17	-7.20	38.47	438,541.3994	787,269.1679	32.202257	-103.404616
6,975.00	0.75	250.65	6,973.17	-7.31	38.16	438,541.2902	787,268.8571	32.202256	-103.404617
7,000.00	0.70	252.51	6,998.17	-7.41	37.86	438,541.1901	787,268.5571	32.202256	-103.404618
7,025.00	0.79	252.48	7,023.17	-7.51	37.55	438,541.0923	787,268.2471	32.202256	-103.404619
7,050.00	0.74	251.11	7,048.16	-7.61	37.23	438,540.9881	787,267.9300	32.202255	-103.404620
7,075.00	0.78	250.87	7,073.16	-7.72	36.92	438,540.8801	787,267.6165	32.202255	-103.404621
7,100.00	0.86	249.92	7,098.16	-7.84	36.58	438,540.7599	787,267.2795	32.202255	-103.404622
7,125.00	0.83	248.28	7,123.16	-7.97	36.24	438,540.6285	787,266.9351	32.202254	-103.404623
7,150.00	0.85	247.48	7,148.15	-8.11	35.90	438,540.4905	787,266.5955	32.202254	-103.404625
7,175.00	0.89	249.29	7,173.15	-8.25	35.54	438,540.3508	787,266.2426	32.202254	-103.404626

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
7,200.00	0.91	247.87	7,198.15	-8.39	35.18	438,540.2074	787,265.8771	32.202253	-103.404627	
7,225.00	0.87	245.88	7,223.14	-8.54	34.82	438,540.0550	787,265.5200	32.202253	-103.404628	
7,250.00	0.91	246.42	7,248.14	-8.70	34.46	438,539.8980	787,265.1648	32.202253	-103.404629	
7,275.00	0.91	246.11	7,273.14	-8.86	34.10	438,539.7382	787,264.8014	32.202252	-103.404630	
7,300.00	0.91	246.44	7,298.14	-9.02	33.74	438,539.5785	787,264.4379	32.202252	-103.404632	
7,325.00	0.89	243.96	7,323.13	-9.19	33.38	438,539.4139	787,264.0815	32.202251	-103.404633	
7,350.00	0.88	242.09	7,348.13	-9.36	33.04	438,539.2388	787,263.7374	32.202251	-103.404634	
7,375.00	0.92	242.01	7,373.13	-9.55	32.69	438,539.0547	787,263.3905	32.202250	-103.404635	
7,400.00	0.89	241.33	7,398.12	-9.73	32.34	438,538.8674	787,263.0429	32.202250	-103.404636	
7,425.00	0.89	241.24	7,423.12	-9.92	32.00	438,538.6808	787,262.7023	32.202249	-103.404637	
7,450.00	0.87	241.12	7,448.12	-10.10	31.67	438,538.4957	787,262.3659	32.202249	-103.404638	
7,475.00	0.80	240.49	7,473.11	-10.28	31.35	438,538.3181	787,262.0479	32.202248	-103.404639	
7,500.00	0.81	238.98	7,498.11	-10.46	31.04	438,538.1411	787,261.7445	32.202248	-103.404640	
7,525.00	0.74	237.11	7,523.11	-10.64	30.76	438,537.9623	787,261.4575	32.202247	-103.404641	
7,550.00	0.75	236.88	7,548.11	-10.81	30.49	438,537.7853	787,261.1849	32.202247	-103.404642	
7,575.00	0.71	240.32	7,573.11	-10.98	30.21	438,537.6192	787,260.9133	32.202246	-103.404643	
7,600.00	0.76	242.66	7,598.10	-11.13	29.93	438,537.4663	787,260.6315	32.202246	-103.404644	
7,625.00	0.81	241.46	7,623.10	-11.29	29.63	438,537.3057	787,260.3290	32.202246	-103.404645	
7,650.00	0.83	239.17	7,648.10	-11.47	29.32	438,537.1285	787,260.0182	32.202245	-103.404646	
7,675.00	0.84	238.09	7,673.10	-11.66	29.01	438,536.9389	787,259.7072	32.202245	-103.404647	
7,700.00	0.79	237.69	7,698.09	-11.85	28.71	438,536.7499	787,259.4060	32.202244	-103.404648	
7,725.00	0.80	238.64	7,723.09	-12.03	28.41	438,536.5669	787,259.1113	32.202244	-103.404649	
7,750.00	0.83	242.15	7,748.09	-12.21	28.10	438,536.3915	787,258.8022	32.202243	-103.404650	
7,775.00	0.86	239.15	7,773.09	-12.39	27.78	438,536.2107	787,258.4810	32.202243	-103.404651	
7,800.00	0.84	233.05	7,798.08	-12.60	27.47	438,536.0044	787,258.1735	32.202242	-103.404652	
7,825.00	0.83	230.97	7,823.08	-12.82	27.19	438,535.7802	787,257.8864	32.202241	-103.404653	
7,850.00	0.82	232.95	7,848.08	-13.04	26.90	438,535.5584	787,257.6029	32.202241	-103.404654	
7,875.00	0.88	230.71	7,873.07	-13.27	26.61	438,535.3290	787,257.3116	32.202240	-103.404655	
7,900.00	0.88	227.20	7,898.07	-13.52	26.32	438,535.0770	787,257.0221	32.202239	-103.404656	
