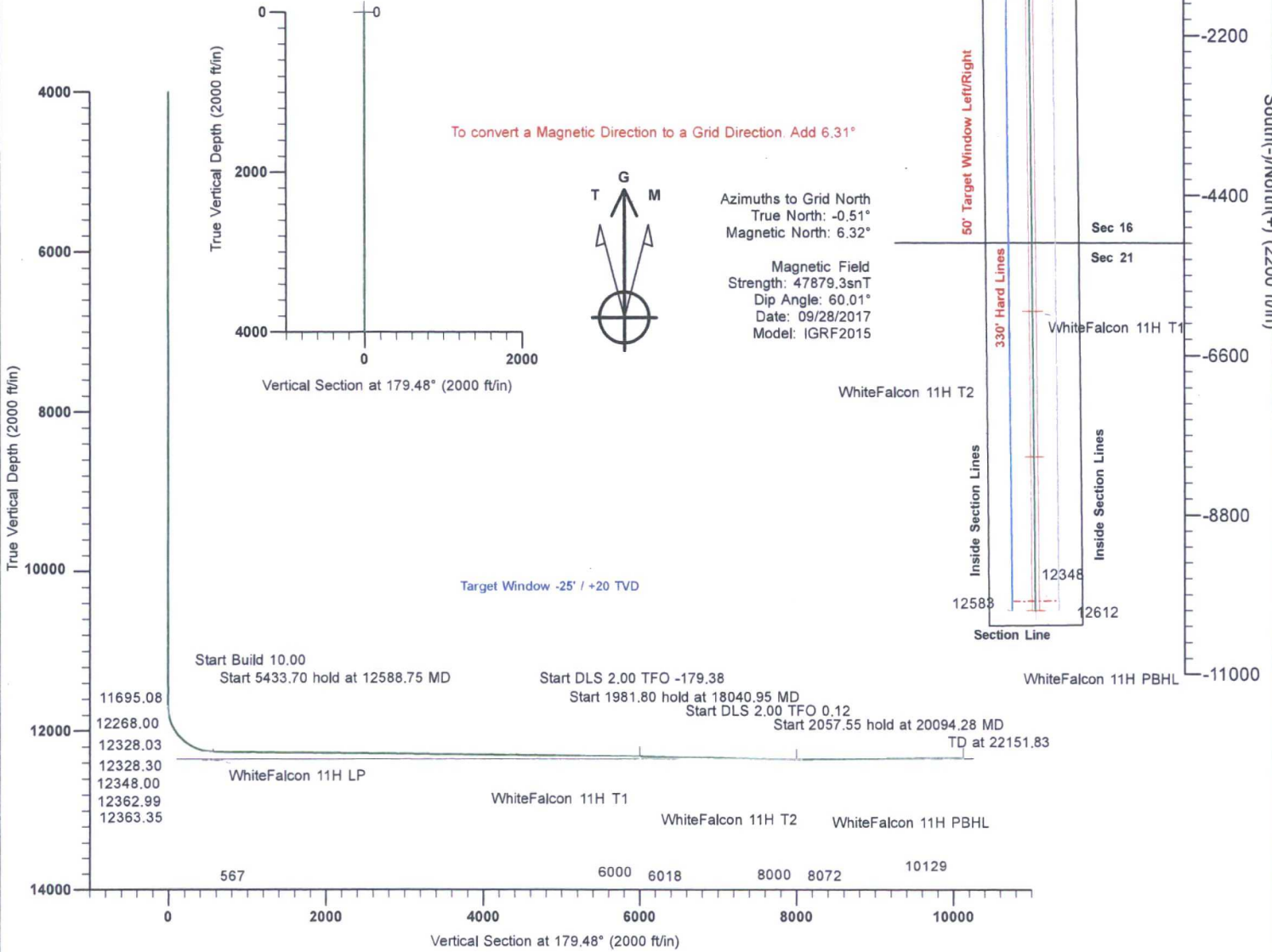


COG OPERATING, LLC

Project: Eddy /Lea County, NM (NAD27) NMEZ
 Site: White Falcon 16 Federal Com Pad
 Well: White Falcon 16 Fed Com 11H
 Wellbore: Lateral
 Design: Plan #1

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



To convert a Magnetic Direction to a Grid Direction. Add 6.31°

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Azimuths to Grid North
 True North: -0.51°
 Magnetic North: 6.32°
 Magnetic Field
 Strength: 47879.3snT
 Dip Angle: 60.01°
 Date: 09/28/2017
 Model: IGRF2015

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
WhiteFalcon 11H SL	0.00	0.00	0.00	414844.20	796901.60	Point
WhiteFalcon 11H T1	12328.00	-5999.75	54.45	408844.45	796956.05	Point
WhiteFalcon 11H PBHL	12348.00	-10128.60	91.40	404715.60	796993.00	Rectangle (Sides: L10024.00 W100.00)
WhiteFalcon 11H LP	12363.00	-566.60	5.10	414277.60	796906.70	Point
WhiteFalcon 11H T2	12363.00	-7999.67	72.60	406844.53	796974.20	Point

SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11695.08	0.00	0.00	11695.08	0.00	0.00	0.00	0.00	0.00	
12588.75	89.37	179.48	12268.00	-566.60	5.10	10.00	179.48	566.63	
18022.45	89.37	179.48	12328.03	-5999.76	54.03	0.00	0.00	6000.00	
18040.95	89.00	179.48	12328.30	-6018.26	54.20	2.00	-179.38	6018.50	
20022.76	89.00	179.48	12362.99	-7999.67	72.19	0.00	0.00	8000.00	
20094.28	90.43	179.48	12363.35	-8071.19	72.83	2.00	0.12	8071.52	
22151.83	90.43	179.48	12348.00	-10128.60	91.40	0.00	0.00	10129.01	WhiteFalcon 11H PBHL

Plan: Plan #1 (White Falcon 16 Fed Com 11H/Lateral)
 Created By: Mekka Williams
 eSomina Well Design
 mekka@esominawelldesign.com
 17.22, 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 11H - Slot 11H
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 11H	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 11H - Slot 11H					
Well Position	+N/-S	0.00 ft	Northing:	414,844.20 ft	Latitude:	32° 8' 12.792 N
	+E/-W	0.00 ft	Easting:	796,901.60 ft	Longitude:	103° 22' 27.001 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) (ft)	+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	
11,695.08	0.00	0.00	11,695.08	0.00	0.00	0.00	0.00	0.00	0.00	
12,588.75	89.37	179.48	12,268.00	-566.60	5.10	10.00	10.00	0.00	179.48	
18,022.45	89.37	179.48	12,328.03	-5,999.76	54.03	0.00	0.00	0.00	0.00	
18,040.96	89.00	179.48	12,328.30	-6,018.26	54.20	2.00	-2.00	-0.02	-179.38	
20,022.76	89.00	179.48	12,362.99	-7,999.67	72.19	0.00	0.00	0.00	0.00	
20,094.28	90.43	179.48	12,363.35	-8,071.19	72.83	2.00	2.00	0.00	0.12	
22,151.83	90.43	179.48	12,348.00	-10,128.60	91.40	0.00	0.00	0.00	0.00	WhiteFalcon 11H PB+

Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 11H - Slot 11H
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 11H	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 11H 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
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 11H - Slot 11H
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 11H	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	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00
8,700.00	0.00	0.00	8,700.00	0.00	0.00	0.00	0.00	0.00	0.00
8,800.00	0.00	0.00	8,800.00	0.00	0.00	0.00	0.00	0.00	0.00
8,900.00	0.00	0.00	8,900.00	0.00	0.00	0.00	0.00	0.00	0.00
9,000.00	0.00	0.00	9,000.00	0.00	0.00	0.00	0.00	0.00	0.00
9,100.00	0.00	0.00	9,100.00	0.00	0.00	0.00	0.00	0.00	0.00
9,200.00	0.00	0.00	9,200.00	0.00	0.00	0.00	0.00	0.00	0.00
9,300.00	0.00	0.00	9,300.00	0.00	0.00	0.00	0.00	0.00	0.00
9,400.00	0.00	0.00	9,400.00	0.00	0.00	0.00	0.00	0.00	0.00
9,500.00	0.00	0.00	9,500.00	0.00	0.00	0.00	0.00	0.00	0.00
9,600.00	0.00	0.00	9,600.00	0.00	0.00	0.00	0.00	0.00	0.00
9,700.00	0.00	0.00	9,700.00	0.00	0.00	0.00	0.00	0.00	0.00
9,800.00	0.00	0.00	9,800.00	0.00	0.00	0.00	0.00	0.00	0.00
9,900.00	0.00	0.00	9,900.00	0.00	0.00	0.00	0.00	0.00	0.00
10,000.00	0.00	0.00	10,000.00	0.00	0.00	0.00	0.00	0.00	0.00
10,100.00	0.00	0.00	10,100.00	0.00	0.00	0.00	0.00	0.00	0.00
10,200.00	0.00	0.00	10,200.00	0.00	0.00	0.00	0.00	0.00	0.00
10,300.00	0.00	0.00	10,300.00	0.00	0.00	0.00	0.00	0.00	0.00
10,400.00	0.00	0.00	10,400.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 11H - Slot 11H
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 11H	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	0.00	0.00	10,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
10,600.00	0.00	0.00	10,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
10,700.00	0.00	0.00	10,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
10,800.00	0.00	0.00	10,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
10,900.00	0.00	0.00	10,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,000.00	0.00	0.00	11,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,100.00	0.00	0.00	11,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,200.00	0.00	0.00	11,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,300.00	0.00	0.00	11,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,400.00	0.00	0.00	11,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,500.00	0.00	0.00	11,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,600.00	0.00	0.00	11,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,695.08	0.00	0.00	11,695.08	0.00	0.00	0.00	0.00	0.00	0.00	
11,700.00	0.49	179.48	11,700.00	-0.02	0.00	0.02	10.00	10.00	0.00	
11,750.00	5.49	179.48	11,749.92	-2.63	0.02	2.63	10.00	10.00	0.00	
11,800.00	10.49	179.48	11,799.41	-9.58	0.09	9.58	10.00	10.00	0.00	
11,850.00	15.49	179.48	11,848.12	-20.82	0.19	20.82	10.00	10.00	0.00	
11,900.00	20.49	179.48	11,895.66	-36.25	0.33	36.26	10.00	10.00	0.00	
11,950.00	25.49	179.48	11,941.67	-55.78	0.50	55.78	10.00	10.00	0.00	
12,000.00	30.49	179.48	11,985.81	-79.24	0.71	79.24	10.00	10.00	0.00	
12,050.00	35.49	179.48	12,027.73	-106.45	0.96	106.46	10.00	10.00	0.00	
12,100.00	40.49	179.48	12,067.13	-137.22	1.24	137.23	10.00	10.00	0.00	
12,150.00	45.49	179.48	12,103.69	-171.30	1.54	171.31	10.00	10.00	0.00	
12,200.00	50.49	179.48	12,137.14	-208.44	1.88	208.45	10.00	10.00	0.00	
12,250.00	55.49	179.48	12,167.22	-248.35	2.24	248.37	10.00	10.00	0.00	
12,300.00	60.49	179.48	12,193.72	-290.74	2.62	290.75	10.00	10.00	0.00	
12,350.00	65.49	179.48	12,216.42	-335.27	3.02	335.28	10.00	10.00	0.00	
12,400.00	70.49	179.48	12,235.15	-381.61	3.44	381.63	10.00	10.00	0.00	
12,450.00	75.49	179.48	12,249.77	-429.41	3.87	429.42	10.00	10.00	0.00	
12,500.00	80.49	179.48	12,260.17	-478.29	4.31	478.31	10.00	10.00	0.00	
12,550.00	85.49	179.48	12,266.27	-527.90	4.75	527.92	10.00	10.00	0.00	
12,588.75	89.37	179.48	12,268.00	-566.60	5.10	566.63	10.00	10.00	0.00	
12,589.79	89.37	179.48	12,268.01	-567.65	5.11	567.67	0.00	0.00	0.00	
WhiteFalcon 11H LP										
12,600.00	89.37	179.48	12,268.13	-577.85	5.20	577.88	0.00	0.00	0.00	
12,700.00	89.37	179.48	12,269.23	-677.84	6.10	677.87	0.00	0.00	0.00	
12,800.00	89.37	179.48	12,270.34	-777.83	7.01	777.87	0.00	0.00	0.00	
12,900.00	89.37	179.48	12,271.44	-877.82	7.91	877.86	0.00	0.00	0.00	
13,000.00	89.37	179.48	12,272.55	-977.81	8.81	977.85	0.00	0.00	0.00	
13,100.00	89.37	179.48	12,273.65	-1,077.80	9.71	1,077.85	0.00	0.00	0.00	
13,200.00	89.37	179.48	12,274.76	-1,177.79	10.61	1,177.84	0.00	0.00	0.00	
13,300.00	89.37	179.48	12,275.86	-1,277.78	11.51	1,277.83	0.00	0.00	0.00	
13,400.00	89.37	179.48	12,276.97	-1,377.77	12.41	1,377.83	0.00	0.00	0.00	
13,500.00	89.37	179.48	12,278.07	-1,477.76	13.31	1,477.82	0.00	0.00	0.00	
13,600.00	89.37	179.48	12,279.18	-1,577.75	14.21	1,577.82	0.00	0.00	0.00	
13,700.00	89.37	179.48	12,280.28	-1,677.74	15.11	1,677.81	0.00	0.00	0.00	
13,800.00	89.37	179.48	12,281.38	-1,777.73	16.01	1,777.80	0.00	0.00	0.00	
13,900.00	89.37	179.48	12,282.49	-1,877.72	16.91	1,877.80	0.00	0.00	0.00	
14,000.00	89.37	179.48	12,283.59	-1,977.71	17.81	1,977.79	0.00	0.00	0.00	
14,100.00	89.37	179.48	12,284.70	-2,077.70	18.71	2,077.79	0.00	0.00	0.00	
14,200.00	89.37	179.48	12,285.80	-2,177.69	19.61	2,177.78	0.00	0.00	0.00	
14,300.00	89.37	179.48	12,286.91	-2,277.68	20.51	2,277.77	0.00	0.00	0.00	
14,400.00	89.37	179.48	12,288.01	-2,377.67	21.41	2,377.77	0.00	0.00	0.00	



