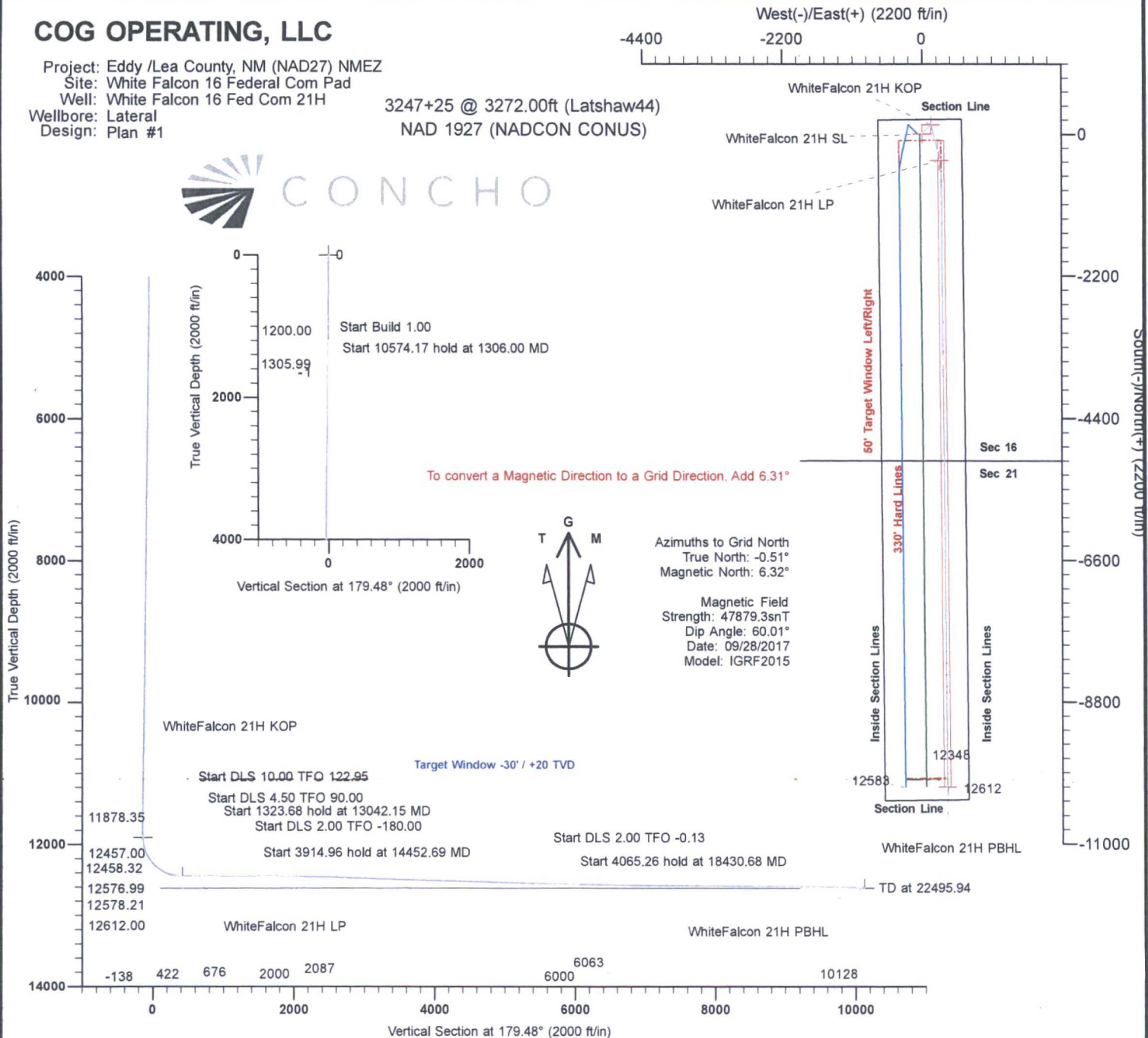


COG OPERATING, LLC

Project: Eddy /Lea County, NM (NAD27) NMEZ
 Site: White Falcon 16 Federal Com Pad
 Well: White Falcon 16 Fed Com 21H
 Wellbore: Lateral
 Design: Plan #1

3247+25 @ 3272.00ft (Latshaw44)
 NAD 1927 (NADCON CONUS)



TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
WhiteFalcon 21H SL	0.00	0.00	0.00	414844.60	796941.60	Point
WhiteFalcon 21H KOP	11898.30	139.10	139.50	414983.70	797081.10	Point
WhiteFalcon 21H LP	12457.00	-419.44	267.32	414425.16	797208.92	Point
WhiteFalcon 21H PBHL	12612.00	-10125.10	381.40	404719.50	797323.00	Rectangle (Sides: L10024.00 W100.00)

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	
1306.00	1.06	45.00	1305.99	0.69	0.69	1.00	45.00	-0.69	
11880.17	1.06	45.00	11878.35	139.01	139.01	0.00	0.00	-137.75	
12785.93	90.00	167.95	12457.00	-419.41	267.41	10.00	122.95	421.82	
13042.15	90.00	179.48	12457.00	-673.67	295.41	4.50	90.00	676.32	
14365.84	90.00	179.48	12457.00	-1997.30	307.42	0.00	0.00	2000.00	
14452.69	88.26	179.48	12458.32	-2084.13	308.21	2.00	-180.00	2086.84	
18367.65	88.26	179.48	12576.99	-5997.13	343.73	0.00	0.00	6000.00	
18430.68	89.52	179.48	12578.21	-6060.15	344.30	2.00	-0.13	6063.02	
22495.94	89.52	179.48	12612.00	-10125.10	381.40	0.00	0.00	10128.14	WhiteFalcon 21H PBHL

Plan: Plan #1 (White Falcon 16 Fed Com 21H/Lateral)
 Created By: Mekka Williams
 eSomina Well Design
 mekka@esominawell.com
 17:25, September 28 2017

VON DIRECTIONAL
 12074 FM 3083 Conroe, Texas 77301
 936-756-2400



Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 21H - Slot 21H
Company:	COG OPERATING, LLC	TVD Reference:	3247+25 @ 3272.00ft (Latshaw44)
Project:	Eddy /Lea County, NM (NAD27) NMEZ	MD Reference:	3247+25 @ 3272.00ft (Latshaw44)
Site:	White Falcon 16 Federal Com Pad	North Reference:	Grid
Well:	White Falcon 16 Fed Com 21H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Project	Eddy /Lea County, NM (NAD27) NMEZ		
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	White Falcon 16 Federal Com Pad, Centered on 11H				
Site Position:		Northing:	414,844.20 ft	Latitude:	32° 8' 12.792 N
From:	Map	Easting:	796,901.60 ft	Longitude:	103° 22' 27.001 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence:	0.51 °

Well	White Falcon 16 Fed Com 21H - Slot 21H				
Well Position	+N/-S	0.40 ft	Northing:	414,844.60 ft	Latitude: 32° 8' 12.793 N
	+E/-W	40.00 ft	Easting:	796,941.60 ft	Longitude: 103° 22' 26.535 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level: 3,247.00 ft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	09/28/17	6.82	60.01	47,879

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	179.48

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,306.00	1.06	45.00	1,305.99	0.69	0.69	1.00	1.00	0.00	45.00	
11,880.17	1.06	45.00	11,878.35	139.01	139.01	0.00	0.00	0.00	0.00	
12,785.93	90.00	167.95	12,457.00	-419.41	267.41	10.00	9.82	13.57	122.95	
13,042.15	90.00	179.48	12,457.00	-673.67	295.41	4.50	0.00	4.50	90.00	
14,365.84	90.00	179.48	12,457.00	-1,997.30	307.42	0.00	0.00	0.00	0.00	
14,452.69	88.26	179.48	12,458.32	-2,084.13	308.21	2.00	-2.00	0.00	-180.00	
18,367.65	88.26	179.48	12,576.99	-5,997.13	343.73	0.00	0.00	0.00	0.00	
18,430.68	89.52	179.48	12,578.21	-6,060.15	344.30	2.00	2.00	0.00	-0.13	
22,495.94	89.52	179.48	12,612.00	-10,125.10	381.40	0.00	0.00	0.00	0.00	WhiteFalcon 21H PB+

Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 21H - Slot 21H
Company:	COG OPERATING, LLC	TVD Reference:	3247+25 @ 3272.00ft (Latshaw44)
Project:	Eddy /Lea County, NM (NAD27) NMEZ	MD Reference:	3247+25 @ 3272.00ft (Latshaw44)
Site:	White Falcon 16 Federal Com Pad	North Reference:	Grid
Well:	White Falcon 16 Fed Com 21H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WhiteFalcon 22H SL - WhiteFalcon 11H SL - WhiteFalcon 21H SL									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,306.00	1.06	45.00	1,305.99	0.69	0.69	-0.69	1.00	1.00	0.00
1,400.00	1.06	45.00	1,399.98	1.92	1.92	-1.91	0.00	0.00	0.00
1,500.00	1.06	45.00	1,499.96	3.23	3.23	-3.20	0.00	0.00	0.00
1,600.00	1.06	45.00	1,599.94	4.54	4.54	-4.50	0.00	0.00	0.00
1,700.00	1.06	45.00	1,699.93	5.85	5.85	-5.79	0.00	0.00	0.00
1,800.00	1.06	45.00	1,799.91	7.16	7.16	-7.09	0.00	0.00	0.00
1,900.00	1.06	45.00	1,899.89	8.46	8.46	-8.39	0.00	0.00	0.00
2,000.00	1.06	45.00	1,999.88	9.77	9.77	-9.68	0.00	0.00	0.00
2,100.00	1.06	45.00	2,099.86	11.08	11.08	-10.98	0.00	0.00	0.00
2,200.00	1.06	45.00	2,199.84	12.39	12.39	-12.27	0.00	0.00	0.00
2,300.00	1.06	45.00	2,299.82	13.70	13.70	-13.57	0.00	0.00	0.00
2,400.00	1.06	45.00	2,399.81	15.00	15.00	-14.87	0.00	0.00	0.00
2,500.00	1.06	45.00	2,499.79	16.31	16.31	-16.16	0.00	0.00	0.00
2,600.00	1.06	45.00	2,599.77	17.62	17.62	-17.46	0.00	0.00	0.00
2,700.00	1.06	45.00	2,699.76	18.93	18.93	-18.76	0.00	0.00	0.00
2,800.00	1.06	45.00	2,799.74	20.24	20.24	-20.05	0.00	0.00	0.00
2,900.00	1.06	45.00	2,899.72	21.54	21.54	-21.35	0.00	0.00	0.00
3,000.00	1.06	45.00	2,999.70	22.85	22.85	-22.64	0.00	0.00	0.00
3,100.00	1.06	45.00	3,099.69	24.16	24.16	-23.94	0.00	0.00	0.00
3,200.00	1.06	45.00	3,199.67	25.47	25.47	-25.24	0.00	0.00	0.00
3,300.00	1.06	45.00	3,299.65	26.78	26.78	-26.53	0.00	0.00	0.00
3,400.00	1.06	45.00	3,399.64	28.09	28.09	-27.83	0.00	0.00	0.00
3,500.00	1.06	45.00	3,499.62	29.39	29.39	-29.13	0.00	0.00	0.00
3,600.00	1.06	45.00	3,599.60	30.70	30.70	-30.42	0.00	0.00	0.00
3,700.00	1.06	45.00	3,699.58	32.01	32.01	-31.72	0.00	0.00	0.00
3,800.00	1.06	45.00	3,799.57	33.32	33.32	-33.01	0.00	0.00	0.00
3,900.00	1.06	45.00	3,899.55	34.63	34.63	-34.31	0.00	0.00	0.00
4,000.00	1.06	45.00	3,999.53	35.93	35.93	-35.61	0.00	0.00	0.00
4,100.00	1.06	45.00	4,099.52	37.24	37.24	-36.90	0.00	0.00	0.00
4,200.00	1.06	45.00	4,199.50	38.55	38.55	-38.20	0.00	0.00	0.00
4,300.00	1.06	45.00	4,299.48	39.86	39.86	-39.49	0.00	0.00	0.00
4,400.00	1.06	45.00	4,399.46	41.17	41.17	-40.79	0.00	0.00	0.00
4,500.00	1.06	45.00	4,499.45	42.47	42.47	-42.09	0.00	0.00	0.00
4,600.00	1.06	45.00	4,599.43	43.78	43.78	-43.38	0.00	0.00	0.00
4,700.00	1.06	45.00	4,699.41	45.09	45.09	-44.68	0.00	0.00	0.00
4,800.00	1.06	45.00	4,799.40	46.40	46.40	-45.98	0.00	0.00	0.00
4,900.00	1.06	45.00	4,899.38	47.71	47.71	-47.27	0.00	0.00	0.00
5,000.00	1.06	45.00	4,999.36	49.01	49.01	-48.57	0.00	0.00	0.00
5,100.00	1.06	45.00	5,099.34	50.32	50.32	-49.86	0.00	0.00	0.00

Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 21H - Slot 21H
Company:	COG OPERATING, LLC	TVD Reference:	3247+25 @ 3272.00ft (Latshaw44)
Project:	Eddy /Lea County, NM (NAD27) NMEZ	MD Reference:	3247+25 @ 3272.00ft (Latshaw44)
Site:	White Falcon 16 Federal Com Pad	North Reference:	Grid
Well:	White Falcon 16 Fed Com 21H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,200.00	1.06	45.00	5,199.33	51.63	51.63	-51.16	0.00	0.00	0.00
5,300.00	1.06	45.00	5,299.31	52.94	52.94	-52.46	0.00	0.00	0.00
5,400.00	1.06	45.00	5,399.29	54.25	54.25	-53.75	0.00	0.00	0.00
5,500.00	1.06	45.00	5,499.28	55.56	55.56	-55.05	0.00	0.00	0.00
5,600.00	1.06	45.00	5,599.26	56.86	56.86	-56.35	0.00	0.00	0.00
5,700.00	1.06	45.00	5,699.24	58.17	58.17	-57.64	0.00	0.00	0.00
5,800.00	1.06	45.00	5,799.23	59.48	59.48	-58.94	0.00	0.00	0.00
5,900.00	1.06	45.00	5,899.21	60.79	60.79	-60.23	0.00	0.00	0.00
6,000.00	1.06	45.00	5,999.19	62.10	62.10	-61.53	0.00	0.00	0.00
6,100.00	1.06	45.00	6,099.17	63.40	63.40	-62.83	0.00	0.00	0.00
6,200.00	1.06	45.00	6,199.16	64.71	64.71	-64.12	0.00	0.00	0.00
6,300.00	1.06	45.00	6,299.14	66.02	66.02	-65.42	0.00	0.00	0.00
6,400.00	1.06	45.00	6,399.12	67.33	67.33	-66.71	0.00	0.00	0.00
6,500.00	1.06	45.00	6,499.11	68.64	68.64	-68.01	0.00	0.00	0.00
6,600.00	1.06	45.00	6,599.09	69.94	69.94	-69.31	0.00	0.00	0.00
6,700.00	1.06	45.00	6,699.07	71.25	71.25	-70.60	0.00	0.00	0.00
6,800.00	1.06	45.00	6,799.05	72.56	72.56	-71.90	0.00	0.00	0.00
6,900.00	1.06	45.00	6,899.04	73.87	73.87	-73.20	0.00	0.00	0.00
7,000.00	1.06	45.00	6,999.02	75.18	75.18	-74.49	0.00	0.00	0.00
7,100.00	1.06	45.00	7,099.00	76.49	76.49	-75.79	0.00	0.00	0.00
7,200.00	1.06	45.00	7,198.99	77.79	77.79	-77.08	0.00	0.00	0.00
7,300.00	1.06	45.00	7,298.97	79.10	79.10	-78.38	0.00	0.00	0.00
7,400.00	1.06	45.00	7,398.95	80.41	80.41	-79.68	0.00	0.00	0.00
7,500.00	1.06	45.00	7,498.93	81.72	81.72	-80.97	0.00	0.00	0.00
7,600.00	1.06	45.00	7,598.92	83.03	83.03	-82.27	0.00	0.00	0.00
7,700.00	1.06	45.00	7,698.90	84.33	84.33	-83.56	0.00	0.00	0.00
7,800.00	1.06	45.00	7,798.88	85.64	85.64	-84.86	0.00	0.00	0.00
7,900.00	1.06	45.00	7,898.87	86.95	86.95	-86.16	0.00	0.00	0.00
8,000.00	1.06	45.00	7,998.85	88.26	88.26	-87.45	0.00	0.00	0.00
8,100.00	1.06	45.00	8,098.83	89.57	89.57	-88.75	0.00	0.00	0.00
8,200.00	1.06	45.00	8,198.81	90.87	90.87	-90.05	0.00	0.00	0.00
8,300.00	1.06	45.00	8,298.80	92.18	92.18	-91.34	0.00	0.00	0.00
8,400.00	1.06	45.00	8,398.78	93.49	93.49	-92.64	0.00	0.00	0.00
8,500.00	1.06	45.00	8,498.76	94.80	94.80	-93.93	0.00	0.00	0.00
8,600.00	1.06	45.00	8,598.75	96.11	96.11	-95.23	0.00	0.00	0.00
8,700.00	1.06	45.00	8,698.73	97.41	97.41	-96.53	0.00	0.00	0.00
8,800.00	1.06	45.00	8,798.71	98.72	98.72	-97.82	0.00	0.00	0.00
8,900.00	1.06	45.00	8,898.69	100.03	100.03	-99.12	0.00	0.00	0.00
9,000.00	1.06	45.00	8,998.68	101.34	101.34	-100.42	0.00	0.00	0.00
9,100.00	1.06	45.00	9,098.66	102.65	102.65	-101.71	0.00	0.00	0.00
9,200.00	1.06	45.00	9,198.64	103.96	103.96	-103.01	0.00	0.00	0.00
9,300.00	1.06	45.00	9,298.63	105.26	105.26	-104.30	0.00	0.00	0.00
9,400.00	1.06	45.00	9,398.61	106.57	106.57	-105.60	0.00	0.00	0.00
9,500.00	1.06	45.00	9,498.59	107.88	107.88	-106.90	0.00	0.00	0.00
9,600.00	1.06	45.00	9,598.57	109.19	109.19	-108.19	0.00	0.00	0.00
9,700.00	1.06	45.00	9,698.56	110.50	110.50	-109.49	0.00	0.00	0.00
9,800.00	1.06	45.00	9,798.54	111.80	111.80	-110.78	0.00	0.00	0.00
9,900.00	1.06	45.00	9,898.52	113.11	113.11	-112.08	0.00	0.00	0.00
10,000.00	1.06	45.00	9,998.51	114.42	114.42	-113.38	0.00	0.00	0.00
10,100.00	1.06	45.00	10,098.49	115.73	115.73	-114.67	0.00	0.00	0.00
10,200.00	1.06	45.00	10,198.47	117.04	117.04	-115.97	0.00	0.00	0.00
10,300.00	1.06	45.00	10,298.46	118.34	118.34	-117.27	0.00	0.00	0.00
10,400.00	1.06	45.00	10,398.44	119.65	119.65	-118.56	0.00	0.00	0.00

Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 21H - Slot 21H
Company:	COG OPERATING, LLC	TVD Reference:	3247+25 @ 3272.00ft (Latshaw44)
Project:	Eddy /Lea County, NM (NAD27) NMEZ	MD Reference:	3247+25 @ 3272.00ft (Latshaw44)
Site:	White Falcon 16 Federal Com Pad	North Reference:	Grid
Well:	White Falcon 16 Fed Com 21H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,500.00	1.06	45.00	10,498.42	120.96	120.96	-119.86	0.00	0.00	0.00
10,600.00	1.06	45.00	10,598.40	122.27	122.27	-121.15	0.00	0.00	0.00
10,700.00	1.06	45.00	10,698.39	123.58	123.58	-122.45	0.00	0.00	0.00
10,800.00	1.06	45.00	10,798.37	124.89	124.89	-123.75	0.00	0.00	0.00
10,900.00	1.06	45.00	10,898.35	126.19	126.19	-125.04	0.00	0.00	0.00
11,000.00	1.06	45.00	10,998.34	127.50	127.50	-126.34	0.00	0.00	0.00
11,100.00	1.06	45.00	11,098.32	128.81	128.81	-127.64	0.00	0.00	0.00
11,200.00	1.06	45.00	11,198.30	130.12	130.12	-128.93	0.00	0.00	0.00
11,300.00	1.06	45.00	11,298.28	131.43	131.43	-130.23	0.00	0.00	0.00
11,400.00	1.06	45.00	11,398.27	132.73	132.73	-131.52	0.00	0.00	0.00
11,500.00	1.06	45.00	11,498.25	134.04	134.04	-132.82	0.00	0.00	0.00
11,600.00	1.06	45.00	11,598.23	135.35	135.35	-134.12	0.00	0.00	0.00
11,700.00	1.06	45.00	11,698.22	136.66	136.66	-135.41	0.00	0.00	0.00
11,800.00	1.06	45.00	11,798.20	137.97	137.97	-136.71	0.00	0.00	0.00
11,880.17	1.06	45.00	11,878.35	139.01	139.01	-137.75	0.00	0.00	0.00
11,895.63	1.32	125.43	11,893.81	139.01	139.26	-137.74	10.00	1.66	520.09
WhiteFalcon 22H KOP									
11,900.00	1.66	135.65	11,898.18	138.94	139.35	-137.67	10.00	7.97	233.94
11,900.11	1.66	135.65	11,898.29	138.94	139.35	-137.67	0.00	0.00	0.00
WhiteFalcon 21H KOP									
11,950.00	6.47	160.08	11,948.04	135.77	140.81	-134.49	10.02	9.63	48.96
12,000.00	11.44	163.55	11,997.42	128.36	143.18	-127.06	10.00	9.95	6.94
12,050.00	16.43	164.93	12,045.93	116.77	146.42	-115.44	10.00	9.98	2.76
12,100.00	21.42	165.68	12,093.21	101.08	150.52	-99.71	10.00	9.99	1.50
12,150.00	26.42	166.16	12,138.90	81.42	155.45	-80.01	10.00	9.99	0.95
12,200.00	31.42	166.49	12,182.65	57.93	161.15	-56.47	10.00	9.99	0.67
12,250.00	36.42	166.74	12,224.13	30.80	167.61	-29.28	10.00	10.00	0.50
12,300.00	41.41	166.94	12,263.02	0.22	174.75	1.36	10.00	10.00	0.39
12,350.00	46.41	167.10	12,299.03	-33.56	182.53	35.21	10.00	10.00	0.32
12,400.00	51.41	167.24	12,331.88	-70.29	190.90	72.02	10.00	10.00	0.27
12,450.00	56.41	167.36	12,361.32	-109.70	199.77	111.51	10.00	10.00	0.24
12,500.00	61.41	167.47	12,387.13	-151.47	209.10	153.36	10.00	10.00	0.21
12,550.00	66.41	167.56	12,409.12	-195.30	218.81	197.28	10.00	10.00	0.19
12,600.00	71.41	167.65	12,427.10	-240.85	228.82	242.92	10.00	10.00	0.18
12,650.00	76.41	167.73	12,440.96	-287.77	239.05	289.93	10.00	10.00	0.17
12,664.34	77.84	167.76	12,444.15	-301.44	242.02	303.62	10.00	10.00	0.16
WhiteFalcon 22H LP									
12,700.00	81.41	167.82	12,450.57	-335.71	249.44	337.96	10.00	10.00	0.16
12,750.00	86.41	167.89	12,455.88	-384.30	259.90	386.64	10.00	10.00	0.16
12,785.93	90.00	167.95	12,457.00	-419.41	267.41	421.82	10.00	10.00	0.16
12,785.94	90.00	167.95	12,457.00	-419.42	267.41	421.83	0.00	0.00	0.00
WhiteFalcon 21H LP									
12,800.00	90.00	168.58	12,457.00	-433.19	270.27	435.62	4.50	0.00	4.50
12,883.51	90.00	172.34	12,457.00	-515.53	284.10	518.08	4.50	0.00	4.50
WhiteFalcon 11H LP									
12,900.00	90.00	173.08	12,457.00	-531.89	286.20	534.46	4.50	0.00	4.50
13,000.00	90.00	177.58	12,457.00	-631.53	294.33	634.18	4.50	0.00	4.50
13,042.15	90.00	179.48	12,457.00	-673.67	295.41	676.32	4.50	0.00	4.50
13,100.00	90.00	179.48	12,457.00	-731.51	295.94	734.17	0.00	0.00	0.00
13,200.00	90.00	179.48	12,457.00	-831.51	296.84	834.17	0.00	0.00	0.00
13,300.00	90.00	179.48	12,457.00	-931.50	297.75	934.17	0.00	0.00	0.00
13,400.00	90.00	179.48	12,457.00	-1,031.50	298.66	1,034.17	0.00	0.00	0.00



Planning Report

Database: VON_EDM

Local Co-ordinate Reference:

Well White Falcon 16 Fed Com 21H - Slot
21H

Company: COG OPERATING, LLC

TVD Reference:

3247+25 @ 3272.00ft (Latshaw44)

Project: Eddy /Lea County, NM (NAD27) NMEZ

MD Reference:

3247+25 @ 3272.00ft (Latshaw44)

Site: White Falcon 16 Federal Com Pad

North Reference:

Grid

Well: White Falcon 16 Fed Com 21H

Survey Calculation Method:

Minimum Curvature

Wellbore: Lateral

Design: Plan #1

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
13,500.00	90.00	179.48	12,457.00	-1,131.50	299.57	1,134.17	0.00	0.00	0.00
13,600.00	90.00	179.48	12,457.00	-1,231.49	300.47	1,234.17	0.00	0.00	0.00
13,700.00	90.00	179.48	12,457.00	-1,331.49	301.38	1,334.17	0.00	0.00	0.00
13,800.00	90.00	179.48	12,457.00	-1,431.48	302.29	1,434.17	0.00	0.00	0.00
13,900.00	90.00	179.48	12,457.00	-1,531.48	303.20	1,534.17	0.00	0.00	0.00
14,000.00	90.00	179.48	12,457.00	-1,631.47	304.10	1,634.17	0.00	0.00	0.00
14,100.00	90.00	179.48	12,457.00	-1,731.47	305.01	1,734.17	0.00	0.00	0.00
14,200.00	90.00	179.48	12,457.00	-1,831.47	305.92	1,834.17	0.00	0.00	0.00
14,300.00	90.00	179.48	12,457.00	-1,931.46	306.83	1,934.17	0.00	0.00	0.00
14,365.84	90.00	179.48	12,457.00	-1,997.30	307.42	2,000.00	0.00	0.00	0.00
14,400.00	89.32	179.48	12,457.21	-2,031.46	307.73	2,034.17	2.00	-2.00	0.00
14,452.69	88.26	179.48	12,458.32	-2,084.13	308.21	2,086.84	2.00	-2.00	0.00
14,500.00	88.26	179.48	12,459.75	-2,131.42	308.64	2,134.13	0.00	0.00	0.00
14,600.00	88.26	179.48	12,462.79	-2,231.37	309.55	2,234.09	0.00	0.00	0.00
14,700.00	88.26	179.48	12,465.82	-2,331.32	310.46	2,334.04	0.00	0.00	0.00
14,800.00	88.26	179.48	12,468.85	-2,431.27	311.36	2,433.99	0.00	0.00	0.00
14,900.00	88.26	179.48	12,471.88	-2,531.22	312.27	2,533.95	0.00	0.00	0.00
15,000.00	88.26	179.48	12,474.91	-2,631.17	313.18	2,633.90	0.00	0.00	0.00
15,100.00	88.26	179.48	12,477.94	-2,731.12	314.08	2,733.86	0.00	0.00	0.00
15,200.00	88.26	179.48	12,480.97	-2,831.07	314.99	2,833.81	0.00	0.00	0.00
15,300.00	88.26	179.48	12,484.00	-2,931.02	315.90	2,933.76	0.00	0.00	0.00
15,400.00	88.26	179.48	12,487.03	-3,030.97	316.81	3,033.72	0.00	0.00	0.00
15,500.00	88.26	179.48	12,490.07	-3,130.92	317.71	3,133.67	0.00	0.00	0.00
15,600.00	88.26	179.48	12,493.10	-3,230.87	318.62	3,233.63	0.00	0.00	0.00
15,700.00	88.26	179.48	12,496.13	-3,330.82	319.53	3,333.58	0.00	0.00	0.00
15,800.00	88.26	179.48	12,499.16	-3,430.77	320.43	3,433.54	0.00	0.00	0.00
15,900.00	88.26	179.48	12,502.19	-3,530.72	321.34	3,533.49	0.00	0.00	0.00
16,000.00	88.26	179.48	12,505.22	-3,630.67	322.25	3,633.44	0.00	0.00	0.00
16,100.00	88.26	179.48	12,508.25	-3,730.62	323.16	3,733.40	0.00	0.00	0.00
16,200.00	88.26	179.48	12,511.28	-3,830.57	324.06	3,833.35	0.00	0.00	0.00
16,300.00	88.26	179.48	12,514.32	-3,930.52	324.97	3,933.31	0.00	0.00	0.00
16,365.69	88.26	179.48	12,516.31	-3,996.17	325.57	3,998.96	0.00	0.00	0.00
WhiteFalcon 22H T1									
16,400.00	88.26	179.48	12,517.35	-4,030.47	325.88	4,033.26	0.00	0.00	0.00
16,500.00	88.26	179.48	12,520.38	-4,130.42	326.78	4,133.21	0.00	0.00	0.00
16,600.00	88.26	179.48	12,523.41	-4,230.37	327.69	4,233.17	0.00	0.00	0.00
16,700.00	88.26	179.48	12,526.44	-4,330.32	328.60	4,333.12	0.00	0.00	0.00
16,800.00	88.26	179.48	12,529.47	-4,430.27	329.51	4,433.08	0.00	0.00	0.00
16,900.00	88.26	179.48	12,532.50	-4,530.22	330.41	4,533.03	0.00	0.00	0.00
17,000.00	88.26	179.48	12,535.53	-4,630.17	331.32	4,632.98	0.00	0.00	0.00
17,100.00	88.26	179.48	12,538.56	-4,730.12	332.23	4,732.94	0.00	0.00	0.00
17,200.00	88.26	179.48	12,541.60	-4,830.07	333.13	4,832.89	0.00	0.00	0.00
17,300.00	88.26	179.48	12,544.63	-4,930.02	334.04	4,932.85	0.00	0.00	0.00
17,400.00	88.26	179.48	12,547.66	-5,029.97	334.95	5,032.80	0.00	0.00	0.00
17,500.00	88.26	179.48	12,550.69	-5,129.92	335.86	5,132.75	0.00	0.00	0.00
17,600.00	88.26	179.48	12,553.72	-5,229.87	336.76	5,232.71	0.00	0.00	0.00
17,700.00	88.26	179.48	12,556.75	-5,329.82	337.67	5,332.66	0.00	0.00	0.00
17,800.00	88.26	179.48	12,559.78	-5,429.77	338.58	5,432.62	0.00	0.00	0.00
17,900.00	88.26	179.48	12,562.81	-5,529.72	339.48	5,532.57	0.00	0.00	0.00
18,000.00	88.26	179.48	12,565.85	-5,629.67	340.39	5,632.52	0.00	0.00	0.00
18,100.00	88.26	179.48	12,568.88	-5,729.62	341.30	5,732.48	0.00	0.00	0.00
18,200.00	88.26	179.48	12,571.91	-5,829.57	342.21	5,832.43	0.00	0.00	0.00
18,300.00	88.26	179.48	12,574.94	-5,929.52	343.11	5,932.39	0.00	0.00	0.00