7,925.00	0.79	224.91	7,923.07	-13.78	26.06	438,534.8245	787,256.7596	32.202239	-103.404657	
7,950.00	0.85	228.22	7,948.07	-14.02	25.80	438,534.5789	787,256.4996	32.202238	-103.404657	
7,975.00	0.87	225.95	7,973.06	-14.28	25.53	438,534.3234	787,256.2249	32.202237	-103.404658	
8,000.00	0.84	219.41	7,998.06	-14.55	25.27	438,534.0498	787,255.9722	32.202237	-103.404659	
8,025.00	0.81	216.54	8,023.06	-14.83	25.05	438,533.7663	787,255.7506	32.202236	-103.404660	
8,050.00	0.81	219.04	8,048.06	-15.11	24.83	438,533.4871	787,255.5341	32.202235	-103.404661	
8,075.00	0.90	221.19	8,073.05	-15.40	24.59	438,533.2021	787,255.2935	32.202234	-103.404661	
8,100.00	0.85	217.47	8,098.05	-15.69	24.35	438,532.9071	787,255.0514	32.202234	-103.404662	
8,125.00	0.81	216.84	8,123.05	-15.98	24.13	438,532.6185	787,254.8327	32.202233	-103.404663	
8,150.00	0.82	217.95	8,148.05	-16.26	23.92	438,532.3360	787,254.6167	32.202232	-103.404664	
8,175.00	0.87	215.91	8,173.04	-16.56	23.70	438,532.0413	787,254.3954	32.202231	-103.404664	
8,200.00	0.82	210.30	8,198.04	-16.87	23.49	438,531.7331	787,254.1938	32.202230	-103.404665	
8,225.00	0.83	214.40	8,223.04	-17.17	23.30	438,531.4292	787,254.0012	32.202230	-103.404666	
8,250.00	0.90	215.57	8,248.03	-17.48	23.08	438,531.1201	787,253.7847	32.202229	-103.404666	
8,275.00	0.89	210.78	8,273.03	-17.81	22.87	438,530.7936	787,253.5712	32.202228	-103.404667	
8,300.00	0.84	210.62	8,298.03	-18.13	22.68	438,530.4691	787,253.3785	32.202227	-103.404668	
8,325.00	0.89	214.39	8,323.03	-18.45	22.48	438,530.1512	787,253.1755	32.202226	-103.404668	
8,350.00	0.88	211.85	8,348.02	-18.77	22.26	438,529.8279	787,252.9645	32.202225	-103.404669	
8,375.00	0.88	212.60	8,373.02	-19.10	22.06	438,529.5031	787,252.7597	32.202224	-103.404670	
8,400.00	0.89	211.64	8,398.02	-19.42	21.85	438,529.1760	787,252.5545	32.202223	-103.404670	
8,425.00	0.97	212.37	8,423.01	-19.77	21.64	438,528.8320	787,252.3393	32.202222	-103.404671	
8,450.00	0.98	208.22	8,448.01	-20.14	21.42	438,528.4649	787,252.1249	32.202221	-103.404672	
8,475.00	0.95	210.56	8,473.01	-20.50	21.22	438,528.0981	787,251.9185	32.202220	-103.404672	
8,500.00	0.97	211.96	8,498.00	-20.86	21.00	438,527.7401	787,251.7011	32.202219	-103.404673	
8,525.00	0.99	209.36	8,523.00	-21.23	20.78	438,527.3723	787,251.4832	32.202218	-103.404674	
8,550.00	0.96	210.21	8,548.00	-21.60	20.57	438,527.0031	787,251.2719	32.202217	-103.404675	

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,575.00	0.99	212.50	8,572.99	-21.96	20.35	438,526.6399	787,251.0505	32.202216	-103.404675
8,600.00	1.03	210.50	8,597.99	-22.34	20.12	438,526.2642	787,250.8204	32.202215	-103.404676
8,625.00	0.99	208.75	8,622.98	-22.72	19.90	438,525.8812	787,250.6025	32.202214	-103.404677
8,650.00	0.94	211.32	8,647.98	-23.08	19.69	438,525.5167	787,250.3920	32.202213	-103.404677
8,675.00	1.02	209.04	8,672.98	-23.45	19.48	438,525.1470	787,250.1774	32.202212	-103.404678
8,700.00	1.00	207.49	8,697.97	-23.84	19.27	438,524.7589	787,249.9687	32.202211	-103.404679
8,725.00	0.96	208.09	8,722.97	-24.22	19.07	438,524.3806	787,249.7694	32.202210	-103.404679
8,750.00	1.01	208.47	8,747.97	-24.60	18.87	438,524.0022	787,249.5657	32.202209	-103.404680
8,775.00	1.04	207.81	8,772.96	-24.99	18.65	438,523.6078	787,249.3548	32.202208	-103.404681
8,800.00	1.01	207.69	8,797.96	-25.39	18.45	438,523.2120	787,249.1466	32.202207	-103.404681
8,825.00	1.04	212.94	8,822.95	-25.77	18.22	438,522.8265	787,248.9208	32.202206	-103.404682
8,850.00	1.06	210.48	8,847.95	-26.16	17.98	438,522.4368	787,248.6802	32.202205	-103.404683
8,875.00	1.06	208.62	8,872.95	-26.57	17.75	438,522.0345	787,248.4521	32.202204	-103.404684