Planning Report

Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 11H - Slot 11H
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 11H	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)	
14,500.00	89.37	179.48	12,289.12	-2,477.66	22.31	2,477.76	0.00	0.00	0.00	
14,600.00	89.37	179.48	12,290.22	-2,577.65	23.21	2,577.76	0.00	0.00	0.00	
14,700.00	89.37	179.48	12,291.33	-2,677.64	24.12	2,677.75	0.00	0.00	0.00	
14,800.00	89.37	179.48	12,292.43	-2,777.63	25.02	2,777.74	0.00	0.00	0.00	
14,900.00	89.37	179.48	12,293.54	-2,877.62	25.92	2,877.74	0.00	0.00	0.00	
15,000.00	89.37	179.48	12,294.64	-2,977.61	26.82	2,977.73	0.00	0.00	0.00	
15,100.00	89.37	179.48	12,295.75	-3,077.60	27.72	3,077.72	0.00	0.00	0.00	
15,200.00	89.37	179.48	12,296.85	-3,177.59	28.62	3,177.72	0.00	0.00	0.00	
15,300.00	89.37	179.48	12,297.96	-3,277.58	29.52	3,277.71	0.00	0.00	0.00	
15,400.00	89.37	179.48	12,299.06	-3,377.57	30.42	3,377.71	0.00	0.00	0.00	
15,500.00	89.37	179.48	12,300.17	-3,477.56	31.32	3,477.70	0.00	0.00	0.00	
15,600.00	89.37	179.48	12,301.27	-3,577.55	32.22	3,577.69	0.00	0.00	0.00	
15,700.00	89.37	179.48	12,302.38	-3,677.54	33.12	3,677.69	0.00	0.00	0.00	
15,800.00	89.37	179.48	12,303.48	-3,777.53	34.02	3,777.68	0.00	0.00	0.00	
15,900.00	89.37	179.48	12,304.58	-3,877.52	34.92	3,877.68	0.00	0.00	0.00	
16,000.00	89.37	179.48	12,305.69	-3,977.51	35.82	3,977.67	0.00	0.00	0.00	
16,100.00	89.37	179.48	12,306.79	-4,077.50	36.72	4,077.66	0.00	0.00	0.00	
16,200.00	89.37	179.48	12,307.90	-4,177.49	37.62	4,177.66	0.00	0.00	0.00	
16,300.00	89.37	179.48	12,309.00	-4,277.48	38.52	4,277.65	0.00	0.00	0.00	
16,400.00	89.37	179.48	12,310.11	-4,377.47	39.42	4,377.65	0.00	0.00	0.00	
16,500.00	89.37	179.48	12,311.21	-4,477.46	40.32	4,477.64	0.00	0.00	0.00	
16,600.00	89.37	179.48	12,312.32	-4,577.45	41.23	4,577.63	0.00	0.00	0.00	
16,700.00	89.37	179.48	12,313.42	-4,677.44	42.13	4,677.63	0.00	0.00	0.00	
16,800.00	89.37	179.48	12,314.53	-4,777.43	43.03	4,777.62	0.00	0.00	0.00	
16,900.00	89.37	179.48	12,315.63	-4,877.42	43.93	4,877.61	0.00	0.00	0.00	
17,000.00	89.37	179.48	12,316.74	-4,977.41	44.83	4,977.61	0.00	0.00	0.00	
17,100.00	89.37	179.48	12,317.84	-5,077.40	45.73	5,077.60	0.00	0.00	0.00	
17,200.00	89.37	179.48	12,318.95	-5,177.39	46.63	5,177.60	0.00	0.00	0.00	
17,300.00	89.37	179.48	12,320.05	-5,277.38	47.53	5,277.59	0.00	0.00	0.00	
17,400.00	89.37	179.48	12,321.16	-5,377.37	48.43	5,377.58	0.00	0.00	0.00	
17,500.00	89.37	179.48	12,322.26	-5,477.36	49.33	5,477.58	0.00	0.00	0.00	
17,600.00	89.37	179.48	12,323.37	-5,577.35	50.23	5,577.57	0.00	0.00	0.00	
17,700.00	89.37	179.48	12,324.47	-5,677.34	51.13	5,677.57	0.00	0.00	0.00	
17,800.00	89.37	179.48	12,325.58	-5,777.33	52.03	5,777.56	0.00	0.00	0.00	
17,900.00	89.37	179.48	12,326.68	-5,877.32	52.93	5,877.55	0.00	0.00	0.00	
18,000.00	89.37	179.48	12,327.79	-5,977.31	53.83	5,977.55	0.00	0.00	0.00	
18,022.45	89.37	179.48	12,328.03	-5,999.76	54.03	6,000.00	0.00	0.00	0.00	
WhiteFalcon 11H T1										
18,040.96	89.00	179.48	12,328.30	-6,018.26	54.20	6,018.50	2.00	-2.00	-0.02	
18,100.00	89.00	179.48	12,329.33	-6,077.29	54.74	6,077.54	0.00	0.00	0.00	
18,200.00	89.00	179.48	12,331.08	-6,177.27	55.65	6,177.52	0.00	0.00	0.00	
18,300.00	89.00	179.48	12,332.83	-6,277.25	56.55	6,277.50	0.00	0.00	0.00	
18,400.00	89.00	179.48	12,334.58	-6,377.23	57.46	6,377.49	0.00	0.00	0.00	
18,500.00	89.00	179.48	12,336.33	-6,477.21	58.37	6,477.47	0.00	0.00	0.00	
18,600.00	89.00	179.48	12,338.08	-6,577.19	59.27	6,577.46	0.00	0.00	0.00	
18,700.00	89.00	179.48	12,339.83	-6,677.17	60.18	6,677.44	0.00	0.00	0.00	
18,800.00	89.00	179.48	12,341.58	-6,777.15	61.09	6,777.43	0.00	0.00	0.00	
18,900.00	89.00	179.48	12,343.33	-6,877.13	62.00	6,877.41	0.00	0.00	0.00	
19,000.00	89.00	179.48	12,345.09	-6,977.11	62.90	6,977.40	0.00	0.00	0.00	
19,100.00	89.00	179.48	12,346.84	-7,077.09	63.81	7,077.38	0.00	0.00	0.00	
19,200.00	89.00	179.48	12,348.59	-7,177.08	64.72	7,177.37	0.00	0.00	0.00	
19,300.00	89.00	179.48	12,350.34	-7,277.06	65.63	7,277.35	0.00	0.00	0.00	
19,400.00	89.00	179.48	12,352.09	-7,377.04	66.53	7,377.34	0.00	0.00	0.00	



Planning Report

Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 11H - Slot 11H
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 11H	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)
19,500.00	89.00	179.48	12,353.84	-7,477.02	67.44	7,477.32	0.00	0.00	0.00
19,600.00	89.00	179.48	12,355.59	-7,577.00	68.35	7,577.31	0.00	0.00	0.00
19,700.00	89.00	179.48	12,357.34	-7,676.98	69.26	7,677.29	0.00	0.00	0.00
19,800.00	89.00	179.48	12,359.09	-7,776.96	70.16	7,777.28	0.00	0.00	0.00
19,900.00	89.00	179.48	12,360.84	-7,876.94	71.07	7,877.26	0.00	0.00	0.00
20,000.00	89.00	179.48	12,362.59	-7,976.92	71.98	7,977.24	0.00	0.00	0.00
20,022.76	89.00	179.48	12,362.99	-7,999.67	72.19	8,000.00	0.00	0.00	0.00
WhiteFalcon 11H T2									
20,094.28	90.43	179.48	12,363.35	-8,071.19	72.83	8,071.52	2.00	2.00	0.00
20,100.00	90.43	179.48	12,363.30	-8,076.91	72.88	8,077.24	0.00	0.00	0.00
20,200.00	90.43	179.48	12,362.56	-8,176.90	73.79	8,177.24	0.00	0.00	0.00
20,300.00	90.43	179.48	12,361.81	-8,276.90	74.69	8,277.23	0.00	0.00	0.00
20,400.00	90.43	179.48	12,361.07	-8,376.89	75.59	8,377.23	0.00	0.00	0.00
20,500.00	90.43	179.48	12,360.32	-8,476.88	76.49	8,477.23	0.00	0.00	0.00
20,600.00	90.43	179.48	12,359.58	-8,576.87	77.40	8,577.22	0.00	0.00	0.00
20,700.00	90.43	179.48	12,358.83	-8,676.87	78.30	8,677.22	0.00	0.00	0.00
20,800.00	90.43	179.48	12,358.08	-8,776.86	79.20	8,777.22	0.00	0.00	0.00
20,900.00	90.43	179.48	12,357.34	-8,876.85	80.10	8,877.22	0.00	0.00	0.00
21,000.00	90.43	179.48	12,356.59	-8,976.85	81.01	8,977.21	0.00	0.00	0.00
21,100.00	90.43	179.48	12,355.85	-9,076.84	81.91	9,077.21	0.00	0.00	0.00
21,200.00	90.43	179.48	12,355.10	-9,176.83	82.81	9,177.21	0.00	0.00	0.00
21,300.00	90.43	179.48	12,354.35	-9,276.83	83.71	9,277.20	0.00	0.00	0.00
21,400.00	90.43	179.48	12,353.61	-9,376.82	84.62	9,377.20	0.00	0.00	0.00
21,500.00	90.43	179.48	12,352.86	-9,476.81	85.52	9,477.20	0.00	0.00	0.00
21,600.00	90.43	179.48	12,352.12	-9,576.81	86.42	9,577.20	0.00	0.00	0.00
21,700.00	90.43	179.48	12,351.37	-9,676.80	87.32	9,677.19	0.00	0.00	0.00
21,800.00	90.43	179.48	12,350.62	-9,776.79	88.23	9,777.19	0.00	0.00	0.00
21,900.00	90.43	179.48	12,349.88	-9,876.79	89.13	9,877.19	0.00	0.00	0.00
22,000.00	90.43	179.48	12,349.13	-9,976.78	90.03	9,977.19	0.00	0.00	0.00
22,100.00	90.43	179.48	12,348.39	-10,076.77	90.93	10,077.18	0.00	0.00	0.00
22,151.83	90.43	179.48	12,348.00	-10,128.60	91.40	10,129.01	0.00	0.00	0.00
WhiteFalcon 11H PBHL									