Database: VON_EDM

Local Co-ordinate Reference:

Well White Falcon 16 Fed Com 21H - Slot 21H

Company: COG OPERATING, LLC

TVD Reference:

3247+25 @ 3272.00ft (Latshaw44)

Project: Eddy /Lea County, NM (NAD27) NMEZ

MD Reference:

3247+25 @ 3272.00ft (Latshaw44)

Site: White Falcon 16 Federal Com Pad

North Reference:

Grid

Well: White Falcon 16 Fed Com 21H

Survey Calculation Method:

Minimum Curvature

Wellbore: Lateral

Design: Plan #1

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
18,360.13	88.26	179.48	12,576.76	-5,989.62	343.66	5,992.49	0.00	0.00	0.00
WhiteFalcon 11H T1									
18,367.65	88.26	179.48	12,576.99	-5,997.13	343.73	6,000.00	0.00	0.00	0.00
18,400.00	88.91	179.48	12,577.79	-6,029.47	344.02	6,032.35	2.00	2.00	0.00
18,430.68	89.52	179.48	12,578.21	-6,060.15	344.30	6,063.02	2.00	2.00	0.00
18,500.00	89.52	179.48	12,578.78	-6,129.46	344.93	6,132.34	0.00	0.00	0.00
18,600.00	89.52	179.48	12,579.61	-6,229.45	345.85	6,232.34	0.00	0.00	0.00
18,700.00	89.52	179.48	12,580.45	-6,329.45	346.76	6,332.33	0.00	0.00	0.00
18,800.00	89.52	179.48	12,581.28	-6,429.44	347.67	6,432.33	0.00	0.00	0.00
18,900.00	89.52	179.48	12,582.11	-6,529.43	348.58	6,532.33	0.00	0.00	0.00
19,000.00	89.52	179.48	12,582.94	-6,629.42	349.50	6,632.32	0.00	0.00	0.00
19,100.00	89.52	179.48	12,583.77	-6,729.42	350.41	6,732.32	0.00	0.00	0.00
19,200.00	89.52	179.48	12,584.60	-6,829.41	351.32	6,832.32	0.00	0.00	0.00
19,300.00	89.52	179.48	12,585.43	-6,929.40	352.23	6,932.31	0.00	0.00	0.00
19,400.00	89.52	179.48	12,586.26	-7,029.39	353.15	7,032.31	0.00	0.00	0.00
19,500.00	89.52	179.48	12,587.10	-7,129.39	354.06	7,132.31	0.00	0.00	0.00
19,600.00	89.52	179.48	12,587.93	-7,229.38	354.97	7,232.30	0.00	0.00	0.00
19,700.00	89.52	179.48	12,588.76	-7,329.37	355.88	7,332.30	0.00	0.00	0.00
19,800.00	89.52	179.48	12,589.59	-7,429.36	356.80	7,432.29	0.00	0.00	0.00
19,867.80	89.52	179.48	12,590.15	-7,497.15	357.42	7,500.09	0.00	0.00	0.00
WhiteFalcon 22H T2									
19,900.00	89.52	179.48	12,590.42	-7,529.36	357.71	7,532.29	0.00	0.00	0.00
20,000.00	89.52	179.48	12,591.25	-7,629.35	358.62	7,632.29	0.00	0.00	0.00
20,100.00	89.52	179.48	12,592.08	-7,729.34	359.53	7,732.28	0.00	0.00	0.00
20,200.00	89.52	179.48	12,592.91	-7,829.33	360.45	7,832.28	0.00	0.00	0.00
20,300.00	89.52	179.48	12,593.75	-7,929.32	361.36	7,932.28	0.00	0.00	0.00
20,365.82	89.52	179.48	12,594.29	-7,995.14	361.96	7,998.10	0.00	0.00	0.00
WhiteFalcon 11H T2									
20,400.00	89.52	179.48	12,594.58	-8,029.32	362.27	8,032.27	0.00	0.00	0.00
20,500.00	89.52	179.48	12,595.41	-8,129.31	363.18	8,132.27	0.00	0.00	0.00
20,600.00	89.52	179.48	12,596.24	-8,229.30	364.10	8,232.27	0.00	0.00	0.00
20,700.00	89.52	179.48	12,597.07	-8,329.29	365.01	8,332.26	0.00	0.00	0.00
20,800.00	89.52	179.48	12,597.90	-8,429.29	365.92	8,432.26	0.00	0.00	0.00
20,900.00	89.52	179.48	12,598.73	-8,529.28	366.84	8,532.26	0.00	0.00	0.00
21,000.00	89.52	179.48	12,599.56	-8,629.27	367.75	8,632.25	0.00	0.00	0.00
21,100.00	89.52	179.48	12,600.40	-8,729.26	368.66	8,732.25	0.00	0.00	0.00
21,200.00	89.52	179.48	12,601.23	-8,829.26	369.57	8,832.25	0.00	0.00	0.00
21,300.00	89.52	179.48	12,602.06	-8,929.25	370.49	8,932.24	0.00	0.00	0.00
21,400.00	89.52	179.48	12,602.89	-9,029.24	371.40	9,032.24	0.00	0.00	0.00
21,500.00	89.52	179.48	12,603.72	-9,129.23	372.31	9,132.24	0.00	0.00	0.00
21,600.00	89.52	179.48	12,604.55	-9,229.23	373.22	9,232.23	0.00	0.00	0.00
21,700.00	89.52	179.48	12,605.38	-9,329.22	374.14	9,332.23	0.00	0.00	0.00
21,800.00	89.52	179.48	12,606.22	-9,429.21	375.05	9,432.23	0.00	0.00	0.00
21,900.00	89.52	179.48	12,607.05	-9,529.20	375.96	9,532.22	0.00	0.00	0.00
22,000.00	89.52	179.48	12,607.88	-9,629.20	376.87	9,632.22	0.00	0.00	0.00
22,100.00	89.52	179.48	12,608.71	-9,729.19	377.79	9,732.22	0.00	0.00	0.00
22,200.00	89.52	179.48	12,609.54	-9,829.18	378.70	9,832.21	0.00	0.00	0.00
22,300.00	89.52	179.48	12,610.37	-9,929.17	379.61	9,932.21	0.00	0.00	0.00
22,400.00	89.52	179.48	12,611.20	-10,029.16	380.52	10,032.21	0.00	0.00	0.00
22,494.64	89.52	179.48	12,611.99	-10,123.79	381.39	10,126.84	0.00	0.00	0.00
WhiteFalcon 11H PBHL									
22,495.94	89.52	179.48	12,612.00	-10,125.10	381.40	10,128.14	0.00	0.00	0.00

Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 21H - Slot 21H
Company:	COG OPERATING, LLC	TVD Reference:	3247+25 @ 3272.00ft (Latshaw44)
Project:	Eddy /Lea County, NM (NAD27) NMEZ	MD Reference:	3247+25 @ 3272.00ft (Latshaw44)
Site:	White Falcon 16 Federal Com Pad	North Reference:	Grid
Well:	White Falcon 16 Fed Com 21H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
WhiteFalcon 22H PBHL - WhiteFalcon 21H PBHL									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
WhiteFalcon 21H SL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	414,844.60	796,941.60	32° 8' 12.793 N	103° 22' 26.535 W
WhiteFalcon 21H KOP - plan misses target center by 0.22ft at 11900.11ft MD (11898.29 TVD, 138.94 N, 139.35 E) - Point	0.00	0.01	11,898.30	139.10	139.50	414,983.70	797,081.10	32° 8' 14.157 N	103° 22' 24.899 W
WhiteFalcon 21H LP - plan misses target center by 0.09ft at 12785.94ft MD (12457.00 TVD, -419.42 N, 267.41 E) - Point	0.00	0.01	12,457.00	-419.44	267.32	414,425.16	797,208.92	32° 8' 8.619 N	103° 22' 23.470 W
WhiteFalcon 21H PBHL - plan hits target center - Rectangle (sides W100.00 H10,024.00 D0.00)	0.00	0.01	12,612.00	-10,125.10	381.40	404,719.50	797,323.00	32° 6' 32.570 N	103° 22' 23.150 W



Anticollision Report

Company: COG OPERATING, LLC

Local Co-ordinate Reference:

Well White Falcon 16 Fed Com 21H - Slot
21H

Project: Eddy /Lea County, NM (NAD27) NMEZ

TVD Reference:

3247+25 @ 3272.00ft (Latshaw44)

Reference Site: White Falcon 16 Federal Com Pad

MD Reference:

3247+25 @ 3272.00ft (Latshaw44)

Site Error: 0.00 ft

North Reference:

Grid

Reference Well: White Falcon 16 Fed Com 21H

Survey Calculation Method:

Minimum Curvature

Well Error: 0.00 ft

Output errors are at

2.00 sigma

Reference Wellbore: Lateral

Database:

VON_EDM

Reference Design: Plan #1

Offset TVD Reference:

Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.00 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	09/28/17		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	22,495.94	Plan #1 (Lateral)	MWD	MWD v3:standard declination	

Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
White Falcon 16 Federal Com Pad						
White Falcon 16 Fed Com 11H - Lateral - Plan #1	1,200.00	1,200.00	40.00	34.89	7.823	CC, ES
White Falcon 16 Fed Com 11H - Lateral - Plan #1	22,495.94	22,148.94	422.61	111.43	1.358	Level 3, SF
White Falcon 16 Fed Com 22H - Lateral - Plan #1	1,200.00	1,200.00	79.90	74.79	15.626	CC, ES
White Falcon 16 Fed Com 22H - Lateral - Plan #1	22,495.94	22,520.19	660.68	281.87	1.744	SF

Offset Design White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 11H - Lateral - Plan #1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-90.57	-0.40	-40.00	40.00				
100.00	100.00	100.00	100.00	0.08	0.08	-90.57	-0.40	-40.00	40.00	39.83	0.17	237.295	
200.00	200.00	200.00	200.00	0.31	0.31	-90.57	-0.40	-40.00	40.00	39.38	0.62	64.717	
300.00	300.00	300.00	300.00	0.53	0.53	-90.57	-0.40	-40.00	40.00	38.93	1.07	37.468	
400.00	400.00	400.00	400.00	0.76	0.76	-90.57	-0.40	-40.00	40.00	38.48	1.52	26.366	
500.00	500.00	500.00	500.00	0.98	0.98	-90.57	-0.40	-40.00	40.00	38.04	1.97	20.340	
600.00	600.00	600.00	600.00	1.21	1.21	-90.57	-0.40	-40.00	40.00	37.59	2.42	16.556	
700.00	700.00	700.00	700.00	1.43	1.43	-90.57	-0.40	-40.00	40.00	37.14	2.87	13.959	
800.00	800.00	800.00	800.00	1.66	1.66	-90.57	-0.40	-40.00	40.00	36.69	3.32	12.066	
900.00	900.00	900.00	900.00	1.88	1.88	-90.57	-0.40	-40.00	40.00	36.24	3.76	10.625	
1,000.00	1,000.00	1,000.00	1,000.00	2.11	2.11	-90.57	-0.40	-40.00	40.00	35.79	4.21	9.492	
1,100.00	1,100.00	1,100.00	1,100.00	2.33	2.33	-90.57	-0.40	-40.00	40.00	35.34	4.66	8.577	
1,200.00	1,200.00	1,200.00	1,200.00	2.56	2.56	-90.57	-0.40	-40.00	40.00	34.89	5.11	7.823	CC, ES
1,300.00	1,299.99	1,300.01	1,299.99	2.78	2.78	-136.43	-0.40	-40.00	40.63	35.07	5.56	7.309	
1,400.00	1,399.98	1,400.02	1,399.98	3.00	3.01	-138.17	-0.40	-40.00	41.99	35.99	6.00	6.997	
1,500.00	1,499.96	1,500.04	1,499.96	3.21	3.23	-139.80	-0.40	-40.00	43.38	36.94	6.44	6.733	
1,600.00	1,599.94	1,600.06	1,599.94	3.43	3.46	-141.32	-0.40	-40.00	44.81	37.92	6.89	6.506	
1,700.00	1,699.93	1,700.07	1,699.93	3.66	3.68	-142.75	-0.40	-40.00	46.27	38.94	7.33	6.311	
1,800.00	1,799.91	1,800.09	1,799.91	3.88	3.91	-144.10	-0.40	-40.00	47.76	39.98	7.78	6.141	
1,900.00	1,899.89	1,900.11	1,899.89	4.10	4.13	-145.36	-0.40	-40.00	49.27	41.04	8.22	5.991	
2,000.00	1,999.88	2,000.12	1,999.88	4.32	4.36	-146.55	-0.40	-40.00	50.80	42.13	8.67	5.860	
2,100.00	2,099.86	2,100.14	2,099.86	4.54	4.58	-147.66	-0.40	-40.00	52.35	43.24	9.12	5.743	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company: COG OPERATING, LLC
Project: Eddy /Lea County, NM (NAD27) NMEZ
Reference Site: White Falcon 16 Federal Com Pad
Site Error: 0.00 ft
Reference Well: White Falcon 16 Fed Com 21H
Well Error: 0.00 ft
Reference Wellbore: Lateral
Reference Design: Plan #1

Local Co-ordinate Reference: Well White Falcon 16 Fed Com 21H - Slot 21H
TVD Reference: 3247+25 @ 3272.00ft (Latshaw44)
MD Reference: 3247+25 @ 3272.00ft (Latshaw44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: VON_EDM
Offset TVD Reference: Offset Datum