8,900.00	1.00	209.48	8,897.94	-26.96	17.53	438,521.6417	787,248.2340	32.202203	-103.404684
8,925.00	1.02	209.36	8,922.94	-27.34	17.32	438,521.2578	787,248.0175	32.202202	-103.404685
8,950.00	1.01	208.22	8,947.93	-27.73	17.10	438,520.8697	787,247.8042	32.202201	-103.404686
8,975.00	0.94	205.66	8,972.93	-28.11	16.91	438,520.4907	787,247.6113	32.202200	-103.404687
9,000.00	0.91	211.53	8,997.93	-28.46	16.72	438,520.1367	787,247.4186	32.202199	-103.404687
9,025.00	0.96	207.48	9,022.92	-28.82	16.52	438,519.7817	787,247.2182	32.202198	-103.404688
9,050.00	0.92	206.74	9,047.92	-29.18	16.33	438,519.4166	787,247.0312	32.202197	-103.404688
9,075.00	0.85	206.09	9,072.92	-29.53	16.16	438,519.0708	787,246.8594	32.202196	-103.404689
9,100.00	0.83	207.31	9,097.91	-29.86	15.99	438,518.7434	787,246.6948	32.202195	-103.404690
9,125.00	0.84	203.88	9,122.91	-30.19	15.84	438,518.4150	787,246.5375	32.202194	-103.404690
9,150.00	0.79	199.63	9,147.91	-30.51	15.71	438,518.0851	787,246.4054	32.202193	-103.404690
9,175.00	0.74	198.07	9,172.91	-30.83	15.60	438,517.7693	787,246.2974	32.202192	-103.404691
9,200.00	0.72	203.62	9,197.90	-31.13	15.48	438,517.4719	787,246.1844	32.202191	-103.404691
9,225.00	0.70	197.11	9,222.90	-31.42	15.38	438,517.1820	787,246.0766	32.202191	-103.404692
9,250.00	0.72	196.64	9,247.90	-31.71	15.29	438,516.8856	787,245.9867	32.202190	-103.404692
9,275.00	0.63	191.09	9,272.90	-32.00	15.22	438,516.6002	787,245.9152	32.202189	-103.404692
9,300.00	0.62	191.44	9,297.90	-32.27	15.16	438,516.3327	787,245.8620	32.202188	-103.404692
9,325.00	0.55	184.02	9,322.90	-32.52	15.13	438,516.0805	787,245.8267	32.202188	-103.404692
9,350.00	0.56	177.73	9,347.90	-32.76	15.12	438,515.8387	787,245.8232	32.202187	-103.404692
9,375.00	0.56	178.63	9,372.89	-33.01	15.13	438,515.5945	787,245.8309	32.202186	-103.404692
9,400.00	0.52	173.41	9,397.89	-33.24	15.15	438,515.3597	787,245.8469	32.202186	-103.404692
9,425.00	0.53	171.01	9,422.89	-33.47	15.18	438,515.1328	787,245.8780	32.202185	-103.404692
9,450.00	0.55	176.78	9,447.89	-33.70	15.20	438,514.8987	787,245.9028	32.202184	-103.404692
9,475.00	0.58	181.09	9,472.89	-33.95	15.21	438,514.6524	787,245.9071	32.202184	-103.404692
9,500.00	0.60	180.74	9,497.89	-34.21	15.20	438,514.3950	787,245.9030	32.202183	-103.404692
9,525.00	0.54	171.74	9,522.89	-34.45	15.22	438,514.1476	787,245.9182	32.202182	-103.404692
9,550.00	0.53	176.41	9,547.89	-34.68	15.24	438,513.9156	787,245.9424	32.202182	-103.404692
9,575.00	0.54	178.20	9,572.88	-34.92	15.25	438,513.6824	787,245.9533	32.202181	-103.404692
9,600.00	0.59	179.53	9,597.88	-35.16	15.26	438,513.4360	787,245.9581	32.202180	-103.404692
9,625.00	0.57	177.81	9,622.88	-35.42	15.26	438,513.1830	787,245.9639	32.202180	-103.404692
9,650.00	0.56	177.28	9,647.88	-35.66	15.27	438,512.9367	787,245.9745	32.202179	-103.404692
9,675.00	0.51	170.70	9,672.88	-35.90	15.30	438,512.7049	787,245.9982	32.202178	-103.404692
9,700.00	0.46	177.63	9,697.88	-36.11	15.32	438,512.4948	787,246.0204	32.202178	-103.404692
9,725.00	0.45	181.62	9,722.88	-36.30	15.32	438,512.2964	787,246.0217	32.202177	-103.404692
9,750.00	0.44	184.70	9,747.88	-36.50	15.31	438,512.1026	787,246.0111	32.202177	-103.404692
9,775.00	0.46	186.98	9,772.88	-36.69	15.29	438,511.9073	787,245.9910	32.202176	-103.404692
9,800.00	0.47	176.11	9,797.88	-36.89	15.29	438,511.7054	787,245.9858	32.202175	-103.404692
9,825.00	0.48	178.43	9,822.87	-37.10	15.30	438,511.4984	787,245.9956	32.202175	-103.404692
9,850.00	0.46	176.92	9,847.87	-37.31	15.30	438,511.2935	787,246.0039	32.202174	-103.404692
9,875.00	0.48	176.55	9,872.87	-37.51	15.32	438,511.0888	787,246.0156	32.202174	-103.404692