Database:	VON_EDM	Local Co-ordinate Reference:	Well White Falcon 16 Fed Com 11H - Slot 11H
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 11H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

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 11H SL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	414,844.20	796,901.60	32° 8' 12.792 N	103° 22' 27.001 W
WhiteFalcon 11H T1 - plan misses target center by 0.42ft at 18022.45ft MD (12328.03 TVD, -5999.76 N, 54.03 E) - Point	0.00	0.01	12,328.00	-5,999.75	54.45	408,844.45	796,956.05	32° 7' 13.419 N	103° 22' 26.989 W
WhiteFalcon 11H PBHL - plan hits target center - Rectangle (sides W100.00 H10,024.00 D0.00)	0.00	0.01	12,348.00	-10,128.60	91.40	404,715.60	796,993.00	32° 6' 32.561 N	103° 22' 26.986 W
WhiteFalcon 11H LP - plan misses target center by 94.99ft at 12589.79ft MD (12268.01 TVD, -567.65 N, 5.11 E) - Point	0.00	0.01	12,363.00	-566.60	5.10	414,277.60	796,906.70	32° 8' 7.185 N	103° 22' 27.000 W
WhiteFalcon 11H T2 - plan misses target center by 0.42ft at 20022.76ft MD (12362.99 TVD, -7999.67 N, 72.19 E) - Point	0.00	0.01	12,363.00	-7,999.67	72.60	406,844.53	796,974.20	32° 6' 53.628 N	103° 22' 26.984 W



Anticollision Report

Company: COG OPERATING, LLC Local Co-ordinate Reference: Well White Falcon 16 Fed Com 11H - Slot 11H
 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 11H 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	22,151.82	Plan #1 (Lateral)	MWD	MWD v3:standard declination

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 21H - Lateral - Plan #1	1,200.00	1,200.00	40.00	34.89	7.823	CC, ES
White Falcon 16 Fed Com 21H - Lateral - Plan #1	22,151.83	22,494.64	422.62	111.40	1.358	Level 3, SF
White Falcon 16 Fed Com 22H - Lateral - Plan #1	1,200.00	1,200.00	39.90	34.79	7.803	CC, ES
White Falcon 16 Fed Com 22H - Lateral - Plan #1	22,151.83	22,523.91	405.14	84.13	1.262	Level 3, SF

Offset Design												White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 21H - Lateral - Plan #1		Offset Site Error:	0.00 ft
Survey Program: 0-MWD														Offset Well Error:	0.00 ft
Reference Measured Depth (ft)	Vertical Depth (ft)	Offset Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+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	89.43	0.40	40.00	40.00						
100.00	100.00	100.00	100.00	0.08	0.08	89.43	0.40	40.00	40.00	39.83	0.17	237.295			
200.00	200.00	200.00	200.00	0.31	0.31	89.43	0.40	40.00	40.00	39.38	0.62	64.717			
300.00	300.00	300.00	300.00	0.53	0.53	89.43	0.40	40.00	40.00	38.93	1.07	37.468			
400.00	400.00	400.00	400.00	0.76	0.76	89.43	0.40	40.00	40.00	38.48	1.52	26.366			
500.00	500.00	500.00	500.00	0.98	0.98	89.43	0.40	40.00	40.00	38.04	1.97	20.340			
600.00	600.00	600.00	600.00	1.21	1.21	89.43	0.40	40.00	40.00	37.59	2.42	16.556			
700.00	700.00	700.00	700.00	1.43	1.43	89.43	0.40	40.00	40.00	37.14	2.87	13.959			
800.00	800.00	800.00	800.00	1.66	1.66	89.43	0.40	40.00	40.00	36.69	3.32	12.066			
900.00	900.00	900.00	900.00	1.88	1.88	89.43	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	89.43	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	89.43	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	89.43	0.40	40.00	40.00	34.89	5.11	7.823	CC, ES		
1,300.00	1,300.00	1,312.54	1,299.46	2.78	2.80	88.58	1.01	40.61	40.62	35.04	5.59	7.273			
1,400.00	1,400.00	1,400.56	1,399.42	3.01	3.00	86.84	2.32	41.92	41.98	35.98	6.00	6.995			
1,500.00	1,500.00	1,500.57	1,499.39	3.23	3.22	85.21	3.62	43.22	43.38	36.94	6.44	6.731			
1,600.00	1,600.00	1,600.59	1,599.35	3.46	3.44	83.68	4.93	44.53	44.81	37.92	6.89	6.505			
1,700.00	1,700.00	1,700.61	1,699.32	3.68	3.66	82.25	6.24	45.84	46.27	38.93	7.33	6.310			
1,800.00	1,800.00	1,800.63	1,799.28	3.91	3.88	80.91	7.55	47.15	47.75	39.97	7.78	6.139			
1,900.00	1,900.00	1,900.64	1,899.25	4.13	4.10	79.64	8.86	48.46	49.26	41.04	8.22	5.990			
2,000.00	2,000.00	2,000.66	1,999.22	4.35	4.32	78.46	10.16	49.76	50.80	42.13	8.67	5.859			
2,100.00	2,100.00	2,100.68	2,099.18	4.58	4.55	77.34	11.47	51.07	52.35	43.23	9.12	5.742			