Offset Design White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 11H - Lateral - Plan #1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
2,200.00	2,199.84	2,200.16	2,199.84	4.77	4.80	-148.71	-0.40	-40.00	53.93	44.36	9.56	5.639		
2,300.00	2,299.82	2,300.18	2,299.82	4.99	5.03	-149.70	-0.40	-40.00	55.52	45.51	10.01	5.546		
2,400.00	2,399.81	2,400.19	2,399.81	5.21	5.25	-150.64	-0.40	-40.00	57.12	46.66	10.46	5.462		
2,500.00	2,499.79	2,500.21	2,499.79	5.44	5.48	-151.53	-0.40	-40.00	58.74	47.83	10.90	5.387		
2,600.00	2,599.77	2,600.23	2,599.77	5.66	5.70	-152.36	-0.40	-40.00	60.37	49.02	11.35	5.318		
2,700.00	2,699.76	2,700.24	2,699.76	5.89	5.93	-153.16	-0.40	-40.00	62.02	50.22	11.80	5.256		
2,800.00	2,799.74	2,800.26	2,799.74	6.11	6.15	-153.91	-0.40	-40.00	63.67	51.42	12.25	5.198		
2,900.00	2,899.72	2,900.28	2,899.72	6.34	6.38	-154.62	-0.40	-40.00	65.34	52.64	12.70	5.146		
3,000.00	2,999.70	3,000.30	2,999.70	6.56	6.60	-155.30	-0.40	-40.00	67.02	53.87	13.14	5.098		
3,100.00	3,099.69	3,100.31	3,099.69	6.79	6.83	-155.94	-0.40	-40.00	68.70	55.11	13.59	5.054		
3,200.00	3,199.67	3,200.33	3,199.67	7.01	7.05	-156.56	-0.40	-40.00	70.39	56.35	14.04	5.013		
3,300.00	3,299.65	3,300.35	3,299.65	7.24	7.28	-157.14	-0.40	-40.00	72.10	57.61	14.49	4.975		
3,400.00	3,399.64	3,400.36	3,399.64	7.46	7.50	-157.70	-0.40	-40.00	73.80	58.86	14.94	4.940		
3,500.00	3,499.62	3,500.38	3,499.62	7.69	7.73	-158.23	-0.40	-40.00	75.52	60.13	15.39	4.908		
3,600.00	3,599.60	3,600.40	3,599.60	7.91	7.95	-158.74	-0.40	-40.00	77.24	61.40	15.84	4.877		
3,700.00	3,699.58	3,700.42	3,699.58	8.14	8.18	-159.23	-0.40	-40.00	78.97	62.68	16.29	4.849		
3,800.00	3,799.57	3,800.43	3,799.57	8.36	8.40	-159.69	-0.40	-40.00	80.70	63.96	16.73	4.822		
3,900.00	3,899.55	3,900.45	3,899.55	8.59	8.63	-160.14	-0.40	-40.00	82.44	65.25	17.18	4.797		
4,000.00	3,999.53	4,000.47	3,999.53	8.81	8.85	-160.57	-0.40	-40.00	84.18	66.55	17.63	4.774		
4,100.00	4,099.52	4,100.48	4,099.52	9.04	9.08	-160.98	-0.40	-40.00	85.93	67.84	18.08	4.752		
4,200.00	4,199.50	4,200.50	4,199.50	9.26	9.30	-161.37	-0.40	-40.00	87.68	69.15	18.53	4.731		
4,300.00	4,299.48	4,300.52	4,299.48	9.49	9.53	-161.75	-0.40	-40.00	89.43	70.45	18.98	4.712		
4,400.00	4,399.46	4,400.54	4,399.46	9.72	9.75	-162.11	-0.40	-40.00	91.19	71.76	19.43	4.694		
4,500.00	4,499.45	4,500.55	4,499.45	9.94	9.98	-162.46	-0.40	-40.00	92.95	73.07	19.88	4.676		
4,600.00	4,599.43	4,600.57	4,599.43	10.17	10.20	-162.80	-0.40	-40.00	94.72	74.39	20.33	4.660		
4,700.00	4,699.41	4,700.59	4,699.41	10.39	10.42	-163.13	-0.40	-40.00	96.49	75.71	20.78	4.644		
4,800.00	4,799.40	4,800.60	4,799.40	10.62	10.65	-163.44	-0.40	-40.00	98.26	77.03	21.23	4.629		
4,900.00	4,899.38	4,900.62	4,899.38	10.85	10.87	-163.74	-0.40	-40.00	100.03	78.36	21.68	4.615		
5,000.00	4,999.36	5,000.64	4,999.36	11.07	11.10	-164.03	-0.40	-40.00	101.81	79.69	22.12	4.602		
5,100.00	5,099.34	5,100.66	5,099.34	11.30	11.32	-164.31	-0.40	-40.00	103.59	81.02	22.57	4.589		
5,200.00	5,199.33	5,200.67	5,199.33	11.52	11.55	-164.59	-0.40	-40.00	105.37	82.35	23.02	4.577		
5,300.00	5,299.31	5,300.69	5,299.31	11.75	11.77	-164.85	-0.40	-40.00	107.16	83.68	23.47	4.565		
5,400.00	5,399.29	5,400.71	5,399.29	11.98	12.00	-165.10	-0.40	-40.00	108.94	85.02	23.92	4.554		
5,500.00	5,499.28	5,500.72	5,499.28	12.20	12.22	-165.35	-0.40	-40.00	110.73	86.36	24.37	4.544		
5,600.00	5,599.26	5,600.74	5,599.26	12.43	12.45	-165.59	-0.40	-40.00	112.52	87.70	24.82	4.533		
5,700.00	5,699.24	5,700.76	5,699.24	12.65	12.67	-165.82	-0.40	-40.00	114.32	89.05	25.27	4.524		
5,800.00	5,799.23	5,800.78	5,799.23	12.88	12.90	-166.04	-0.40	-40.00	116.11	90.39	25.72	4.514		
5,900.00	5,899.21	5,900.79	5,899.21	13.11	13.12	-166.26	-0.40	-40.00	117.91	91.74	26.17	4.506		
6,000.00	5,999.19	6,000.81	5,999.19	13.33	13.35	-166.47	-0.40	-40.00	119.71	93.09	26.62	4.497		
6,100.00	6,099.17	6,100.83	6,099.17	13.56	13.57	-166.67	-0.40	-40.00	121.50	94.44	27.07	4.489		
6,200.00	6,199.16	6,200.84	6,199.16	13.78	13.80	-166.87	-0.40	-40.00	123.31	95.79	27.52	4.481		
6,300.00	6,299.14	6,300.86	6,299.14	14.01	14.02	-167.06	-0.40	-40.00	125.11	97.14	27.97	4.473		
6,400.00	6,399.12	6,400.88	6,399.12	14.24	14.25	-167.25	-0.40	-40.00	126.91	98.49	28.42	4.466		
6,500.00	6,499.11	6,500.90	6,499.11	14.46	14.47	-167.43	-0.40	-40.00	128.72	99.85	28.87	4.459		
6,600.00	6,599.09	6,600.91	6,599.09	14.69	14.70	-167.61	-0.40	-40.00	130.52	101.21	29.32	4.452		
6,700.00	6,699.07	6,700.93	6,699.07	14.92	14.92	-167.78	-0.40	-40.00	132.33	102.56	29.77	4.446		
6,800.00	6,799.05	6,800.95	6,799.05	15.14	15.15	-167.95	-0.40	-40.00	134.14	103.92	30.22	4.439		
6,900.00	6,899.04	6,900.96	6,899.04	15.37	15.37	-168.11	-0.40	-40.00	135.95	105.28	30.67	4.433		
7,000.00	6,999.02	7,000.98	6,999.02	15.59	15.60	-168.27	-0.40	-40.00	137.76	106.64	31.11	4.427		
7,100.00	7,099.00	7,101.00	7,099.00	15.82	15.82	-168.42	-0.40	-40.00	139.57	108.01	31.56	4.422		
7,200.00	7,198.99	7,201.01	7,198.99	16.05	16.04	-168.58	-0.40	-40.00	141.38	109.37	32.01	4.416		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company: COG OPERATING, LLC

Local Co-ordinate Reference:

Well White Falcon 16 Fed Com 21H - Slot
21H

Project: Eddy /Lea County, NM (NAD27) NMEZ

TVD Reference:

3247+25 @ 3272.00ft (Latshaw44)

Reference Site: White Falcon 16 Federal Com Pad

MD Reference:

3247+25 @ 3272.00ft (Latshaw44)

Site Error: 0.00 ft

North Reference:

Grid

Reference Well: White Falcon 16 Fed Com 21H

Survey Calculation Method:

Minimum Curvature

Well Error: 0.00 ft

Output errors are at

2.00 sigma

Reference Wellbore: Lateral

Database:

VON_EDM

Reference Design: Plan #1

Offset TVD Reference:

Offset Datum

Offset Design White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 11H - Lateral - Plan #1														Offset Site Error:	0.00 ft
Survey Program: 0-MWD														Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore +N/-S (ft)	Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
7,300.00	7,298.97	7,301.03	7,298.97	16.27	16.27	-168.72	-0.40	-40.00	143.20	110.73	32.46	4.411			
7,400.00	7,398.95	7,401.05	7,398.95	16.50	16.49	-168.86	-0.40	-40.00	145.01	112.10	32.91	4.406			
7,500.00	7,498.93	7,501.07	7,498.93	16.73	16.72	-169.00	-0.40	-40.00	146.83	113.46	33.36	4.401			
7,600.00	7,598.92	7,601.08	7,598.92	16.95	16.94	-169.14	-0.40	-40.00	148.64	114.83	33.81	4.396			
7,700.00	7,698.90	7,701.10	7,698.90	17.18	17.17	-169.27	-0.40	-40.00	150.46	116.20	34.26	4.391			
7,800.00	7,798.88	7,801.12	7,798.88	17.40	17.39	-169.40	-0.40	-40.00	152.28	117.57	34.71	4.387			
7,900.00	7,898.87	7,901.13	7,898.87	17.63	17.62	-169.53	-0.40	-40.00	154.10	118.94	35.16	4.383			
8,000.00	7,998.85	8,001.15	7,998.85	17.86	17.84	-169.65	-0.40	-40.00	155.92	120.31	35.61	4.378			
8,100.00	8,098.83	8,101.17	8,098.83	18.08	18.07	-169.77	-0.40	-40.00	157.74	121.68	36.06	4.374			
8,200.00	8,198.81	8,201.19	8,198.81	18.31	18.29	-169.89	-0.40	-40.00	159.56	123.05	36.51	4.370			
8,300.00	8,298.80	8,301.20	8,298.80	18.54	18.52	-170.01	-0.40	-40.00	161.38	124.42	36.96	4.366			
8,400.00	8,398.78	8,401.22	8,398.78	18.76	18.74	-170.12	-0.40	-40.00	163.20	125.79	37.41	4.362			
8,500.00	8,498.76	8,501.24	8,498.76	18.99	18.97	-170.23	-0.40	-40.00	165.03	127.17	37.86	4.359			
8,600.00	8,598.75	8,601.25	8,598.75	19.22	19.19	-170.34	-0.40	-40.00	166.85	128.54	38.31	4.355			
8,700.00	8,698.73	8,701.27	8,698.73	19.44	19.42	-170.44	-0.40	-40.00	168.67	129.91	38.76	4.352			
8,800.00	8,798.71	8,801.29	8,798.71	19.67	19.64	-170.55	-0.40	-40.00	170.50	131.29	39.21	4.348			
8,900.00	8,898.69	8,901.31	8,898.69	19.89	19.87	-170.65	-0.40	-40.00	172.32	132.66	39.66	4.345			
9,000.00	8,998.68	9,001.32	8,998.68	20.12	20.09	-170.75	-0.40	-40.00	174.15	134.04	40.11	4.342			
9,100.00	9,098.66	9,101.34	9,098.66	20.35	20.32	-170.84	-0.40	-40.00	175.97	135.42	40.56	4.339			
9,200.00	9,198.64	9,201.36	9,198.64	20.57	20.54	-170.94	-0.40	-40.00	177.80	136.79	41.01	4.336			
9,300.00	9,298.63	9,301.37	9,298.63	20.80	20.77	-171.03	-0.40	-40.00	179.63	138.17	41.46	4.333			
9,400.00	9,398.61	9,401.39	9,398.61	21.03	20.99	-171.12	-0.40	-40.00	181.46	139.55	41.91	4.330			
9,500.00	9,498.59	9,501.41	9,498.59	21.25	21.22	-171.21	-0.40	-40.00	183.28	140.93	42.36	4.327			
9,600.00	9,598.57	9,601.43	9,598.57	21.48	21.44	-171.30	-0.40	-40.00	185.11	142.30	42.81	4.324			
9,700.00	9,698.56	9,701.44	9,698.56	21.71	21.67	-171.38	-0.40	-40.00	186.94	143.68	43.26	4.322			
9,800.00	9,798.54	9,801.46	9,798.54	21.93	21.89	-171.47	-0.40	-40.00	188.77	145.06	43.71	4.319			
9,900.00	9,898.52	9,901.48	9,898.52	22.16	22.11	-171.55	-0.40	-40.00	190.60	146.44	44.16	4.316			
10,000.00	9,998.51	10,001.49	9,998.51	22.38	22.34	-171.63	-0.40	-40.00	192.43	147.82	44.61	4.314			
10,100.00	10,098.49	10,101.51	10,098.49	22.61	22.56	-171.71	-0.40	-40.00	194.26	149.20	45.06	4.311			
10,200.00	10,198.47	10,201.53	10,198.47	22.84	22.79	-171.79	-0.40	-40.00	196.09	150.58	45.51	4.309			
10,300.00	10,298.46	10,301.55	10,298.46	23.06	23.01	-171.87	-0.40	-40.00	197.92	151.97	45.96	4.307			
10,400.00	10,398.44	10,401.56	10,398.44	23.29	23.24	-171.94	-0.40	-40.00	199.75	153.35	46.41	4.304			
10,500.00	10,498.42	10,501.58	10,498.42	23.52	23.46	-172.01	-0.40	-40.00	201.59	154.73	46.86	4.302			
10,600.00	10,598.40	10,601.60	10,598.40	23.74	23.69	-172.09	-0.40	-40.00	203.42	156.11	47.31	4.300			
10,700.00	10,698.39	10,701.61	10,698.39	23.97	23.91	-172.16	-0.40	-40.00	205.25	157.49	47.76	4.298			
10,800.00	10,798.37	10,801.63	10,798.37	24.20	24.14	-172.23	-0.40	-40.00	207.08	158.88	48.21	4.296			
10,900.00	10,898.35	10,901.65	10,898.35	24.42	24.36	-172.30	-0.40	-40.00	208.92	160.26	48.66	4.294			
11,000.00	10,998.34	11,001.67	10,998.34	24.65	24.59	-172.36	-0.40	-40.00	210.75	161.64	49.11	4.292			
11,100.00	11,098.32	11,101.68	11,098.32	24.88	24.81	-172.43	-0.40	-40.00	212.58	163.03	49.56	4.290			
11,200.00	11,198.30	11,201.70	11,198.30	25.10	25.04	-172.49	-0.40	-40.00	214.42	164.41	50.01	4.288			
11,300.00	11,298.28	11,301.72	11,298.28	25.33	25.26	-172.56	-0.40	-40.00	216.25	165.80	50.46	4.286			
11,400.00	11,398.27	11,401.73	11,398.27	25.55	25.49	-172.62	-0.40	-40.00	218.09	167.18	50.91	4.284			
11,500.00	11,498.25	11,501.75	11,498.25	25.78	25.71	-172.68	-0.40	-40.00	219.92	168.57	51.35	4.282			
11,600.00	11,598.23	11,601.77	11,598.23	26.01	25.94	-172.74	-0.40	-40.00	221.76	169.95	51.80	4.281			
11,700.00	11,698.22	11,697.62	11,697.62	26.23	26.15	-172.81	-0.41	-40.00	223.60	171.35	52.24	4.280			
11,800.00	11,798.20	11,777.75	11,777.46	26.46	26.29	-174.04	-6.35	-39.95	230.02	177.44	52.58	4.375			
11,900.00	11,898.18	11,854.57	11,852.52	26.68	26.41	92.02	-22.45	-39.80	245.41	192.55	52.86	4.642			
12,000.00	11,997.42	11,928.66	11,922.25	26.86	26.53	60.11	-47.36	-39.58	264.44	211.37	53.07	4.983			
12,100.00	12,093.21	12,000.00	11,985.81	27.02	26.64	55.26	-79.64	-39.29	283.24	230.00	53.23	5.321			
12,200.00	12,182.65	12,072.68	12,045.94	27.19	26.77	52.79	-120.38	-38.92	300.86	247.45	53.41	5.633			
12,300.00	12,263.02	12,143.22	12,098.90	27.36	26.92	51.61	-166.89	-38.50	316.76	263.14	53.62	5.907			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company: COG OPERATING, LLC
Project: Eddy /Lea County, NM (NAD27) NMEZ
Reference Site: White Falcon 16 Federal Com Pad
Site Error: 0.00 ft
Reference Well: White Falcon 16 Fed Com 21H
Well Error: 0.00 ft
Reference Wellbore: Lateral
Reference Design: Plan #1