9,900.00	0.50	177.56	9,897.87	-37.72	15.33	438,510.8753	787,246.0265	32.202173	-103.404692
9,925.00	0.48	175.98	9,922.87	-37.94	15.34	438,510.6618	787,246.0385	32.202173	-103.404692



Integrity Directional Services, LLC
Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,950.00	0.49	178.19	9,947.87	-38.15	15.35	438,510.4505	787,246.0492	32.202172	-103.404692
9,975.00	0.49	178.03	9,972.87	-38.36	15.36	438,510.2368	787,246.0563	32.202171	-103.404692
10,000.00	0.47	173.83	9,997.87	-38.57	15.37	438,510.0281	787,246.0710	32.202171	-103.404692
10,025.00	0.50	167.25	10,022.87	-38.78	15.41	438,509.8197	787,246.1061	32.202170	-103.404692
10,050.00	0.53	168.76	10,047.87	-39.00	15.45	438,509.5999	787,246.1527	32.202170	-103.404692
10,075.00	0.50	171.00	10,072.87	-39.22	15.49	438,509.3788	787,246.1923	32.202169	-103.404691
10,100.00	0.50	161.28	10,097.86	-39.43	15.54	438,509.1677	787,246.2444	32.202169	-103.404691
10,125.00	0.51	149.60	10,122.86	-39.63	15.64	438,508.9685	787,246.3357	32.202168	-103.404691
10,150.00	0.62	128.35	10,147.86	-39.81	15.80	438,508.7886	787,246.4980	32.202167	-103.404690
10,175.00	0.74	114.75	10,172.86	-39.96	16.05	438,508.6371	787,246.7507	32.202167	-103.404690
10,200.00	0.77	109.10	10,197.86	-40.09	16.36	438,508.5145	787,247.0561	32.202167	-103.404689
10,225.00	1.04	98.11	10,222.86	-40.17	16.74	438,508.4275	787,247.4394	32.202166	-103.404687
10,250.00	1.30	88.86	10,247.85	-40.20	17.25	438,508.4012	787,247.9476	32.202166	-103.404686
10,275.00	1.48	83.68	10,272.84	-40.16	17.85	438,508.4423	787,248.5520	32.202166	-103.404684
10,300.00	1.70	82.27	10,297.83	-40.07	18.54	438,508.5278	787,249.2403	32.202167	-103.404682
10,325.00	1.77	82.14	10,322.82	-39.97	19.29	438,508.6304	787,249.9903	32.202167	-103.404679
10,350.00	1.94	82.39	10,347.81	-39.86	20.09	438,508.7393	787,250.7922	32.202167	-103.404677
10,375.00	2.02	86.57	10,372.79	-39.78	20.95	438,508.8217	787,251.6514	32.202167	-103.404674
10,400.00	2.17	89.29	10,397.78	-39.75	21.86	438,508.8539	787,252.5645	32.202167	-103.404671
10,425.00	2.15	90.64	10,422.76	-39.75	22.81	438,508.8545	787,253.5067	32.202167	-103.404668
10,450.00	2.20	88.81	10,447.74	-39.74	23.76	438,508.8593	787,254.4553	32.202167	-103.404665
10,475.00	2.21	88.99	10,472.72	-39.72	24.72	438,508.8777	787,255.4170	32.202167	-103.404662
10,500.00	2.17	89.33	10,497.70	-39.71	25.67	438,508.8918	787,256.3723	32.202168	-103.404659
10,525.00	2.15	87.77	10,522.69	-39.68	26.61	438,508.9155	787,257.3141	32.202168	-103.404655
10,550.00	2.06	86.58	10,547.67	-39.64	27.53	438,508.9606	787,258.2312	32.202168	-103.404653
10,575.00	2.08	84.85	10,572.65	-39.57	28.43	438,509.0281	787,259.1316	32.202168	-103.404650
10,600.00	2.13	84.39	10,597.64	-39.49	29.35	438,509.1143	787,260.0458	32.202168	-103.404647
10,625.00	2.04	81.66	10,622.62	-39.38	30.25	438,509.2242	787,260.9484	32.202168	-103.404644
10,650.00	2.07	81.42	10,647.60	-39.24	31.14	438,509.3561	787,261.8352	32.202169	-103.404641
10,675.00	1.91	77.99	10,672.59	-39.09	31.99	438,509.5102	787,262.6891	32.202169	-103.404638
10,700.00	2.00	78.19	10,697.57	-38.91	32.82	438,509.6861	787,263.5236	32.202170	-103.404635
10,725.00	1.96	77.41	10,722.56	-38.73	33.67	438,509.8686	787,264.3679	32.202170	-103.404633
10,750.00	1.84	77.52	10,747.55	-38.55	34.48	438,510.0485	787,265.1770	32.202170	-103.404630
10,775.00	1.81	77.09	10,772.53	-38.38	35.25	438,510.2235	787,265.9537	32.202171	-103.404628
10,800.00	1.67	77.37	10,797.52	-38.21	35.99	438,510.3913	787,266.6940	32.202171	-103.404625
10,825.00	1.53	74.83	10,822.51	-38.04	36.67	438,510.5583	787,267.3716	32.202172	-103.404623