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 11H - Slot 11H
 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 11H 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 21H - 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		
2,200.00	2,200.00	2,200.69	2,199.15	4.80	4.77	76.29	12.78	52.38	53.92	44.36	9.56	5.638		
2,300.00	2,300.00	2,300.71	2,299.11	5.03	4.99	75.30	14.09	53.69	55.51	45.50	10.01	5.545		
2,400.00	2,400.00	2,400.73	2,399.08	5.25	5.22	74.36	15.39	54.99	57.12	46.66	10.46	5.462		
2,500.00	2,500.00	2,500.74	2,499.04	5.48	5.44	73.48	16.70	56.30	58.74	47.83	10.91	5.386		
2,600.00	2,600.00	2,600.76	2,599.01	5.70	5.66	72.64	18.01	57.61	60.37	49.01	11.35	5.317		
2,700.00	2,700.00	2,700.78	2,698.98	5.93	5.89	71.85	19.32	58.92	62.01	50.21	11.80	5.255		
2,800.00	2,800.00	2,800.80	2,798.94	6.15	6.11	71.09	20.63	60.23	63.67	51.42	12.25	5.198		
2,900.00	2,900.00	2,900.81	2,898.91	6.38	6.34	70.38	21.93	61.53	65.34	52.64	12.70	5.146		
3,000.00	3,000.00	3,000.83	2,998.87	6.60	6.56	69.70	23.24	62.84	67.01	53.87	13.15	5.098		
3,100.00	3,100.00	3,100.85	3,098.84	6.83	6.79	69.06	24.55	64.15	68.70	55.10	13.59	5.053		
3,200.00	3,200.00	3,200.86	3,198.81	7.05	7.01	68.44	25.86	65.46	70.39	56.35	14.04	5.013		
3,300.00	3,300.00	3,300.88	3,298.77	7.28	7.24	67.86	27.17	66.77	72.09	57.60	14.49	4.975		
3,400.00	3,400.00	3,400.90	3,398.74	7.50	7.46	67.30	28.47	68.07	73.80	58.86	14.94	4.940		
3,500.00	3,500.00	3,500.92	3,498.70	7.73	7.69	66.77	29.78	69.38	75.51	60.13	15.39	4.907		
3,600.00	3,600.00	3,600.93	3,598.67	7.95	7.91	66.26	31.09	70.69	77.24	61.40	15.84	4.877		
3,700.00	3,700.00	3,700.95	3,698.63	8.18	8.14	65.77	32.40	72.00	78.96	62.68	16.29	4.848		
3,800.00	3,800.00	3,800.97	3,798.60	8.40	8.36	65.31	33.70	73.30	80.69	63.96	16.73	4.822		
3,900.00	3,900.00	3,900.98	3,898.57	8.63	8.59	64.86	35.01	74.61	82.43	65.25	17.18	4.797		
4,000.00	4,000.00	4,001.00	3,998.53	8.85	8.82	64.43	36.32	75.92	84.17	66.54	17.63	4.774		
4,100.00	4,100.00	4,101.02	4,098.50	9.07	9.04	64.02	37.63	77.23	85.92	67.84	18.08	4.752		
4,200.00	4,200.00	4,201.04	4,198.46	9.30	9.27	63.63	38.94	78.54	87.67	69.14	18.53	4.731		
4,300.00	4,300.00	4,301.05	4,298.43	9.52	9.49	63.25	40.24	79.84	89.43	70.45	18.98	4.712		
4,400.00	4,400.00	4,401.07	4,398.39	9.75	9.72	62.89	41.55	81.15	91.19	71.76	19.43	4.693		
4,500.00	4,500.00	4,501.09	4,498.36	9.97	9.94	62.54	42.86	82.46	92.95	73.07	19.88	4.676		
4,600.00	4,600.00	4,601.10	4,598.33	10.20	10.17	62.20	44.17	83.77	94.71	74.39	20.33	4.659		
4,700.00	4,700.00	4,701.12	4,698.29	10.42	10.40	61.87	45.48	85.08	96.48	75.71	20.78	4.644		
4,800.00	4,800.00	4,801.14	4,798.26	10.65	10.62	61.56	46.78	86.38	98.25	77.03	21.23	4.629		
4,900.00	4,900.00	4,901.16	4,898.22	10.87	10.85	61.26	48.09	87.69	100.03	78.35	21.68	4.615		
5,000.00	5,000.00	5,001.17	4,998.19	11.10	11.07	60.97	49.40	89.00	101.81	79.68	22.13	4.601		
5,100.00	5,100.00	5,101.19	5,098.16	11.32	11.30	60.69	50.71	90.31	103.59	81.01	22.57	4.589		
5,200.00	5,200.00	5,201.21	5,198.12	11.55	11.53	60.41	52.02	91.62	105.37	82.34	23.02	4.576		
5,300.00	5,300.00	5,301.22	5,298.09	11.77	11.75	60.15	53.32	92.92	107.15	83.68	23.47	4.565		
5,400.00	5,400.00	5,398.76	5,398.05	12.00	11.97	59.90	54.63	94.23	108.94	85.02	23.92	4.555		
5,500.00	5,500.00	5,501.26	5,498.02	12.22	12.20	59.65	55.94	95.54	110.73	86.36	24.37	4.543		
5,600.00	5,600.00	5,601.28	5,597.98	12.45	12.43	59.41	57.25	96.85	112.52	87.70	24.82	4.533		
5,700.00	5,700.00	5,701.29	5,697.95	12.67	12.66	59.18	58.55	98.15	114.31	89.04	25.27	4.523		
5,800.00	5,800.00	5,801.31	5,797.92	12.90	12.88	58.96	59.86	99.46	116.11	90.39	25.72	4.514		
5,900.00	5,900.00	5,901.33	5,897.88	13.12	13.11	58.74	61.17	100.77	117.90	91.73	26.17	4.505		
6,000.00	6,000.00	6,001.34	5,997.85	13.35	13.34	58.53	62.48	102.08	119.70	93.08	26.62	4.497		
6,100.00	6,100.00	6,101.36	6,097.81	13.57	13.56	58.33	63.79	103.39	121.50	94.43	27.07	4.489		
6,200.00	6,200.00	6,198.62	6,197.78	13.80	13.78	58.13	65.09	104.69	123.30	95.79	27.51	4.482		
6,300.00	6,300.00	6,301.40	6,297.74	14.02	14.01	57.94	66.40	106.00	125.10	97.13	27.97	4.473		
6,400.00	6,400.00	6,401.41	6,397.71	14.24	14.24	57.75	67.71	107.31	126.91	98.49	28.42	4.466		
6,500.00	6,500.00	6,501.43	6,497.68	14.47	14.47	57.57	69.02	108.62	128.71	99.84	28.87	4.459		
6,600.00	6,600.00	6,601.45	6,597.64	14.69	14.69	57.39	70.33	109.93	130.52	101.20	29.32	4.452		
6,700.00	6,700.00	6,701.46	6,697.61	14.92	14.92	57.22	71.63	111.23	132.33	102.56	29.77	4.445		
6,800.00	6,800.00	6,801.48	6,797.57	15.14	15.14	57.05	72.94	112.54	134.13	103.92	30.22	4.439		
6,900.00	6,900.00	6,901.50	6,897.54	15.37	15.37	56.89	74.25	113.85	135.94	105.28	30.67	4.433		
7,000.00	7,000.00	7,001.52	6,997.50	15.59	15.60	56.73	75.56	115.16	137.75	106.64	31.12	4.427		
7,100.00	7,100.00	7,101.53	7,097.47	15.82	15.82	56.58	76.87	116.47	139.57	108.00	31.57	4.422		
7,200.00	7,200.00	7,201.55	7,197.44	16.04	16.05	56.43	78.17	117.77	141.38	109.36	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 11H - Slot 11H