Local Co-ordinate Reference: Well White Falcon 16 Fed Com 21H - Slot 21H
TVD Reference: 3247+25 @ 3272.00ft (Latshaw44)
MD Reference: 3247+25 @ 3272.00ft (Latshaw44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: VON_EDM
Offset TVD Reference: Offset Datum

Offset Design White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 11H - Lateral - Plan #1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (ft)	+E-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
12,400.00	12,331.88	12,213.15	12,145.39	27.56	27.10	51.36	-219.08	-38.03	330.65	276.75	53.89	6.135		
12,500.00	12,387.13	12,282.76	12,185.00	27.84	27.32	51.88	-276.27	-37.52	342.42	288.15	54.26	6.310		
12,600.00	12,427.10	12,350.00	12,216.42	28.20	27.56	52.98	-335.67	-36.98	352.17	297.42	54.75	6.432		
12,700.00	12,450.57	12,422.26	12,242.17	28.67	27.89	54.83	-403.13	-36.37	360.09	304.67	55.42	6.497		
12,800.00	12,457.00	12,492.86	12,258.94	29.25	28.25	57.22	-471.66	-35.76	366.55	310.30	56.25	6.516		
12,900.00	12,457.00	12,566.11	12,267.31	29.91	28.67	59.38	-544.38	-35.10	373.33	316.15	57.17	6.530		
13,000.00	12,457.00	12,658.32	12,268.77	30.63	29.28	60.19	-636.57	-34.27	378.73	320.47	58.26	6.501		
13,100.00	12,457.00	12,758.31	12,269.88	31.41	30.03	60.40	-736.55	-33.37	378.79	319.29	59.50	6.366		
13,200.00	12,457.00	12,858.30	12,270.98	32.27	30.88	60.54	-836.53	-32.47	378.26	317.35	60.90	6.211		
13,300.00	12,457.00	12,958.30	12,272.09	33.22	31.80	60.69	-936.51	-31.57	377.72	315.27	62.45	6.048		
13,400.00	12,457.00	13,058.29	12,273.19	34.23	32.81	60.83	-1,036.50	-30.67	377.19	313.05	64.14	5.881		
13,500.00	12,457.00	13,158.28	12,274.30	35.32	33.89	60.98	-1,136.48	-29.77	376.65	310.69	65.96	5.710		
13,600.00	12,457.00	13,258.28	12,275.40	36.46	35.03	61.13	-1,236.46	-28.87	376.13	308.22	67.90	5.539		
13,700.00	12,457.00	13,358.27	12,276.50	37.66	36.23	61.28	-1,336.45	-27.97	375.60	305.64	69.96	5.369		
13,800.00	12,457.00	13,458.26	12,277.61	38.92	37.48	61.43	-1,436.43	-27.07	375.08	302.96	72.12	5.201		
13,900.00	12,457.00	13,558.26	12,278.71	40.21	38.78	61.57	-1,536.41	-26.17	374.56	300.19	74.37	5.036		
14,000.00	12,457.00	13,658.25	12,279.82	41.56	40.13	61.72	-1,636.40	-25.27	374.04	297.32	76.71	4.876		
14,100.00	12,457.00	13,758.25	12,280.92	42.93	41.51	61.87	-1,736.38	-24.37	373.52	294.38	79.14	4.720		
14,200.00	12,457.00	13,858.24	12,282.03	44.35	42.93	62.02	-1,836.37	-23.47	373.01	291.37	81.64	4.569		
14,300.00	12,457.00	13,958.23	12,283.13	45.79	44.38	62.17	-1,936.35	-22.56	372.50	288.29	84.20	4.424		
14,397.10	12,457.57	14,055.33	12,284.21	47.22	45.82	62.24	-2,033.44	-21.69	372.26	285.53	86.73	4.292		
14,400.00	12,457.21	14,058.23	12,284.24	47.27	45.86	62.30	-2,036.34	-21.66	372.08	285.26	86.83	4.285		
14,500.00	12,459.75	14,158.22	12,285.34	48.77	47.37	62.11	-2,136.31	-20.76	372.76	283.39	89.37	4.171		
14,600.00	12,462.79	14,258.20	12,286.45	50.29	48.90	61.84	-2,236.28	-19.86	373.67	281.75	91.92	4.065		
14,700.00	12,465.82	14,358.18	12,287.55	51.84	50.45	61.59	-2,336.26	-18.96	374.59	280.10	94.50	3.964		
14,800.00	12,468.85	14,458.16	12,288.66	53.40	52.02	61.33	-2,436.23	-18.06	375.52	278.42	97.10	3.867		
14,900.00	12,471.88	14,558.14	12,289.76	54.99	53.61	61.07	-2,536.20	-17.16	376.45	276.73	99.72	3.775		
15,000.00	12,474.91	14,658.12	12,290.86	56.59	55.21	60.82	-2,636.17	-16.26	377.40	275.03	102.36	3.687		
15,100.00	12,477.94	14,758.11	12,291.97	58.20	56.83	60.56	-2,736.14	-15.36	378.35	273.32	105.02	3.603		
15,200.00	12,480.97	14,858.09	12,293.07	59.83	58.46	60.31	-2,836.11	-14.46	379.30	271.61	107.69	3.522		
15,300.00	12,484.00	14,958.07	12,294.18	61.47	60.11	60.06	-2,936.08	-13.56	380.27	269.89	110.38	3.445		
15,400.00	12,487.03	15,058.05	12,295.28	63.12	61.77	59.81	-3,036.05	-12.66	381.24	268.17	113.07	3.372		
15,500.00	12,490.07	15,158.03	12,296.39	64.79	63.44	59.56	-3,136.03	-11.76	382.22	266.45	115.77	3.302		
15,600.00	12,493.10	15,258.01	12,297.49	66.46	65.11	59.31	-3,236.00	-10.86	383.20	264.73	118.47	3.235		
15,700.00	12,496.13	15,357.99	12,298.60	68.14	66.80	59.06	-3,335.97	-9.96	384.20	263.02	121.18	3.170		
15,800.00	12,499.16	15,457.98	12,299.70	69.84	68.50	58.82	-3,435.94	-9.06	385.20	261.30	123.89	3.109		
15,900.00	12,502.19	15,557.96	12,300.81	71.53	70.20	58.57	-3,535.91	-8.16	386.20	259.60	126.61	3.050		
16,000.00	12,505.22	15,657.94	12,301.91	73.24	71.91	58.33	-3,635.88	-7.26	387.22	257.89	129.32	2.994		
16,100.00	12,508.25	15,757.92	12,303.02	74.95	73.63	58.09	-3,735.85	-6.36	388.24	256.20	132.04	2.940		
16,200.00	12,511.28	15,857.90	12,304.12	76.67	75.35	57.85	-3,835.82	-5.46	389.27	254.51	134.75	2.889		
16,300.00	12,514.32	15,957.88	12,305.22	78.40	77.08	57.61	-3,935.80	-4.56	390.30	252.83	137.47	2.839		
16,400.00	12,517.35	16,057.86	12,306.33	80.13	78.82	57.37	-4,035.77	-3.66	391.34	251.17	140.18	2.792		
16,500.00	12,520.38	16,157.85	12,307.43	81.87	80.56	57.14	-4,135.74	-2.76	392.39	249.51	142.89	2.746		
16,600.00	12,523.41	16,257.83	12,308.54	83.61	82.31	56.90	-4,235.71	-1.86	393.45	247.86	145.59	2.702		
16,700.00	12,526.44	16,357.81	12,309.64	85.36	84.06	56.67	-4,335.68	-0.96	394.51	246.22	148.29	2.660		
16,800.00	12,529.47	16,457.79	12,310.75	87.11	85.81	56.43	-4,435.65	-0.06	395.58	244.59	150.98	2.620		
16,900.00	12,532.50	16,557.77	12,311.85	88.86	87.57	56.20	-4,535.62	0.84	396.65	242.98	153.67	2.581		
17,000.00	12,535.53	16,657.75	12,312.96	90.62	89.33	55.97	-4,635.59	1.75	397.73	241.38	156.35	2.544		
17,100.00	12,538.56	16,757.73	12,314.06	92.38	91.09	55.74	-4,735.57	2.65	398.82	239.79	159.03	2.508		
17,200.00	12,541.60	16,857.72	12,315.17	94.15	92.86	55.52	-4,835.54	3.55	399.91	238.21	161.70	2.473		
17,300.00	12,544.63	16,957.70	12,316.27	95.92	94.64	55.29	-4,935.51	4.45	401.01	236.65	164.36	2.440		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company: COG OPERATING, LLC

Local Co-ordinate Reference:

Well White Falcon 16 Fed Com 21H - Slot
21H

Project: Eddy /Lea County, NM (NAD27) NMEZ

TVD Reference:

3247+25 @ 3272.00ft (Latshaw44)

Reference Site: White Falcon 16 Federal Com Pad

MD Reference:

3247+25 @ 3272.00ft (Latshaw44)

Site Error: 0.00 ft

North Reference:

Grid

Reference Well: White Falcon 16 Fed Com 21H

Survey Calculation Method:

Minimum Curvature

Well Error: 0.00 ft

Output errors are at

2.00 sigma

Reference Wellbore: Lateral

Database:

VON_EDM

Reference Design: Plan #1

Offset TVD Reference:

Offset Datum

Offset Design White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 11H - Lateral - Plan #1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
17,400.00	12,547.66	17,057.68	12,317.37	97.69	96.41	55.07	-5,035.48	5.35	402.12	235.10	167.02	2.408		
17,500.00	12,550.69	17,157.66	12,318.48	99.46	98.19	54.84	-5,135.45	6.25	403.23	233.56	169.67	2.377		
17,600.00	12,553.72	17,257.64	12,319.58	101.24	99.97	54.62	-5,235.42	7.15	404.35	232.04	172.31	2.347		
17,700.00	12,556.75	17,357.62	12,320.69	103.02	101.75	54.40	-5,335.39	8.05	405.47	230.53	174.94	2.318		
17,800.00	12,559.78	17,457.60	12,321.79	104.80	103.54	54.18	-5,435.37	8.95	406.60	229.04	177.56	2.290		
17,900.00	12,562.81	17,557.59	12,322.90	106.59	105.32	53.96	-5,535.34	9.85	407.74	227.56	180.18	2.263		
18,000.00	12,565.85	17,657.57	12,324.00	108.37	107.11	53.74	-5,635.31	10.75	408.88	226.10	182.79	2.237		
18,100.00	12,568.88	17,757.55	12,325.11	110.16	108.91	53.52	-5,735.28	11.65	410.03	224.65	185.38	2.212		
18,200.00	12,571.91	17,857.53	12,326.21	111.95	110.70	53.31	-5,835.25	12.55	411.18	223.21	187.97	2.187		
18,300.00	12,574.94	17,957.51	12,327.32	113.75	112.49	53.10	-5,935.22	13.45	412.34	221.79	190.55	2.164		
18,400.00	12,577.97	18,059.13	12,328.62	115.54	114.32	52.92	-6,036.83	14.37	413.29	220.07	193.22	2.139		
18,500.00	12,578.78	18,159.13	12,330.37	117.34	116.12	53.00	-6,136.80	15.27	412.84	216.50	196.34	2.103		
18,600.00	12,579.61	18,259.12	12,332.12	119.13	117.92	53.10	-6,236.78	16.18	412.29	212.80	199.50	2.067		
18,700.00	12,580.45	18,359.12	12,333.87	120.93	119.72	53.21	-6,336.76	17.09	411.75	209.08	202.67	2.032		
18,800.00	12,581.28	18,459.11	12,335.62	122.73	121.53	53.31	-6,436.73	18.00	411.20	205.35	205.85	1.998		
18,900.00	12,582.11	18,559.11	12,337.37	124.54	123.33	53.41	-6,536.71	18.90	410.66	201.62	209.04	1.964		
19,000.00	12,582.94	18,659.10	12,339.12	126.34	125.14	53.52	-6,636.68	19.81	410.11	197.88	212.24	1.932		
19,100.00	12,583.77	18,759.10	12,340.87	128.14	126.95	53.62	-6,736.66	20.72	409.57	194.12	215.45	1.901		
19,200.00	12,584.60	18,859.10	12,342.62	129.95	128.76	53.72	-6,836.64	21.63	409.03	190.36	218.67	1.871		
19,300.00	12,585.43	18,959.09	12,344.37	131.76	130.57	53.83	-6,936.61	22.53	408.49	186.60	221.90	1.841		
19,400.00	12,586.26	19,059.09	12,346.12	133.57	132.38	53.93	-7,036.59	23.44	407.95	182.82	225.13	1.812		
19,500.00	12,587.10	19,159.08	12,347.87	135.38	134.19	54.04	-7,136.57	24.35	407.42	179.04	228.38	1.784		
19,600.00	12,587.93	19,259.08	12,349.62	137.19	136.01	54.14	-7,236.54	25.26	406.88	175.24	231.64	1.757		
19,700.00	12,588.76	19,359.08	12,351.37	139.00	137.82	54.25	-7,336.52	26.16	406.35	171.45	234.90	1.730		
19,800.00	12,589.59	19,459.07	12,353.12	140.81	139.64	54.35	-7,436.50	27.07	405.82	167.64	238.18	1.704		
19,900.00	12,590.42	19,559.07	12,354.87	142.63	141.45	54.46	-7,536.47	27.98	405.29	163.82	241.46	1.678		
20,000.00	12,591.25	19,659.06	12,356.62	144.44	143.27	54.57	-7,636.45	28.88	404.76	160.00	244.75	1.654		
20,100.00	12,592.08	19,759.06	12,358.37	146.26	145.09	54.67	-7,736.42	29.79	404.23	156.17	248.06	1.630		
20,200.00	12,592.91	19,859.05	12,360.12	148.07	146.91	54.78	-7,836.40	30.70	403.70	152.34	251.36	1.606		
20,300.00	12,593.75	19,959.05	12,361.87	149.89	148.73	54.89	-7,936.38	31.61	403.18	148.49	254.68	1.583		
20,391.87	12,594.51	20,048.81	12,363.33	151.56	150.36	54.97	-8,026.12	32.42	402.77	145.11	257.66	1.563		
20,400.00	12,594.58	20,056.33	12,363.38	151.71	150.50	54.97	-8,033.64	32.49	402.78	144.88	257.90	1.562		
20,500.00	12,595.41	20,153.25	12,362.91	153.53	152.27	54.82	-8,130.55	33.36	403.53	142.99	260.55	1.549		
20,600.00	12,596.24	20,253.23	12,362.16	155.35	154.09	54.64	-8,230.53	34.27	404.45	141.28	263.17	1.537		
20,700.00	12,597.07	20,353.22	12,361.42	157.17	155.91	54.46	-8,330.51	35.17	405.38	139.59	265.79	1.525		
20,800.00	12,597.90	20,453.21	12,360.67	158.99	157.73	54.28	-8,430.49	36.07	406.30	137.91	268.39	1.514		
20,900.00	12,598.73	20,553.20	12,359.92	160.81	159.55	54.10	-8,530.47	36.97	407.23	136.24	270.99	1.503		
21,000.00	12,599.56	20,653.18	12,359.18	162.64	161.38	53.92	-8,630.46	37.88	408.17	134.59	273.58	1.492 Level 3		
21,100.00	12,600.40	20,753.17	12,358.43	164.46	163.20	53.74	-8,730.44	38.78	409.11	132.95	276.16	1.481 Level 3		
21,200.00	12,601.23	20,853.16	12,357.69	166.28	165.03	53.57	-8,830.42	39.68	410.05	131.32	278.73	1.471 Level 3		
21,300.00	12,602.06	20,953.15	12,356.94	168.11	166.85	53.39	-8,930.40	40.58	411.00	129.71	281.29	1.461 Level 3		
21,400.00	12,602.89	21,053.13	12,356.20	169.93	168.68	53.21	-9,030.38	41.49	411.95	128.11	283.84	1.451 Level 3		
21,500.00	12,603.72	21,153.12	12,355.45	171.76	170.51	53.04	-9,130.36	42.39	412.90	126.52	286.38	1.442 Level 3		
21,600.00	12,604.55	21,253.11	12,354.70	173.59	172.33	52.87	-9,230.34	43.29	413.86	124.95	288.91	1.432 Level 3		
21,700.00	12,605.38	21,353.10	12,353.96	175.41	174.16	52.69	-9,330.32	44.19	414.82	123.39	291.44	1.423 Level 3		
21,800.00	12,606.22	21,453.08	12,353.21	177.24	175.99	52.52	-9,430.30	45.09	415.79	121.84	293.95	1.414 Level 3		
21,900.00	12,607.05	21,553.07	12,352.47	179.07	177.82	52.35	-9,530.28	46.00	416.76	120.30	296.45	1.406 Level 3		
22,000.00	12,607.88	21,653.06	12,351.72	180.90	179.65	52.18	-9,630.26	46.90	417.73	118.78	298.95	1.397 Level 3		
22,100.00	12,608.71	21,753.05	12,350.97	182.73	181.48	52.01	-9,730.24	47.80	418.71	117.27	301.44	1.389 Level 3		
22,200.00	12,609.54	21,853.04	12,350.23	184.55	183.31	51.84	-9,830.22	48.70	419.69	115.78	303.91	1.381 Level 3		
22,300.00	12,610.37	21,953.02	12,349.48	186.38	185.14	51.67	-9,930.20	49.61	420.68	114.29	306.38	1.373 Level 3		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company: COG OPERATING, LLC
Project: Eddy /Lea County, NM (NAD27) NMEZ
Reference Site: White Falcon 16 Federal Com Pad
Site Error: 0.00 ft
Reference Well: White Falcon 16 Fed Com 21H
Well Error: 0.00 ft
Reference Wellbore: Lateral
Reference Design: Plan #1

Local Co-ordinate Reference: Well White Falcon 16 Fed Com 21H - Slot 21H
TVD Reference: 3247+25 @ 3272.00ft (Latshaw44)
MD Reference: 3247+25 @ 3272.00ft (Latshaw44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: VON_EDM
Offset TVD Reference: Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Highside Tooface (")	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
22,400.00	12,611.20	22,053.01	12,348.74	188.21	186.97	51.51	-10,030.19	50.51	421.66	112.82	308.84	1.365 Level 3		
22,495.94	12,612.00	22,148.94	12,348.02	189.97	188.72	51.35	-10,126.11	51.37	422.61	111.43	311.19	1.358 Level 3, SF		



Anticollision Report

Company: COG OPERATING, LLC
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Reference Site: White Falcon 16 Federal Com Pad
Site Error: 0.00 ft
Reference Well: White Falcon 16 Fed Com 21H
Well Error: 0.00 ft
Reference Wellbore: Lateral
Reference Design: Plan #1

Local Co-ordinate Reference: Well White Falcon 16 Fed Com 21H - Slot 21H
TVD Reference: 3247+25 @ 3272.00ft (Latshaw44)
MD Reference: 3247+25 @ 3272.00ft (Latshaw44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: VON_EDM
Offset TVD Reference: Offset Datum

Offset Design White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 22H - Lateral - Plan #1													Offset Site Error: 0.00 ft
Survey Program: 0-MWD													Offset Well Error: 0.00 ft
Reference		Offset		Semi Major Axis			Distance				Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
0.00	0.00	0.00	0.00	0.00	0.00	-90.50	-0.70	-79.90	79.90				
100.00	100.00	100.00	100.00	0.08	0.08	-90.50	-0.70	-79.90	79.90	79.73	0.17	473.992	
200.00	200.00	200.00	200.00	0.31	0.31	-90.50	-0.70	-79.90	79.90	79.28	0.62	129.271	
300.00	300.00	300.00	300.00	0.53	0.53	-90.50	-0.70	-79.90	79.90	78.84	1.07	74.841	
400.00	400.00	400.00	400.00	0.76	0.76	-90.50	-0.70	-79.90	79.90	78.39	1.52	52.666	
500.00	500.00	500.00	500.00	0.98	0.98	-90.50	-0.70	-79.90	79.90	77.94	1.97	40.628	
600.00	600.00	600.00	600.00	1.21	1.21	-90.50	-0.70	-79.90	79.90	77.49	2.42	33.069	
700.00	700.00	700.00	700.00	1.43	1.43	-90.50	-0.70	-79.90	79.90	77.04	2.87	27.882	
800.00	800.00	800.00	800.00	1.66	1.66	-90.50	-0.70	-79.90	79.90	76.59	3.32	24.101	
900.00	900.00	900.00	900.00	1.88	1.88	-90.50	-0.70	-79.90	79.90	76.14	3.76	21.224	
1,000.00	1,000.00	1,000.00	1,000.00	2.11	2.11	-90.50	-0.70	-79.90	79.90	75.69	4.21	18.960	
1,100.00	1,100.00	1,100.00	1,100.00	2.33	2.33	-90.50	-0.70	-79.90	79.90	75.24	4.66	17.132	
1,200.00	1,200.00	1,200.00	1,200.00	2.56	2.56	-90.50	-0.70	-79.90	79.90	74.79	5.11	15.626	CC, ES
1,300.00	1,299.99	1,312.45	1,298.95	2.78	2.80	-135.49	-0.10	-80.50	81.13	75.55	5.58	14.535	
1,400.00	1,399.98	1,401.08	1,398.89	3.00	3.00	-135.48	1.21	-81.81	83.74	77.75	5.99	13.976	
1,500.00	1,499.96	1,501.12	1,498.84	3.21	3.22	-135.46	2.51	-83.11	86.35	79.92	6.43	13.434	
1,600.00	1,599.94	1,601.15	1,598.79	3.43	3.44	-135.45	3.81	-84.41	88.96	82.10	6.87	12.957	
1,700.00	1,699.93	1,701.19	1,698.74	3.66	3.66	-135.44	5.12	-85.72	91.58	84.27	7.31	12.535	
1,800.00	1,799.91	1,801.22	1,798.69	3.88	3.88	-135.43	6.42	-87.02	94.19	86.44	7.75	12.158	
1,900.00	1,899.89	1,901.25	1,898.64	4.10	4.10	-135.42	7.73	-88.33	96.80	88.61	8.19	11.821	
2,000.00	1,999.88	2,001.29	1,998.59	4.32	4.33	-135.41	9.03	-89.63	99.41	90.78	8.63	11.517	
2,100.00	2,099.86	2,101.32	2,098.54	4.54	4.55	-135.40	10.33	-90.93	102.02	92.95	9.08	11.241	
2,200.00	2,199.84	2,201.36	2,198.49	4.77	4.77	-135.40	11.64	-92.24	104.64	95.12	9.52	10.991	
2,300.00	2,299.82	2,301.39	2,298.43	4.99	5.00	-135.39	12.94	-93.54	107.25	97.28	9.97	10.762	
2,400.00	2,399.81	2,401.42	2,398.38	5.21	5.22	-135.38	14.24	-94.84	109.86	99.45	10.41	10.552	
2,500.00	2,499.79	2,501.46	2,498.33	5.44	5.44	-135.37	15.55	-96.15	112.47	101.62	10.86	10.359	
2,600.00	2,599.77	2,601.49	2,598.28	5.66	5.67	-135.37	16.85	-97.45	115.09	103.78	11.30	10.181	
2,700.00	2,699.76	2,701.53	2,698.23	5.89	5.89	-135.36	18.16	-98.76	117.70	105.95	11.75	10.016	
2,800.00	2,799.74	2,801.56	2,798.18	6.11	6.12	-135.35	19.46	-100.06	120.31	108.11	12.20	9.863	
2,900.00	2,899.72	2,901.60	2,898.13	6.34	6.34	-135.35	20.76	-101.36	122.92	110.28	12.65	9.721	
3,000.00	2,999.70	3,001.63	2,998.08	6.56	6.57	-135.34	22.07	-102.67	125.53	112.44	13.09	9.588	
3,100.00	3,099.69	3,101.66	3,098.03	6.79	6.79	-135.34	23.37	-103.97	128.15	114.61	13.54	9.464	
3,200.00	3,199.67	3,201.70	3,197.97	7.01	7.02	-135.33	24.68	-105.28	130.76	116.77	13.99	9.347	
3,300.00	3,299.65	3,301.73	3,297.92	7.24	7.24	-135.33	25.98	-106.58	133.37	118.93	14.44	9.238	
3,400.00	3,399.64	3,401.77	3,397.87	7.46	7.47	-135.32	27.28	-107.88	135.98	121.10	14.89	9.135	
3,500.00	3,499.62	3,501.80	3,497.82	7.69	7.69	-135.32	28.59	-109.19	138.60	123.26	15.33	9.038	
3,600.00	3,599.60	3,601.83	3,597.77	7.91	7.92	-135.31	29.89	-110.49	141.21	125.42	15.78	8.947	
3,700.00	3,699.58	3,701.87	3,697.72	8.14	8.15	-135.31	31.20	-111.80	143.82	127.59	16.23	8.860	
3,800.00	3,799.57	3,801.90	3,797.67	8.36	8.37	-135.31	32.50	-113.10	146.43	129.75	16.68	8.778	
3,900.00	3,899.55	3,901.94	3,897.62	8.59	8.60	-135.30	33.80	-114.40	149.04	131.91	17.13	8.701	
4,000.00	3,999.53	4,001.97	3,997.57	8.81	8.82	-135.30	35.11	-115.71	151.66	134.08	17.58	8.627	
4,100.00	4,099.52	4,102.00	4,097.51	9.04	9.05	-135.29	36.41	-117.01	154.27	136.24	18.03	8.557	
4,200.00	4,199.50	4,202.04	4,197.46	9.26	9.27	-135.29	37.72	-118.32	156.88	138.40	18.48	8.490	
4,300.00	4,299.48	4,302.07	4,297.41	9.49	9.50	-135.29	39.02	-119.62	159.49	140.57	18.93	8.426	
4,400.00	4,399.46	4,402.11	4,397.36	9.72	9.73	-135.28	40.32	-120.92	162.11	142.73	19.38	8.366	
4,500.00	4,499.45	4,502.14	4,497.31	9.94	9.95	-135.28	41.63	-122.23	164.72	144.89	19.83	8.308	
4,600.00	4,599.43	4,602.18	4,597.26	10.17	10.18	-135.28	42.93	-123.53	167.33	147.05	20.28	8.252	
4,700.00	4,699.41	4,702.21	4,697.21	10.39	10.40	-135.27	44.24	-124.84	169.94	149.22	20.73	8.199	
4,800.00	4,799.40	4,802.24	4,797.16	10.62	10.63	-135.27	45.54	-126.14	172.56	151.38	21.18	8.149	
4,900.00	4,899.38	4,902.28	4,897.11	10.85	10.86	-135.27	46.84	-127.44	175.17	153.54	21.63	8.100	
5,000.00	4,999.36	5,002.31	4,997.05	11.07	11.08	-135.26	48.15	-128.75	177.78	155.70	22.08	8.053	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company: COG OPERATING, LLC
Project: Eddy /Lea County, NM (NAD27) NMEZ
Reference Site: White Falcon 16 Federal Com Pad
Site Error: 0.00 ft
Reference Well: White Falcon 16 Fed Com 21H
Well Error: 0.00 ft
Reference Wellbore: Lateral
Reference Design: Plan #1

Local Co-ordinate Reference: Well White Falcon 16 Fed Com 21H - Slot 21H
TVD Reference: 3247+25 @ 3272.00ft (Latshaw44)
MD Reference: 3247+25 @ 3272.00ft (Latshaw44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: VON_EDM
Offset TVD Reference: Offset Datum