10,850.00	1.52	74.14	10,847.50	-37.86	37.31	438,510.7363	787,268.0127	32.202172	-103.404621
10,875.00	1.41	73.11	10,872.50	-37.68	37.93	438,510.9163	787,268.6259	32.202173	-103.404619
10,900.00	1.31	74.24	10,897.49	-37.52	38.50	438,511.0832	787,269.1953	32.202173	-103.404617
10,925.00	1.11	73.84	10,922.48	-37.37	39.00	438,511.2283	787,269.7029	32.202174	-103.404615
10,950.00	0.99	76.28	10,947.48	-37.25	39.45	438,511.3469	787,270.1453	32.202174	-103.404614
10,975.00	0.97	81.92	10,972.47	-37.17	39.86	438,511.4278	787,270.5646	32.202174	-103.404613
11,000.00	0.92	85.45	10,997.47	-37.13	40.27	438,511.4735	787,270.9742	32.202174	-103.404611
11,025.00	0.89	89.14	11,022.47	-37.11	40.67	438,511.4923	787,271.3684	32.202174	-103.404610
11,050.00	0.96	90.25	11,047.46	-37.11	41.07	438,511.4943	787,271.7720	32.202174	-103.404609
11,075.00	0.96	93.08	11,072.46	-37.12	41.49	438,511.4822	787,272.1905	32.202174	-103.404607
11,100.00	0.96	93.15	11,097.46	-37.14	41.91	438,511.4594	787,272.6088	32.202174	-103.404606
11,125.00	0.98	91.98	11,122.45	-37.16	42.33	438,511.4405	787,273.0315	32.202174	-103.404605
11,150.00	1.16	90.22	11,147.45	-37.17	42.80	438,511.4322	787,273.4982	32.202174	-103.404603
11,175.00	1.34	91.03	11,172.44	-37.17	43.34	438,511.4259	787,274.0436	32.202174	-103.404601
11,200.00	1.46	85.65	11,197.44	-37.16	43.95	438,511.4448	787,274.6534	32.202174	-103.404599
11,225.00	1.65	85.16	11,222.43	-37.10	44.63	438,511.4994	787,275.3296	32.202174	-103.404597
11,250.00	1.64	84.57	11,247.42	-37.04	45.34	438,511.5636	787,276.0444	32.202174	-103.404595
11,275.00	1.74	83.69	11,272.41	-36.96	46.08	438,511.6392	787,276.7778	32.202175	-103.404592
11,300.00	1.77	82.47	11,297.39	-36.87	46.84	438,511.7315	787,277.5378	32.202175	-103.404590

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,325.00	1.63	83.92	11,322.38	-36.78	47.57	438,511.8197	787,278.2741	32.202175	-103.404588
11,350.00	1.28	84.10	11,347.38	-36.71	48.21	438,511.8861	787,278.9054	32.202175	-103.404586
11,375.00	1.01	81.86	11,372.37	-36.65	48.70	438,511.9460	787,279.4013	32.202175	-103.404584
11,400.00	1.03	78.53	11,397.37	-36.58	49.14	438,512.0219	787,279.8396	32.202176	-103.404583
11,425.00	0.96	88.27	11,422.36	-36.53	49.57	438,512.0729	787,280.2692	32.202176	-103.404581
11,450.00	0.94	80.82	11,447.36	-36.49	49.98	438,512.1119	787,280.6809	32.202176	-103.404580
11,475.00	0.99	83.12	11,472.36	-36.43	50.40	438,512.1705	787,281.0978	32.202176	-103.404579
11,500.00	0.71	79.45	11,497.35	-36.38	50.76	438,512.2247	787,281.4645	32.202176	-103.404577
11,525.00	0.53	69.04	11,522.35	-36.31	51.02	438,512.2944	787,281.7248	32.202176	-103.404576
11,550.00	0.55	58.45	11,547.35	-36.20	51.24	438,512.3986	787,281.9350	32.202177	-103.404576
11,575.00	0.65	59.77	11,572.35	-36.07	51.46	438,512.5328	787,282.1598	32.202177	-103.404575
11,600.00	0.87	60.99	11,597.35	-35.90	51.75	438,512.6962	787,282.4483	32.202177	-103.404574
11,625.00	0.93	58.46	11,622.34	-35.71	52.09	438,512.8944	787,282.7872	32.202178	-103.404573
11,650.00	1.26	54.08	11,647.34	-35.44	52.48	438,513.1618	787,283.1827	32.202179	-103.404572
11,675.00	1.28	52.24	11,672.33	-35.11	52.93	438,513.4940	787,283.6260	32.202180	-103.404570
11,700.00	1.41	52.30	11,697.33	-34.75	53.39	438,513.8531	787,284.0901	32.202180	-103.404569
11,725.00	1.81	55.02	11,722.32	-34.33	53.96	438,514.2675	787,284.6570	32.202182	-103.404567
11,750.00	1.87	52.86	11,747.30	-33.86	54.61	438,514.7401	787,285.3057	32.202183	-103.404565
11,763.00	1.81	53.71	11,760.30	-33.61	54.94	438,514.9897	787,285.6402	32.202184	-103.404564