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 11H

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														Offset Site Error:	0.00 ft
White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 21H - Lateral - Plan #1														Offset Well Error:	0.00 ft
Survey Program: 0-MWD															
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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
7,300.00	7,300.00	7,301.57	7,297.40	16.27	16.28	56.28	79.48	119.08	143.19	110.73	32.46	4.411			
7,400.00	7,400.00	7,401.58	7,397.37	16.49	16.50	56.14	80.79	120.39	145.01	112.09	32.91	4.406			
7,500.00	7,500.00	7,501.60	7,497.33	16.72	16.73	56.00	82.10	121.70	146.82	113.46	33.36	4.401			
7,600.00	7,600.00	7,601.62	7,597.30	16.94	16.96	55.86	83.40	123.00	148.64	114.83	33.81	4.396			
7,700.00	7,700.00	7,701.63	7,697.27	17.17	17.18	55.73	84.71	124.31	150.46	116.19	34.26	4.391			
7,800.00	7,800.00	7,801.65	7,797.23	17.39	17.41	55.60	86.02	125.62	152.27	117.56	34.71	4.387			
7,900.00	7,900.00	7,901.67	7,897.20	17.62	17.63	55.47	87.33	126.93	154.09	118.93	35.16	4.382			
8,000.00	8,000.00	8,001.69	7,997.16	17.84	17.86	55.35	88.64	128.24	155.91	120.30	35.61	4.378			
8,100.00	8,100.00	8,101.70	8,097.13	18.07	18.09	55.23	89.94	129.54	157.73	121.67	36.06	4.374			
8,200.00	8,200.00	8,201.72	8,197.09	18.29	18.31	55.11	91.25	130.85	159.55	123.04	36.51	4.370			
8,300.00	8,300.00	8,301.74	8,297.06	18.52	18.54	54.99	92.56	132.16	161.38	124.41	36.96	4.366			
8,400.00	8,400.00	8,401.75	8,397.03	18.74	18.77	54.88	93.87	133.47	163.20	125.79	37.41	4.362			
8,500.00	8,500.00	8,501.77	8,496.99	18.96	18.99	54.77	95.18	134.78	165.02	127.16	37.86	4.359			
8,600.00	8,600.00	8,601.79	8,596.96	19.19	19.22	54.66	96.48	136.08	166.84	128.53	38.31	4.355			
8,700.00	8,700.00	8,701.81	8,696.92	19.41	19.45	54.56	97.79	137.39	168.67	129.91	38.76	4.352			
8,800.00	8,800.00	8,801.82	8,796.89	19.64	19.67	54.45	99.10	138.70	170.49	131.28	39.21	4.348			
8,900.00	8,900.00	8,901.84	8,896.85	19.86	19.90	54.35	100.41	140.01	172.32	132.66	39.66	4.345			
9,000.00	9,000.00	9,001.86	8,996.82	20.09	20.12	54.25	101.71	141.31	174.14	134.03	40.11	4.342			
9,100.00	9,100.00	9,101.87	9,096.79	20.31	20.35	54.16	103.02	142.62	175.97	135.41	40.56	4.339			
9,200.00	9,200.00	9,201.89	9,196.75	20.54	20.58	54.06	104.33	143.93	177.80	136.79	41.01	4.336			
9,300.00	9,300.00	9,301.91	9,296.72	20.76	20.80	53.97	105.64	145.24	179.62	138.16	41.46	4.333			
9,400.00	9,400.00	9,401.93	9,396.68	20.99	21.03	53.88	106.95	146.55	181.45	139.54	41.91	4.330			
9,500.00	9,500.00	9,501.94	9,496.65	21.21	21.26	53.79	108.25	147.85	183.28	140.92	42.36	4.327			
9,600.00	9,600.00	9,601.96	9,596.62	21.44	21.48	53.70	109.56	149.16	185.11	142.30	42.81	4.324			
9,700.00	9,700.00	9,701.98	9,696.58	21.66	21.71	53.62	110.87	150.47	186.94	143.68	43.26	4.321			
9,800.00	9,800.00	9,801.99	9,796.55	21.89	21.94	53.53	112.18	151.78	188.77	145.06	43.71	4.319			
9,900.00	9,900.00	9,902.01	9,896.51	22.11	22.16	53.45	113.49	153.09	190.59	146.44	44.16	4.316			
10,000.00	10,000.00	10,002.03	9,996.48	22.34	22.39	53.37	114.79	154.39	192.43	147.82	44.61	4.314			
10,100.00	10,100.00	10,102.05	10,096.44	22.56	22.62	53.29	116.10	155.70	194.26	149.20	45.06	4.311			
10,200.00	10,200.00	10,197.94	10,196.41	22.79	22.83	53.21	117.41	157.01	196.09	150.59	45.50	4.310			
10,300.00	10,300.00	10,302.08	10,296.38	23.01	23.07	53.13	118.72	158.32	197.92	151.96	45.96	4.307			
10,400.00	10,400.00	10,402.10	10,396.34	23.24	23.29	53.06	120.03	159.63	199.75	153.34	46.41	4.304			
10,500.00	10,500.00	10,502.11	10,496.31	23.46	23.52	52.99	121.33	160.93	201.58	154.72	46.86	4.302			
10,600.00	10,600.00	10,602.13	10,596.27	23.68	23.75	52.91	122.64	162.24	203.41	156.11	47.31	4.300			
10,700.00	10,700.00	10,702.15	10,696.24	23.91	23.97	52.84	123.95	163.55	205.25	157.49	47.76	4.298			
10,800.00	10,800.00	10,802.17	10,796.20	24.13	24.20	52.77	125.26	164.86	207.08	158.87	48.21	4.296			
10,900.00	10,900.00	10,902.18	10,896.17	24.36	24.43	52.70	126.56	166.16	208.91	160.25	48.66	4.294			
11,000.00	11,000.00	11,002.20	10,996.14	24.58	24.65	52.64	127.87	167.47	210.74	161.64	49.11	4.292			
11,100.00	11,100.00	11,102.22	11,096.10	24.81	24.88	52.57	129.18	168.78	212.58	163.02	49.56	4.290			
11,200.00	11,200.00	11,202.23	11,196.07	25.03	25.11	52.51	130.49	170.09	214.41	164.41	50.01	4.288			
11,300.00	11,300.00	11,297.75	11,296.03	25.26	25.32	52.44	131.80	171.40	216.25	165.80	50.45	4.287			
11,400.00	11,400.00	11,402.27	11,396.00	25.48	25.56	52.38	133.10	172.70	218.08	167.18	50.91	4.284			
11,500.00	11,500.00	11,502.29	11,495.97	25.71	25.79	52.32	134.41	174.01	219.92	168.56	51.36	4.282			
11,600.00	11,600.00	11,602.30	11,595.93	25.93	26.01	52.26	135.72	175.32	221.75	169.95	51.81	4.280			
11,700.00	11,700.00	11,702.32	11,695.90	26.16	26.24	-127.28	137.03	176.63	223.60	171.35	52.25	4.279			
11,800.00	11,799.41	11,803.05	11,795.15	26.32	26.47	-128.61	138.33	177.93	231.35	178.70	52.65	4.394			
11,900.00	11,895.66	11,896.72	11,894.91	26.49	26.68	-132.04	139.40	179.28	250.76	197.74	53.02	4.729			
12,000.00	11,985.81	12,025.19	12,021.99	26.64	26.90	-135.87	123.44	184.71	276.12	222.75	53.36	5.174			
12,100.00	12,067.13	12,164.45	12,151.76	26.82	27.13	-137.44	75.42	197.02	301.18	247.56	53.62	5.617			
12,200.00	12,137.14	12,313.26	12,272.87	27.06	27.38	-136.83	-8.03	216.75	323.66	269.79	53.88	6.007			
12,300.00	12,193.72	12,468.38	12,371.25	27.37	27.74	-134.20	-124.40	243.16	342.12	287.82	54.29	6.301			