Offset Design White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 22H - Lateral - Plan #1														Offset Site Error: 0.00 ft	
Survey Program: 0-MWD														Offset Well Error: 0.00 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore +N/-S (ft)	Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
5,100.00	5,099.34	5,102.35	5,097.00	11.30	11.31	-135.26	49.45	-130.05	180.39	157.87	22.53	8.008			
5,200.00	5,199.33	5,202.38	5,196.95	11.52	11.54	-135.26	50.76	-131.36	183.00	160.03	22.98	7.965			
5,300.00	5,299.31	5,302.41	5,296.90	11.75	11.76	-135.26	52.06	-132.66	185.62	162.19	23.43	7.923			
5,400.00	5,399.29	5,402.45	5,396.85	11.98	11.99	-135.25	53.36	-133.96	188.23	164.35	23.88	7.884			
5,500.00	5,499.28	5,502.48	5,496.80	12.20	12.21	-135.25	54.67	-135.27	190.84	166.51	24.33	7.845			
5,600.00	5,599.26	5,602.52	5,596.75	12.43	12.44	-135.25	55.97	-136.57	193.45	168.68	24.78	7.808			
5,700.00	5,699.24	5,702.55	5,696.70	12.65	12.67	-135.25	57.28	-137.88	196.07	170.84	25.23	7.772			
5,800.00	5,799.23	5,802.58	5,796.65	12.88	12.89	-135.24	58.58	-139.18	198.68	173.00	25.68	7.738			
5,900.00	5,899.21	5,902.62	5,896.59	13.11	13.12	-135.24	59.88	-140.48	201.29	175.16	26.13	7.704			
6,000.00	5,999.19	6,002.65	5,996.54	13.33	13.35	-135.24	61.19	-141.79	203.90	177.33	26.58	7.672			
6,100.00	6,099.17	6,102.69	6,096.49	13.56	13.57	-135.24	62.49	-143.09	206.51	179.49	27.03	7.641			
6,200.00	6,199.16	6,202.72	6,196.44	13.78	13.80	-135.24	63.80	-144.40	209.13	181.65	27.48	7.611			
6,300.00	6,299.14	6,302.76	6,296.39	14.01	14.03	-135.23	65.10	-145.70	211.74	183.81	27.93	7.581			
6,400.00	6,399.12	6,402.79	6,396.34	14.24	14.25	-135.23	66.40	-147.00	214.35	185.97	28.38	7.553			
6,500.00	6,499.11	6,502.82	6,496.29	14.46	14.48	-135.23	67.71	-148.31	216.96	188.13	28.83	7.526			
6,600.00	6,599.09	6,602.86	6,596.24	14.69	14.70	-135.23	69.01	-149.61	219.58	190.30	29.28	7.499			
6,700.00	6,699.07	6,702.89	6,696.18	14.92	14.93	-135.23	70.32	-150.92	222.19	192.46	29.73	7.473			
6,800.00	6,799.05	6,802.93	6,796.13	15.14	15.16	-135.23	71.62	-152.22	224.80	194.62	30.18	7.448			
6,900.00	6,899.04	6,902.96	6,896.08	15.37	15.38	-135.22	72.92	-153.52	227.41	196.78	30.63	7.424			
7,000.00	6,999.02	7,002.99	6,996.03	15.59	15.61	-135.22	74.23	-154.83	230.03	198.94	31.08	7.401			
7,100.00	7,099.00	7,103.03	7,095.98	15.82	15.84	-135.22	75.53	-156.13	232.64	201.11	31.53	7.378			
7,200.00	7,199.99	7,196.94	7,195.93	16.05	16.05	-135.22	76.84	-157.44	235.25	203.28	31.97	7.359			
7,300.00	7,299.97	7,303.10	7,295.88	16.27	16.29	-135.22	78.14	-158.74	237.86	205.43	32.43	7.334			
7,400.00	7,399.95	7,403.13	7,395.83	16.50	16.52	-135.22	79.44	-160.04	240.47	207.59	32.88	7.313			
7,500.00	7,499.93	7,503.17	7,495.78	16.73	16.74	-135.21	80.75	-161.35	243.09	209.75	33.33	7.292			
7,600.00	7,599.92	7,603.20	7,595.72	16.95	16.97	-135.21	82.05	-162.65	245.70	211.91	33.79	7.272			
7,700.00	7,699.90	7,703.23	7,695.67	17.18	17.20	-135.21	83.35	-163.95	248.31	214.08	34.24	7.253			
7,800.00	7,799.88	7,803.27	7,795.62	17.40	17.42	-135.21	84.66	-165.26	250.92	216.24	34.69	7.234			
7,900.00	7,899.87	7,903.30	7,895.57	17.63	17.65	-135.21	85.96	-166.56	253.54	218.40	35.14	7.216			
8,000.00	7,999.85	8,003.34	7,995.52	17.86	17.88	-135.21	87.27	-167.87	256.15	220.56	35.59	7.198			
8,100.00	8,099.83	8,103.37	8,095.47	18.08	18.10	-135.21	88.57	-169.17	258.76	222.72	36.04	7.180			
8,200.00	8,199.81	8,203.40	8,195.42	18.31	18.33	-135.20	89.87	-170.47	261.37	224.88	36.49	7.163			
8,300.00	8,299.80	8,303.44	8,295.37	18.54	18.56	-135.20	91.18	-171.78	263.99	227.04	36.94	7.146			
8,400.00	8,399.78	8,396.53	8,395.32	18.76	18.77	-135.20	92.48	-173.08	266.60	229.22	37.38	7.133			
8,500.00	8,499.76	8,503.51	8,495.26	18.99	19.01	-135.20	93.79	-174.39	269.21	231.37	37.84	7.114			
8,600.00	8,599.75	8,603.54	8,595.21	19.22	19.24	-135.20	95.09	-175.69	271.82	233.53	38.29	7.099			
8,700.00	8,699.73	8,703.57	8,695.16	19.44	19.46	-135.20	96.39	-176.99	274.43	235.69	38.74	7.083			
8,800.00	8,799.71	8,803.61	8,795.11	19.67	19.69	-135.20	97.70	-178.30	277.05	237.85	39.19	7.069			
8,900.00	8,899.69	8,903.64	8,895.06	19.89	19.92	-135.20	99.00	-179.60	279.66	240.01	39.64	7.054			
9,000.00	8,999.68	9,003.68	8,995.01	20.12	20.14	-135.20	100.31	-180.91	282.27	242.18	40.10	7.040			
9,100.00	9,099.66	9,096.29	9,094.96	20.35	20.35	-135.19	101.61	-182.21	284.88	244.35	40.53	7.029			
9,200.00	9,199.64	9,203.75	9,194.91	20.57	20.59	-135.19	102.91	-183.51	287.50	246.50	41.00	7.013			
9,300.00	9,299.63	9,303.78	9,294.86	20.80	20.82	-135.19	104.22	-184.82	290.11	248.66	41.45	6.999			
9,400.00	9,399.61	9,403.81	9,394.80	21.03	21.05	-135.19	105.52	-186.12	292.72	250.82	41.90	6.986			
9,500.00	9,499.59	9,503.85	9,494.75	21.25	21.27	-135.19	106.83	-187.43	295.33	252.98	42.35	6.974			
9,600.00	9,599.57	9,603.88	9,594.70	21.48	21.50	-135.19	108.13	-188.73	297.94	255.14	42.80	6.961			
9,700.00	9,699.56	9,703.92	9,694.65	21.71	21.73	-135.19	109.43	-190.03	300.56	257.31	43.25	6.949			
9,800.00	9,799.54	9,803.95	9,794.60	21.93	21.95	-135.19	110.74	-191.34	303.17	259.47	43.70	6.937			
9,900.00	9,899.52	9,903.98	9,894.55	22.16	22.18	-135.19	112.04	-192.64	305.78	261.63	44.15	6.925			
10,000.00	9,999.51	10,004.02	9,994.50	22.38	22.41	-135.18	113.35	-193.95	308.39	263.79	44.60	6.914			
10,100.00	10,099.49	10,104.05	10,094.45	22.61	22.63	-135.18	114.65	-195.25	311.01	265.95	45.06	6.903			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company: COG OPERATING, LLC
Project: Eddy /Lea County, NM (NAD27) NMEZ
Reference Site: White Falcon 16 Federal Com Pad
Site Error: 0.00 ft
Reference Well: White Falcon 16 Fed Com 21H
Well Error: 0.00 ft
Reference Wellbore: Lateral
Reference Design: Plan #1

Local Co-ordinate Reference: Well White Falcon 16 Fed Com 21H - Slot 21H
TVD Reference: 3247+25 @ 3272.00ft (Latshaw44)
MD Reference: 3247+25 @ 3272.00ft (Latshaw44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: VON_EDM
Offset TVD Reference: Offset Datum

Offset Design White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 22H - Lateral - Plan #1													Offset Site Error: 0.00 ft
Survey Program: 0-MWD													Offset Well Error: 0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (ft)	+E-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
10,200.00	10,198.47	10,204.09	10,194.40	22.84	22.86	-135.18	115.95	-196.55	313.62	268.11	45.51	6.892	
10,300.00	10,298.46	10,304.12	10,294.34	23.06	23.09	-135.18	117.26	-197.86	316.23	270.27	45.96	6.881	
10,400.00	10,398.44	10,404.15	10,394.29	23.29	23.31	-135.18	118.56	-199.16	318.84	272.44	46.41	6.870	
10,500.00	10,498.42	10,504.19	10,494.24	23.52	23.54	-135.18	119.87	-200.47	321.46	274.60	46.86	6.860	
10,600.00	10,598.40	10,604.22	10,594.19	23.74	23.77	-135.18	121.17	-201.77	324.07	276.76	47.31	6.850	
10,700.00	10,698.39	10,704.26	10,694.14	23.97	23.99	-135.18	122.47	-203.07	326.68	278.92	47.76	6.840	
10,800.00	10,798.37	10,804.29	10,794.09	24.20	24.22	-135.18	123.78	-204.38	329.29	281.08	48.21	6.830	
10,900.00	10,898.35	10,904.33	10,894.04	24.42	24.45	-135.18	125.08	-205.68	331.90	283.24	48.66	6.821	
11,000.00	10,998.34	11,004.36	10,993.99	24.65	24.67	-135.18	126.39	-206.99	334.52	285.40	49.11	6.811	
11,100.00	11,098.32	11,104.39	11,093.93	24.88	24.90	-135.18	127.69	-208.29	337.13	287.56	49.56	6.802	
11,200.00	11,198.30	11,204.43	11,193.88	25.10	25.13	-135.17	128.99	-209.59	339.74	289.73	50.02	6.793	
11,300.00	11,298.28	11,304.46	11,293.83	25.33	25.35	-135.17	130.30	-210.90	342.35	291.89	50.47	6.784	
11,400.00	11,398.27	11,404.50	11,393.78	25.55	25.58	-135.17	131.60	-212.20	344.97	294.05	50.92	6.775	
11,500.00	11,498.25	11,504.53	11,493.73	25.78	25.81	-135.17	132.91	-213.51	347.58	296.21	51.37	6.766	
11,600.00	11,598.23	11,604.56	11,593.68	26.01	26.03	-135.17	134.21	-214.81	350.19	298.37	51.82	6.758	
11,700.00	11,698.22	11,704.60	11,693.63	26.23	26.26	-135.17	135.51	-216.11	352.80	300.53	52.27	6.750	
11,800.00	11,798.20	11,804.63	11,793.58	26.46	26.49	-135.17	136.82	-217.42	355.42	302.69	52.72	6.741	
11,900.00	11,898.18	11,899.33	11,893.52	26.68	26.69	134.19	138.12	-218.72	358.10	304.95	53.15	6.738	
12,000.00	11,997.42	11,984.87	11,982.81	26.86	26.87	106.46	133.29	-221.08	364.59	311.11	53.48	6.817	
12,100.00	12,093.21	12,073.69	12,069.52	27.02	27.01	104.09	115.11	-226.07	377.60	323.86	53.75	7.026	
12,200.00	12,182.65	12,162.18	12,151.98	27.19	27.15	102.60	84.15	-233.55	396.76	342.78	53.98	7.350	
12,300.00	12,263.02	12,250.23	12,228.20	27.36	27.29	101.07	41.34	-243.30	421.50	367.28	54.23	7.773	
12,400.00	12,331.88	12,337.92	12,296.55	27.56	27.44	99.31	-12.19	-255.06	451.11	396.60	54.51	8.275	
12,500.00	12,387.13	12,425.52	12,355.69	27.84	27.60	97.30	-75.26	-268.59	484.75	429.87	54.88	8.832	
12,600.00	12,427.10	12,513.54	12,404.53	28.20	27.82	95.09	-146.82	-283.65	521.51	466.15	55.37	9.419	
12,700.00	12,450.57	12,602.68	12,441.99	28.67	28.10	92.77	-225.92	-300.04	560.41	504.42	55.99	10.010	
12,800.00	12,457.00	12,693.94	12,466.90	29.25	28.47	91.03	-311.84	-317.60	600.34	543.57	56.77	10.575	
12,900.00	12,457.00	12,791.32	12,477.79	29.91	28.95	91.97	-406.59	-336.70	635.71	577.95	57.76	11.006	
13,000.00	12,457.00	12,976.37	12,478.24	30.63	30.08	91.86	-589.78	-361.72	657.72	598.01	59.71	11.016	
13,100.00	12,457.00	13,124.12	12,478.45	31.41	31.15	91.86	-737.47	-363.73	660.04	598.43	61.61	10.712	
13,200.00	12,457.00	13,224.12	12,478.59	32.27	31.98	91.87	-837.46	-362.82	660.05	596.72	63.33	10.422	
13,300.00	12,457.00	13,324.12	12,478.73	33.22	32.89	91.89	-937.46	-361.91	660.05	594.84	65.21	10.122	
13,400.00	12,457.00	13,424.12	12,478.87	34.23	33.88	91.90	-1,037.46	-361.01	660.05	592.81	67.24	9.816	
13,500.00	12,457.00	13,524.12	12,479.01	35.32	34.94	91.91	-1,137.45	-360.10	660.06	590.65	69.41	9.509	
13,600.00	12,457.00	13,624.12	12,479.15	36.46	36.06	91.92	-1,237.45	-359.19	660.06	588.36	71.71	9.205	
13,700.00	12,457.00	13,724.12	12,479.29	37.66	37.24	91.93	-1,337.44	-358.28	660.07	585.95	74.12	8.906	
13,800.00	12,457.00	13,824.12	12,479.43	38.92	38.48	91.95	-1,437.44	-357.38	660.07	583.45	76.63	8.614	
13,900.00	12,457.00	13,924.12	12,479.57	40.21	39.76	91.96	-1,537.43	-356.47	660.08	580.85	79.23	8.331	
14,000.00	12,457.00	14,024.12	12,479.71	41.56	41.08	91.97	-1,637.43	-355.56	660.08	578.16	81.92	8.057	
14,100.00	12,457.00	14,124.12	12,479.85	42.93	42.45	91.98	-1,737.43	-354.65	660.09	575.40	84.69	7.794	
14,200.00	12,457.00	14,224.12	12,479.99	44.35	43.85	92.00	-1,837.42	-353.75	660.09	572.57	87.52	7.542	
14,300.00	12,457.00	14,324.12	12,480.12	45.79	45.28	92.01	-1,937.42	-352.84	660.10	569.68	90.42	7.300	
14,400.00	12,457.21	14,424.12	12,480.26	47.27	46.74	92.00	-2,037.41	-351.93	660.09	566.72	93.37	7.069	
14,500.00	12,459.75	14,524.08	12,480.40	48.77	48.23	91.79	-2,137.38	-351.02	660.02	563.63	96.39	6.847	
14,600.00	12,462.79	14,624.04	12,480.54	50.29	49.74	91.54	-2,237.33	-350.12	659.93	560.48	99.45	6.636	
14,700.00	12,465.82	14,724.00	12,480.68	51.84	51.28	91.29	-2,337.29	-349.21	659.86	557.30	102.56	6.434	
14,800.00	12,468.85	14,823.96	12,480.82	53.40	52.83	91.04	-2,437.24	-348.30	659.80	554.10	105.70	6.242	
14,900.00	12,471.88	14,923.92	12,480.96	54.99	54.41	90.79	-2,537.19	-347.39	659.75	550.88	108.88	6.060	
15,000.00	12,474.91	15,023.88	12,481.10	56.59	56.00	90.54	-2,637.15	-346.49	659.72	547.64	112.09	5.886	
15,100.00	12,477.94	15,123.83	12,481.24	58.20	57.61	90.29	-2,737.10	-345.58	659.70	544.38	115.32	5.720	
15,200.00	12,480.97	15,223.79	12,481.38	59.83	59.23	90.04	-2,837.06	-344.67	659.69	541.11	118.59	5.563	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company: COG OPERATING, LLC
Project: Eddy /Lea County, NM (NAD27) NMEZ
Reference Site: White Falcon 16 Federal Com Pad
Site Error: 0.00 ft
Reference Well: White Falcon 16 Fed Com 21H
Well Error: 0.00 ft
Reference Wellbore: Lateral
Reference Design: Plan #1