11,904.00	2.57	54.30	11,901.19	-30.45	59.30	438,518.1524	787,290.0023	32.202192	-103.404550
11,990.00	2.77	59.68	11,987.10	-28.27	62.66	438,520.3266	787,293.3619	32.202198	-103.404539
12,068.00	1.07	140.85	12,065.06	-27.89	64.75	438,520.7134	787,295.4491	32.202199	-103.404532
12,101.00	1.24	142.01	12,098.06	-28.41	65.16	438,520.1930	787,295.8634	32.202198	-103.404531
12,132.00	2.24	182.39	12,129.04	-29.28	65.34	438,519.3233	787,296.0446	32.202195	-103.404530
12,164.00	5.23	191.84	12,160.97	-31.33	65.02	438,517.2706	787,295.7192	32.202190	-103.404531
12,195.00	9.98	187.85	12,191.69	-35.38	64.36	438,513.2244	787,295.0620	32.202178	-103.404533
12,242.00	18.64	184.02	12,237.19	-46.93	63.28	438,501.6751	787,293.9771	32.202147	-103.404537
12,292.00	27.14	183.65	12,283.21	-66.31	61.99	438,482.2876	787,292.6886	32.202094	-103.404542
12,338.00	32.77	184.46	12,323.05	-89.21	60.35	438,459.3871	787,291.0513	32.202031	-103.404548
12,372.25	35.32	184.13	12,351.43	-108.33	58.92	438,440.2678	787,289.6169	32.201978	-103.404553
Hardline Crossing Point @ 12372.25'MD / 108.12' VS									
12,385.00	36.27	184.02	12,361.77	-115.77	58.39	438,432.8294	787,289.0869	32.201958	-103.404555
12,432.00	39.87	183.44	12,398.76	-144.69	56.51	438,403.9142	787,287.2077	32.201878	-103.404562
12,481.00	43.25	183.64	12,435.42	-177.13	54.50	438,371.4744	787,285.1990	32.201789	-103.404569
12,529.00	46.67	183.22	12,469.38	-210.98	52.47	438,337.6227	787,283.1738	32.201696	-103.404577
12,577.00	49.70	182.18	12,501.38	-246.71	50.80	438,301.8928	787,281.4965	32.201598	-103.404583
12,624.00	52.69	180.87	12,530.83	-283.32	49.83	438,265.2848	787,280.5307	32.201497	-103.404587
12,673.00	56.33	179.79	12,559.28	-323.20	49.61	438,225.3966	787,280.3094	32.201388	-103.404589
12,700.00	59.11	179.87	12,573.69	-346.03	49.68	438,202.5719	787,280.3769	32.201325	-103.404589
12,767.00	67.69	182.06	12,603.67	-405.87	48.63	438,142.7340	787,279.3260	32.201161	-103.404595
12,800.00	73.33	184.22	12,614.68	-436.91	46.91	438,111.6870	787,277.6126	32.201075	-103.404601
12,837.00	79.45	187.71	12,623.38	-472.66	43.16	438,075.9453	787,273.8638	32.200977	-103.404614
12,863.00	81.32	189.18	12,627.72	-498.01	39.40	438,050.5906	787,270.0985	32.200907	-103.404627
12,885.00	83.30	189.45	12,630.67	-519.52	35.87	438,029.0771	787,266.5696	32.200848	-103.404639
12,980.00	88.03	188.44	12,637.85	-613.07	21.15	437,935.5285	787,251.8477	32.200592	-103.404689
13,076.00	89.99	187.12	12,639.50	-708.17	8.16	437,840.4332	787,238.8554	32.200331	-103.404734
13,171.00	88.22	183.58	12,640.99	-802.72	-0.70	437,745.8777	787,229.9998	32.200071	-103.404765
13,266.00	88.17	181.94	12,643.98	-897.56	-5.27	437,651.0384	787,225.4277	32.199810	-103.404782
13,361.00	88.53	183.16	12,646.72	-992.43	-9.50	437,556.1740	787,221.2028	32.199550	-103.404799
13,456.00	91.33	185.96	12,646.83	-1,087.11	-17.05	437,461.4938	787,213.6515	32.199290	-103.404826
13,551.00	87.83	184.13	12,647.53	-1,181.72	-25.40	437,366.8834	787,205.2989	32.199030	-103.404855
13,645.00	88.28	183.75	12,650.72	-1,275.44	-31.86	437,273.1602	787,198.8438	32.198772	-103.404879
13,741.00	85.67	182.54	12,655.79	-1,371.15	-37.12	437,177.4487	787,193.5837	32.198509	-103.404899
13,835.00	89.43	183.98	12,659.80	-1,464.90	-42.46	437,083.7062	787,188.2425	32.198252	-103.404919
13,931.00	89.85	184.36	12,660.41	-1,560.64	-49.44	436,987.9628	787,181.2619	32.197989	-103.404944



Integrity Directional Services, LLC

Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,026.00	90.69	184.43	12,659.96	-1,655.36	-56.72	436,893.2442	787,173.9821	32.197729	-103.404970
14,122.00	90.80	181.55	12,658.71	-1,751.21	-61.72	436,797.3933	787,168.9755	32.197465	-103.404989