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 11H - Slot 11H
 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 11H 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 21H - 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 Tooface (")	Offset Wellbore Centre +N-S (ft)	+EJ-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
12,400.00	12,235.15	12,624.95	12,434.54	27.78	28.31	-129.84	-263.72	273.90	356.10	301.07	55.03	6.471		
12,500.00	12,260.17	12,777.75	12,456.95	28.28	29.11	-124.14	-411.01	305.70	366.18	310.01	56.16	6.520		
12,600.00	12,268.13	12,909.89	12,457.00	28.88	29.98	-120.41	-541.31	327.35	375.22	317.79	57.43	6.533		
12,700.00	12,269.23	13,044.29	12,457.00	29.57	30.97	-119.69	-675.41	335.43	379.10	320.34	58.76	6.452		
12,800.00	12,270.34	13,143.73	12,457.00	30.36	31.79	-119.54	-774.84	336.33	378.56	318.49	60.08	6.301		
12,900.00	12,271.44	13,243.73	12,457.00	31.24	32.68	-119.40	-874.83	337.24	378.03	316.49	61.54	6.143		
13,000.00	12,272.55	13,343.72	12,457.00	32.20	33.66	-119.25	-974.82	338.15	377.49	314.34	63.15	5.978		
13,100.00	12,273.65	13,443.72	12,457.00	33.24	34.70	-119.10	-1,074.81	339.06	376.96	312.05	64.89	5.809		
13,200.00	12,274.76	13,543.71	12,457.00	34.35	35.82	-118.96	-1,174.80	339.96	376.43	309.66	66.77	5.638		
13,300.00	12,275.86	13,643.70	12,457.00	35.51	36.99	-118.81	-1,274.79	340.87	375.90	307.14	68.76	5.467		
13,400.00	12,276.97	13,743.70	12,457.00	36.74	38.21	-118.66	-1,374.78	341.78	375.38	304.52	70.86	5.296		
13,500.00	12,278.07	13,843.69	12,457.00	38.01	39.48	-118.51	-1,474.77	342.69	374.85	301.80	73.06	5.131		
13,600.00	12,279.18	13,943.69	12,457.00	39.33	40.80	-118.36	-1,574.76	343.59	374.33	298.98	75.35	4.968		
13,700.00	12,280.28	14,043.68	12,457.00	40.70	42.16	-118.21	-1,674.75	344.50	373.82	296.09	77.73	4.809		
13,800.00	12,281.38	14,143.67	12,457.00	42.10	43.55	-118.06	-1,774.74	345.41	373.30	293.12	80.19	4.655		
13,900.00	12,282.49	14,243.67	12,457.00	43.53	44.98	-117.91	-1,874.73	346.32	372.79	290.07	82.72	4.507		
14,000.00	12,283.59	14,343.66	12,457.00	44.99	46.43	-117.76	-1,974.72	347.22	372.28	286.97	85.31	4.364		
14,055.33	12,284.21	14,397.11	12,457.17	45.82	47.22	-117.70	-2,028.16	347.71	372.08	285.33	86.75	4.289		
14,100.00	12,284.70	14,439.22	12,457.94	46.48	47.85	-117.74	-2,070.27	348.09	372.23	284.36	87.88	4.266		
14,200.00	12,285.80	14,538.39	12,460.92	48.00	49.35	-118.00	-2,169.39	348.99	373.13	282.72	90.41	4.127		
14,300.00	12,286.91	14,638.37	12,463.95	49.54	50.89	-118.26	-2,269.32	349.90	374.04	281.07	92.97	4.023		
14,400.00	12,288.01	14,738.35	12,466.98	51.10	52.44	-118.52	-2,369.25	350.80	374.96	279.41	95.56	3.924		
14,500.00	12,289.12	14,838.34	12,470.01	52.68	54.01	-118.78	-2,469.19	351.71	375.89	277.73	98.17	3.829		
14,600.00	12,290.22	14,938.32	12,473.04	54.27	55.60	-119.03	-2,569.12	352.62	376.83	276.03	100.80	3.738		
14,700.00	12,291.33	15,038.30	12,476.07	55.89	57.21	-119.29	-2,669.05	353.52	377.78	274.33	103.45	3.652		
14,800.00	12,292.43	15,138.28	12,479.10	57.51	58.83	-119.54	-2,768.98	354.43	378.73	272.62	106.11	3.569		
14,900.00	12,293.54	15,238.26	12,482.13	59.15	60.46	-119.79	-2,868.91	355.34	379.69	270.90	108.79	3.490		
15,000.00	12,294.64	15,338.24	12,485.16	60.80	62.10	-120.04	-2,968.84	356.25	380.66	269.18	111.47	3.415		
15,100.00	12,295.75	15,438.22	12,488.19	62.46	63.76	-120.29	-3,068.77	357.15	381.63	267.46	114.17	3.343		
15,200.00	12,296.85	15,538.21	12,491.22	64.14	65.43	-120.54	-3,168.71	358.06	382.61	265.74	116.87	3.274		
15,300.00	12,297.96	15,638.19	12,494.25	65.82	67.10	-120.79	-3,268.64	358.97	383.60	264.03	119.57	3.208		
15,400.00	12,299.06	15,738.17	12,497.29	67.51	68.79	-121.04	-3,368.57	359.87	384.60	262.31	122.29	3.145		
15,500.00	12,300.17	15,838.15	12,500.32	69.21	70.48	-121.28	-3,468.50	360.78	385.60	260.60	125.00	3.085		
15,600.00	12,301.27	15,938.13	12,503.35	70.92	72.19	-121.52	-3,568.43	361.69	386.61	258.89	127.71	3.027		
15,700.00	12,302.38	16,038.11	12,506.38	72.63	73.89	-121.77	-3,668.36	362.59	387.63	257.20	130.43	2.972		
15,800.00	12,303.48	16,138.09	12,509.41	74.35	75.61	-122.01	-3,768.29	363.50	388.65	255.50	133.15	2.919		
15,900.00	12,304.58	16,238.08	12,512.44	76.08	77.33	-122.25	-3,868.22	364.41	389.68	253.82	135.86	2.868		
16,000.00	12,305.69	16,338.06	12,515.47	77.81	79.06	-122.49	-3,968.16	365.32	390.72	252.15	138.57	2.820		
16,100.00	12,306.79	16,438.04	12,518.50	79.55	80.79	-122.72	-4,068.09	366.22	391.76	250.48	141.28	2.773		
16,200.00	12,307.90	16,538.02	12,521.53	81.29	82.53	-122.96	-4,168.02	367.13	392.81	248.83	143.99	2.728		
16,300.00	12,309.00	16,638.00	12,524.56	83.04	84.27	-123.19	-4,267.95	368.04	393.87	247.18	146.69	2.685		
16,400.00	12,310.11	16,737.98	12,527.59	84.79	86.02	-123.43	-4,367.88	368.94	394.93	245.55	149.38	2.644		
16,500.00	12,311.21	16,837.96	12,530.62	86.55	87.77	-123.66	-4,467.81	369.85	396.01	243.93	152.08	2.604		
16,600.00	12,312.32	16,937.95	12,533.65	88.31	89.53	-123.89	-4,567.74	370.76	397.08	242.32	154.76	2.566		
16,700.00	12,313.42	17,037.93	12,536.68	90.07	91.29	-124.12	-4,667.68	371.66	398.17	240.72	157.44	2.529		
16,800.00	12,314.53	17,137.91	12,539.71	91.84	93.05	-124.35	-4,767.61	372.57	399.26	239.14	160.12	2.494		
16,900.00	12,315.63	17,237.89	12,542.74	93.61	94.82	-124.57	-4,867.54	373.48	400.35	237.57	162.78	2.459		
17,000.00	12,316.74	17,337.87	12,545.77	95.39	96.59	-124.80	-4,967.47	374.39	401.45	236.01	165.44	2.427		
17,100.00	12,317.84	17,437.85	12,548.81	97.16	98.36	-125.02	-5,067.40	375.29	402.56	234.47	168.10	2.395		
17,200.00	12,318.95	17,537.83	12,551.84	98.94	100.13	-125.25	-5,167.33	376.20	403.68	232.94	170.74	2.364		
17,300.00	12,320.05	17,637.82	12,554.87	100.72	101.91	-125.47	-5,267.26	377.11	404.80	231.42	173.38	2.335		