Local Co-ordinate Reference: Well White Falcon 16 Fed Com 21H - Slot 21H
TVD Reference: 3247+25 @ 3272.00ft (Latshaw44)
MD Reference: 3247+25 @ 3272.00ft (Latshaw44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: VON_EDM
Offset TVD Reference: Offset Datum

Offset Design White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 22H - Lateral - Plan #1														Offset Site Error:	0.00 ft
Survey Program: O-MWD														Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)							
15,214.13	12,481.40	15,237.92	12,481.40	60.06	59.46	90.00	-2,851.18	-344.55	659.69	540.64	119.05	5.541			
15,300.00	12,484.00	15,323.75	12,481.52	61.47	60.86	89.78	-2,937.01	-343.77	659.70	537.82	121.87	5.413			
15,400.00	12,487.03	15,423.71	12,481.66	63.12	62.51	89.53	-3,036.96	-342.86	659.71	534.53	125.18	5.270			
15,500.00	12,490.07	15,523.67	12,481.80	64.79	64.16	89.28	-3,136.92	-341.95	659.74	531.23	128.51	5.134			
15,600.00	12,493.10	15,623.62	12,481.94	66.46	65.83	89.03	-3,236.87	-341.04	659.79	527.93	131.86	5.004			
15,700.00	12,496.13	15,723.58	12,482.08	68.14	67.51	88.78	-3,336.82	-340.14	659.84	524.62	135.22	4.880			
15,800.00	12,499.16	15,823.54	12,482.22	69.84	69.19	88.53	-3,436.78	-339.23	659.91	521.32	138.59	4.761			
15,900.00	12,502.19	15,923.50	12,482.36	71.53	70.89	88.28	-3,536.73	-338.32	659.99	518.01	141.98	4.648			
16,000.00	12,505.22	16,023.46	12,482.50	73.24	72.59	88.03	-3,636.69	-337.42	660.08	514.70	145.38	4.540			
16,100.00	12,508.25	16,123.42	12,482.64	74.95	74.30	87.78	-3,736.64	-336.51	660.19	511.39	148.80	4.437			
16,200.00	12,511.28	16,223.37	12,482.78	76.67	76.01	87.53	-3,836.59	-335.60	660.31	508.09	152.22	4.338			
16,300.00	12,514.32	16,323.33	12,482.92	78.40	77.73	87.28	-3,936.55	-334.69	660.44	504.79	155.65	4.243			
16,400.00	12,517.35	16,423.69	12,483.25	80.13	79.47	87.04	-4,036.90	-333.78	660.57	501.48	159.09	4.152			
16,500.00	12,520.38	16,524.48	12,486.14	81.87	81.22	87.03	-4,137.64	-332.87	660.58	498.00	162.58	4.063			
16,600.00	12,523.41	16,624.48	12,489.75	83.61	82.96	87.08	-4,237.57	-331.96	660.55	494.48	166.07	3.978			
16,700.00	12,526.44	16,724.48	12,493.36	85.36	84.70	87.13	-4,337.50	-331.06	660.52	490.95	169.57	3.895			
16,800.00	12,529.47	16,824.47	12,496.98	87.11	86.45	87.18	-4,437.43	-330.15	660.49	487.42	173.08	3.816			
16,900.00	12,532.50	16,924.47	12,500.59	88.86	88.21	87.23	-4,537.36	-329.24	660.46	483.87	176.59	3.740			
17,000.00	12,535.53	17,024.47	12,504.20	90.62	89.96	87.28	-4,637.29	-328.33	660.44	480.32	180.12	3.667			
17,100.00	12,538.56	17,124.47	12,507.81	92.38	91.72	87.33	-4,737.22	-327.43	660.41	476.76	183.65	3.596			
17,200.00	12,541.60	17,224.47	12,511.42	94.15	93.49	87.38	-4,837.14	-326.52	660.38	473.19	187.19	3.528			
17,300.00	12,544.63	17,324.47	12,515.04	95.92	95.26	87.43	-4,937.07	-325.61	660.36	469.62	190.73	3.462			
17,400.00	12,547.66	17,424.46	12,518.65	97.69	97.03	87.48	-5,037.00	-324.71	660.33	466.05	194.28	3.399			
17,500.00	12,550.69	17,524.46	12,522.26	99.46	98.80	87.53	-5,136.93	-323.80	660.31	462.47	197.84	3.338			
17,600.00	12,553.72	17,624.46	12,525.87	101.24	100.58	87.58	-5,236.86	-322.89	660.28	458.88	201.40	3.278			
17,700.00	12,556.75	17,724.46	12,529.48	103.02	102.36	87.63	-5,336.79	-321.99	660.26	455.29	204.97	3.221			
17,800.00	12,559.78	17,824.46	12,533.10	104.80	104.14	87.68	-5,436.72	-321.08	660.23	451.69	208.54	3.166			
17,900.00	12,562.81	17,924.46	12,536.71	106.59	105.92	87.73	-5,536.65	-320.17	660.21	448.09	212.12	3.112			
18,000.00	12,565.85	18,024.45	12,540.32	108.37	107.71	87.78	-5,636.58	-319.26	660.19	444.49	215.70	3.061			
18,100.00	12,568.88	18,124.45	12,543.93	110.16	109.50	87.83	-5,736.51	-318.36	660.16	440.88	219.28	3.011			
18,200.00	12,571.91	18,224.45	12,547.54	111.95	111.29	87.88	-5,836.43	-317.45	660.14	437.27	222.87	2.962			
18,300.00	12,574.94	18,324.45	12,551.16	113.75	113.08	87.93	-5,936.36	-316.54	660.12	433.65	226.47	2.915			
18,400.00	12,577.97	18,424.45	12,554.77	115.54	114.88	88.00	-6,036.29	-315.64	660.09	430.03	230.07	2.869			
18,500.00	12,578.78	18,524.41	12,558.38	117.34	116.67	88.23	-6,136.19	-314.73	660.01	426.33	233.68	2.824			
18,600.00	12,579.61	18,624.37	12,561.99	119.13	118.47	88.47	-6,236.08	-313.82	659.94	422.63	237.30	2.781			
18,700.00	12,580.45	18,724.33	12,565.60	120.93	120.27	88.71	-6,335.97	-312.92	659.87	418.95	240.92	2.739			
18,800.00	12,581.28	18,824.29	12,569.21	122.73	122.07	88.95	-6,435.86	-312.01	659.82	415.28	244.55	2.698			
18,900.00	12,582.11	18,924.26	12,572.82	124.54	123.87	89.19	-6,535.75	-311.10	659.78	411.62	248.17	2.659			
19,000.00	12,582.94	19,024.22	12,576.43	126.34	125.68	89.43	-6,635.65	-310.20	659.75	407.97	251.79	2.620			
19,100.00	12,583.77	19,124.18	12,580.04	128.14	127.48	89.68	-6,735.54	-309.29	659.74	404.33	255.41	2.583			
19,190.81	12,584.53	19,214.95	12,583.32	129.79	129.12	89.90	-6,826.25	-308.47	659.73	401.04	258.69	2.550			
19,200.00	12,584.60	19,224.14	12,583.65	129.95	129.29	89.92	-6,835.43	-308.38	659.73	400.71	259.03	2.547			
19,300.00	12,585.43	19,324.10	12,587.26	131.76	131.09	90.16	-6,935.32	-307.48	659.74	397.10	262.64	2.512			
19,400.00	12,586.26	19,424.06	12,590.88	133.57	132.90	90.40	-7,035.21	-306.57	659.76	393.50	266.26	2.478			
19,500.00	12,587.10	19,524.02	12,594.49	135.38	134.71	90.64	-7,135.11	-305.66	659.79	389.92	269.87	2.445			
19,600.00	12,587.93	19,623.99	12,598.10	137.19	136.52	90.88	-7,235.00	-304.76	659.83	386.35	273.49	2.413			
19,700.00	12,588.76	19,723.95	12,601.71	139.00	138.33	91.12	-7,334.89	-303.85	659.89	382.79	277.09	2.381			
19,800.00	12,589.59	19,823.91	12,605.32	140.81	140.15	91.37	-7,434.78	-302.94	659.95	379.25	280.70	2.351			
19,900.00	12,590.42	19,924.07	12,608.76	142.63	141.96	91.59	-7,534.88	-302.04	660.02	375.71	284.31	2.321			
20,000.00	12,591.25	20,024.68	12,609.51	144.44	143.79	91.58	-7,635.48	-301.13	660.03	372.07	287.95	2.292			
20,100.00	12,592.08	20,124.68	12,608.45	146.26	145.60	91.42	-7,735.46	-300.22	659.99	368.39	291.60	2.263			

CC - Min centre to center distance or convergent point. SF - min separation factor. ES - min ellipse separation

Company: COG OPERATING, LLC
Project: Eddy /Lea County, NM (NAD27) NMEZ
Reference Site: White Falcon 16 Federal Com Pad
Site Error: 0.00 ft
Reference Well: White Falcon 16 Fed Com 21H
Well Error: 0.00 ft
Reference Wellbore: Lateral
Reference Design: Plan #1

Local Co-ordinate Reference: Well White Falcon 16 Fed Com 21H - Slot 21H
TVD Reference: 3247+25 @ 3272.00ft (Latshaw44)
MD Reference: 3247+25 @ 3272.00ft (Latshaw44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: VON_EDM
Offset TVD Reference: Offset Datum

Offset Design White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 22H - Lateral - Plan #1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
20,200.00	12,592.91	20,224.66	12,607.39	148.07	147.42	91.26	-7,835.44	-299.32	659.96	364.70	295.25	2.235		
20,300.00	12,593.75	20,324.64	12,606.32	149.89	149.24	91.09	-7,935.41	-298.42	659.93	361.03	298.90	2.208		
20,400.00	12,594.58	20,424.62	12,605.26	151.71	151.05	90.93	-8,035.38	-297.52	659.91	357.35	302.55	2.181		
20,500.00	12,595.41	20,524.60	12,604.20	153.53	152.87	90.76	-8,135.35	-296.62	659.89	353.69	306.20	2.155		
20,600.00	12,596.24	20,624.59	12,603.14	155.35	154.69	90.60	-8,235.33	-295.72	659.88	350.03	309.85	2.130		
20,700.00	12,597.07	20,724.57	12,602.08	157.17	156.51	90.43	-8,335.30	-294.81	659.87	346.37	313.50	2.105		
20,767.37	12,597.63	20,808.07	12,601.37	158.40	158.03	90.32	-8,402.65	-294.21	659.87	343.62	316.25	2.087		
20,800.00	12,597.90	20,824.55	12,601.02	158.99	158.33	90.27	-8,435.27	-293.91	659.87	342.72	317.15	2.081		
20,900.00	12,598.73	20,924.53	12,599.96	160.81	160.15	90.11	-8,535.24	-293.01	659.87	339.08	320.79	2.057		
21,000.00	12,599.56	21,024.51	12,598.90	162.64	161.97	89.94	-8,635.22	-292.11	659.88	335.44	324.44	2.034		
21,100.00	12,600.40	21,124.50	12,597.84	164.46	163.79	89.78	-8,735.19	-291.21	659.90	331.81	328.09	2.011		
21,200.00	12,601.23	21,224.48	12,596.77	166.28	165.62	89.61	-8,835.16	-290.31	659.92	328.19	331.73	1.989		
21,300.00	12,602.06	21,324.46	12,595.71	168.11	167.44	89.45	-8,935.13	-289.40	659.95	324.57	335.37	1.968		
21,400.00	12,602.89	21,424.44	12,594.65	169.93	169.26	89.29	-9,035.11	-288.50	659.98	320.96	339.01	1.947		
21,500.00	12,603.72	21,524.43	12,593.59	171.76	171.09	89.12	-9,135.08	-287.60	660.02	317.36	342.66	1.926		
21,600.00	12,604.55	21,624.41	12,592.53	173.59	172.91	88.96	-9,235.05	-286.70	660.06	313.76	346.29	1.906		
21,700.00	12,605.38	21,724.39	12,591.47	175.41	174.74	88.79	-9,335.02	-285.80	660.11	310.17	349.93	1.886		
21,800.00	12,606.22	21,824.37	12,590.41	177.24	176.57	88.63	-9,435.00	-284.90	660.16	306.59	353.57	1.867		
21,900.00	12,607.05	21,924.35	12,589.35	179.07	178.39	88.46	-9,534.97	-283.99	660.22	303.02	357.20	1.848		
22,000.00	12,607.88	22,024.34	12,588.29	180.90	180.22	88.30	-9,634.94	-283.09	660.28	299.45	360.83	1.830		
22,100.00	12,608.71	22,124.32	12,587.23	182.73	182.05	88.14	-9,734.91	-282.19	660.35	295.89	364.46	1.812		
22,200.00	12,609.54	22,224.30	12,586.16	184.55	183.88	87.97	-9,834.88	-281.29	660.43	292.34	368.09	1.794		
22,300.00	12,610.37	22,324.28	12,585.10	186.38	185.71	87.81	-9,934.86	-280.39	660.51	288.79	371.71	1.777		
22,400.00	12,611.20	22,424.26	12,584.04	188.21	187.53	87.64	-10,034.83	-279.49	660.59	285.26	375.34	1.760		
22,495.94	12,612.00	22,520.19	12,583.02	189.97	189.29	87.49	-10,130.75	-278.62	660.68	281.87	378.81	1.744 SF		