14,218.00	88.57	182.15	12,659.24	-1,847.15	-64.82	436,701.4515	787,165.8766	32.197202	-103.405001
14,312.00	87.27	179.25	12,662.65	-1,941.07	-65.97	436,607.5327	787,164.7281	32.196944	-103.405008
14,408.00	85.58	179.29	12,668.64	-2,036.87	-64.75	436,511.7309	787,165.9488	32.196680	-103.405007
14,504.00	88.16	179.88	12,673.88	-2,132.72	-64.06	436,415.8854	787,166.6425	32.196417	-103.405007
14,599.00	90.04	180.62	12,675.37	-2,227.70	-64.47	436,320.9031	787,166.2279	32.196156	-103.405011
14,694.00	90.13	180.64	12,675.23	-2,322.70	-65.52	436,225.9092	787,165.1833	32.195895	-103.405017
14,789.00	88.39	178.05	12,676.46	-2,417.67	-64.43	436,130.9352	787,166.2687	32.195633	-103.405016
14,884.00	88.92	178.67	12,678.69	-2,512.60	-61.71	436,036.0013	787,168.9867	32.195372	-103.405010
14,980.00	89.99	179.96	12,679.60	-2,608.59	-60.57	435,940.0161	787,170.1342	32.195109	-103.405009
15,075.00	91.08	180.03	12,678.71	-2,703.58	-60.56	435,845.0219	787,170.1425	32.194848	-103.405012
15,171.00	85.67	179.52	12,681.43	-2,799.51	-60.18	435,749.0974	787,170.5186	32.194584	-103.405013
15,266.00	83.67	179.79	12,690.26	-2,894.09	-59.61	435,654.5149	787,171.0885	32.194324	-103.405014
15,362.00	86.48	179.10	12,698.50	-2,989.72	-58.68	435,558.8842	787,172.0161	32.194061	-103.405014
15,457.00	89.12	179.67	12,702.15	-3,084.64	-57.67	435,463.9687	787,173.0345	32.193800	-103.405013
15,552.00	90.80	180.76	12,702.21	-3,179.63	-58.02	435,368.9744	787,172.6780	32.193539	-103.405017
15,648.00	92.28	180.13	12,699.63	-3,275.59	-58.77	435,273.0153	787,171.9326	32.193275	-103.405022
15,743.00	90.94	180.66	12,696.96	-3,370.55	-59.42	435,178.0578	787,171.2778	32.193014	-103.405027
15,838.00	87.41	177.96	12,698.33	-3,465.51	-58.28	435,083.0985	787,172.4204	32.192753	-103.405026
15,934.00	88.56	178.44	12,701.71	-3,561.40	-55.27	434,987.2073	787,175.4338	32.192490	-103.405018
16,029.00	87.24	177.75	12,705.19	-3,656.28	-52.11	434,892.3264	787,178.5893	32.192229	-103.405011
16,124.00	87.94	177.37	12,709.18	-3,751.11	-48.07	434,797.4974	787,182.6302	32.191968	-103.405000
16,220.00	87.97	177.36	12,712.61	-3,846.95	-43.66	434,701.6602	787,187.0408	32.191704	-103.404989
16,315.00	88.98	179.90	12,715.14	-3,941.88	-41.39	434,606.7302	787,189.3107	32.191443	-103.404984
16,410.00	89.17	180.09	12,716.67	-4,036.87	-41.38	434,511.7428	787,189.3189	32.191182	-103.404987
16,504.00	88.64	180.03	12,718.47	-4,130.85	-41.48	434,417.7606	787,189.2205	32.190924	-103.404990
16,598.00	88.39	180.33	12,720.90	-4,224.82	-41.77	434,323.7930	787,188.9253	32.190666	-103.404993
16,693.00	90.10	182.12	12,722.15	-4,319.78	-43.81	434,228.8305	787,186.8944	32.190405	-103.405003
16,788.00	88.45	182.24	12,723.36	-4,414.70	-47.42	434,133.9103	787,183.2811	32.190144	-103.405017
16,884.00	86.51	181.63	12,727.58	-4,510.55	-50.66	434,038.0631	787,180.0426	32.189881	-103.405030
16,979.00	86.82	181.17	12,733.10	-4,605.36	-52.97	433,943.2529	787,177.7255	32.189620	-103.405040
17,073.00	87.77	181.38	12,737.54	-4,699.23	-55.06	433,849.3822	787,175.6362	32.189362	-103.405050
17,168.00	88.75	181.63	12,740.42	-4,794.15	-57.56	433,754.4601	787,173.1422	32.189101	-103.405060
17,264.00	86.71	180.63	12,744.23	-4,890.05	-59.45	433,658.5606	787,171.2500	32.188838	-103.405069
17,359.00	84.43	179.78	12,751.56	-4,984.76	-59.79	433,563.8524	787,170.9101	32.188577	-103.405073
17,455.00	87.30	180.10	12,758.49	-5,080.50	-59.69	433,468.1126	787,171.0099	32.188314	-103.405075
17,551.00	90.43	180.92	12,760.39	-5,176.46	-60.54	433,372.1483	787,170.1553	32.188050	-103.405081
17,646.00	91.22	180.28	12,759.02	-5,271.45	-61.54	433,277.1648	787,169.1605	32.187789	-103.405086
17,741.00	90.80	179.83	12,757.34	-5,366.43	-61.63	433,182.1803	787,169.0694	32.187528	-103.405089
17,836.00	89.31	178.79	12,757.25	-5,461.42	-60.49	433,087.1914	787,170.2134	32.187267	-103.405088
17,932.00	88.56	179.96	12,759.04	-5,557.40	-59.44	432,991.2162	787,171.2605	32.187003	-103.405088
18,027.00	89.54	181.06	12,760.61	-5,652.38	-60.29	432,896.2358	787,170.4149	32.186742	-103.405093
18,123.00	87.66	177.77	12,762.96	-5,748.32	-59.31	432,800.2872	787,171.3934	32.186479	-103.405093
18,218.00	90.32	176.56	12,764.63	-5,843.18	-54.61	432,705.4287	787,176.0913	32.186218	-103.405080
18,312.00	87.49	177.80	12,766.43	-5,937.04	-49.99	432,611.5712	787,180.7150	32.185960	-103.405068
18,407.00	88.25	180.94	12,769.96	-6,031.96	-48.94	432,516.6554	787,181.7581	32.185699	-103.405067
18,503.00	87.52	182.87	12,773.50	-6,127.83	-52.13	432,420.7792	787,178.5695	32.185435	-103.405080
18,597.00	87.72	181.73	12,777.41	-6,221.67	-55.90	432,326.9377	787,174.8005	32.185177	-103.405095
18,693.00	88.10	181.80	12,780.91	-6,317.57	-58.85	432,231.0475	787,171.8457	32.184914	-103.405107
18,787.00	86.99	179.97	12,784.94	-6,411.46	-60.31	432,137.1506	787,170.3946	32.184656	-103.405114
18,882.00	87.69	179.63	12,789.34	-6,506.36	-59.97	432,042.2545	787,170.7259	32.184395	-103.405116
18,977.00	87.38	177.05	12,793.43	-6,601.22	-57.23	431,947.3905	787,173.4749	32.184134	-103.405110
19,071.00	86.74	173.11	12,798.25	-6,694.73	-49.18	431,853.8793	787,181.5236	32.183877	-103.405086
19,166.00	88.42	181.10	12,802.27	-6,789.45	-44.39	431,759.1656	787,186.3092	32.183617	-103.405073

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Fascinator Fee 24H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3366.00ft (McVay 8)
Site:	Sec. 19, T 24 S., R 35 E	MD Reference:	KB=26' @ 3366.00ft (McVay 8)
Well:	Fascinator Fee 24H	North Reference:	Grid
Wellbore:	Wellbore #2	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #2	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
19,261.00	86.57	184.10	12,806.42	-6,884.24	-48.69	431,664.3692	787,182.0063	32.183356	-103.405090
19,356.00	88.36	180.91	12,810.63	-6,979.05	-52.84	431,569.5691	787,177.8607	32.183096	-103.405106
19,451.00	89.01	177.22	12,812.81	-7,073.99	-51.29	431,474.6239	787,179.4107	32.182835	-103.405104
19,547.00	89.96	176.80	12,813.67	-7,169.85	-46.28	431,378.7599	787,184.4179	32.182571	-103.405090
19,641.00	89.15	176.43	12,814.40	-7,263.69	-40.73	431,284.9279	787,189.9679	32.182313	-103.405075
19,780.00	86.40	175.09	12,819.80	-7,402.19	-30.47	431,146.4295	787,200.2343	32.181932	-103.405045
19,812.00	86.60	175.37	12,821.75	-7,434.02	-27.81	431,114.5999	787,202.8903	32.181844	-103.405038
19,857.57	86.54	175.33	12,824.48	-7,479.35	-24.12	431,069.2612	787,206.5774	32.181720	-103.405027
Hardline Crossing Point @ 19857.57'MD / 7479.39' VS									
19,907.00	86.48	175.29	12,827.48	-7,528.53	-20.09	431,020.0881	787,210.6108	32.181585	-103.405015
Final MWD Survey @ 19907'MD									
19,971.00	86.48	175.29	12,831.41	-7,592.19	-14.84	430,956.4246	787,215.8561	32.181409	-103.405000
Projection to TD @ 19971'MD									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
12,372.25	12,351.43	-108.33	58.92	Hardline Crossing Point @ 12372.25'MD / 108.12' VS	
19,857.57	12,824.48	-7,479.35	-24.12	Hardline Crossing Point @ 19857.57'MD / 7479.39' VS	
19,907.00	12,827.48	-7,528.53	-20.09	Final MWD Survey @ 19907'MD	
19,971.00	12,831.41	-7,592.19	-14.84	Projection to TD @ 19971'MD	

Checked By: _____	Approved By: _____	Date: _____
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