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 11H - Slot 11H
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 11H **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 21H - Lateral - Plan #1	Offset Site Error:	0.00 ft
Survey Program: D-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			
17,400.00	12,321.16	17,737.80	12,557.90	102.51	103.69	-125.69	-5,367.20	378.01	405.93	229.92	176.01	2.306			
17,500.00	12,322.26	17,837.78	12,560.93	104.29	105.48	-125.91	-5,467.13	378.92	407.06	228.43	178.63	2.279			
17,600.00	12,323.37	17,937.76	12,563.96	106.08	107.26	-126.13	-5,567.06	379.83	408.20	226.96	181.24	2.252			
17,700.00	12,324.47	18,037.74	12,566.99	107.87	109.05	-126.35	-5,666.99	380.73	409.34	225.50	183.84	2.227			
17,800.00	12,325.58	18,137.72	12,570.02	109.67	110.84	-126.56	-5,766.92	381.64	410.49	224.06	186.44	2.202			
17,900.00	12,326.68	18,237.70	12,573.05	111.46	112.63	-126.78	-5,866.85	382.55	411.65	222.63	189.02	2.178			
18,000.00	12,327.79	18,337.69	12,576.08	113.26	114.42	-126.99	-5,966.78	383.45	412.81	221.21	191.60	2.155			
18,100.00	12,329.33	18,443.14	12,578.31	115.06	116.32	-127.06	-6,072.21	384.41	413.16	218.66	194.51	2.124			
18,200.00	12,331.08	18,543.14	12,579.14	116.86	118.11	-126.96	-6,172.20	385.33	412.61	214.95	197.66	2.087			
18,300.00	12,332.83	18,643.14	12,579.97	118.66	119.91	-126.85	-6,272.19	386.24	412.06	211.24	200.82	2.052			
18,400.00	12,334.58	18,743.13	12,580.80	120.46	121.71	-126.75	-6,372.17	387.15	411.52	207.52	204.00	2.017			
18,500.00	12,336.33	18,843.13	12,581.64	122.27	123.51	-126.65	-6,472.16	388.06	410.97	203.79	207.18	1.984			
18,600.00	12,338.08	18,943.12	12,582.47	124.07	125.31	-126.54	-6,572.15	388.98	410.43	200.05	210.38	1.951			
18,700.00	12,339.83	19,043.12	12,583.30	125.88	127.12	-126.44	-6,672.14	389.89	409.89	196.31	213.58	1.919			
18,800.00	12,341.58	19,143.11	12,584.13	127.69	128.92	-126.34	-6,772.13	390.80	409.35	192.55	216.79	1.888			
18,900.00	12,343.33	19,243.11	12,584.96	129.50	130.73	-126.23	-6,872.12	391.71	408.81	188.79	220.02	1.858			
19,000.00	12,345.09	19,343.11	12,585.79	131.31	132.54	-126.13	-6,972.10	392.63	408.27	185.02	223.25	1.829			
19,100.00	12,346.84	19,443.10	12,586.62	133.12	134.35	-126.02	-7,072.09	393.54	407.73	181.24	226.49	1.800			
19,200.00	12,348.59	19,543.10	12,587.45	134.94	136.16	-125.92	-7,172.08	394.45	407.19	177.45	229.74	1.772			
19,300.00	12,350.34	19,643.09	12,588.28	136.75	137.97	-125.81	-7,272.07	395.36	406.66	173.66	233.00	1.745			
19,400.00	12,352.09	19,743.09	12,589.12	138.56	139.78	-125.71	-7,372.06	396.28	406.13	169.85	236.27	1.719			
19,500.00	12,353.84	19,843.09	12,589.95	140.38	141.59	-125.60	-7,472.04	397.19	405.59	166.04	239.55	1.693			
19,600.00	12,355.59	19,943.08	12,590.78	142.20	143.41	-125.49	-7,572.03	398.10	405.06	162.23	242.84	1.668			
19,700.00	12,357.34	20,043.08	12,591.61	144.02	145.22	-125.39	-7,672.02	399.02	404.53	158.40	246.13	1.644			
19,800.00	12,359.09	20,143.07	12,592.44	145.83	147.04	-125.28	-7,772.01	399.93	404.01	154.57	249.44	1.620			
19,900.00	12,360.84	20,243.07	12,593.27	147.65	148.86	-125.17	-7,872.00	400.84	403.48	150.73	252.75	1.596			
20,000.00	12,362.59	20,343.06	12,594.10	149.47	150.68	-125.07	-7,971.99	401.75	402.96	146.89	256.07	1.574			
20,036.43	12,363.06	20,379.49	12,594.41	150.14	151.34	-125.05	-8,008.41	402.09	402.86	145.62	257.24	1.566			
20,100.00	12,363.30	20,443.06	12,594.93	151.30	152.49	-125.08	-8,071.97	402.67	403.03	143.92	259.11	1.555			
20,200.00	12,362.56	20,543.05	12,595.77	153.12	154.31	-125.26	-8,171.95	403.58	403.95	142.20	261.74	1.543			
20,300.00	12,361.81	20,643.04	12,596.60	154.94	156.13	-125.44	-8,271.93	404.49	404.87	140.50	264.36	1.531			
20,400.00	12,361.07	20,743.02	12,597.43	156.76	157.95	-125.62	-8,371.91	405.40	405.79	138.82	266.98	1.520			
20,500.00	12,360.32	20,843.01	12,598.26	158.58	159.78	-125.80	-8,471.89	406.32	406.72	137.14	269.58	1.509			
20,600.00	12,359.58	20,943.00	12,599.09	160.41	161.60	-125.98	-8,571.87	407.23	407.65	135.48	272.17	1.498 Level 3			
20,700.00	12,358.83	21,042.99	12,599.92	162.23	163.42	-126.16	-8,671.85	408.14	408.59	133.83	274.76	1.487 Level 3			
20,800.00	12,358.08	21,142.97	12,600.75	164.06	165.24	-126.34	-8,771.83	409.05	409.53	132.20	277.33	1.477 Level 3			
20,900.00	12,357.34	21,242.96	12,601.58	165.88	167.07	-126.51	-8,871.81	409.97	410.48	130.58	279.90	1.467 Level 3			
21,000.00	12,356.59	21,342.95	12,602.42	167.71	168.89	-126.69	-8,971.79	410.88	411.42	128.97	282.45	1.457 Level 3			
21,100.00	12,355.85	21,442.94	12,603.25	169.54	170.72	-126.86	-9,071.77	411.79	412.38	127.38	285.00	1.447 Level 3			
21,200.00	12,355.10	21,542.92	12,604.08	171.36	172.54	-127.04	-9,171.75	412.70	413.33	125.80	287.54	1.438 Level 3			
21,300.00	12,354.35	21,642.91	12,604.91	173.19	174.37	-127.21	-9,271.73	413.62	414.29	124.23	290.06	1.428 Level 3			
21,400.00	12,353.61	21,742.90	12,605.74	175.02	176.20	-127.38	-9,371.71	414.53	415.26	122.68	292.58	1.419 Level 3			
21,500.00	12,352.86	21,842.89	12,606.57	176.85	178.02	-127.55	-9,471.69	415.44	416.23	121.13	295.09	1.410 Level 3			
21,600.00	12,352.12	21,942.87	12,607.40	178.68	179.85	-127.73	-9,571.67	416.35	417.20	119.60	297.59	1.402 Level 3			
21,700.00	12,351.37	22,042.86	12,608.23	180.51	181.68	-127.90	-9,671.65	417.27	418.17	118.09	300.08	1.394 Level 3			
21,800.00	12,350.62	22,142.85	12,609.07	182.34	183.51	-128.07	-9,771.63	418.18	419.15	116.59	302.56	1.385 Level 3			
21,900.00	12,349.88	22,242.84	12,609.90	184.17	185.34	-128.23	-9,871.61	419.09	420.13	115.10	305.04	1.377 Level 3			
22,000.00	12,349.13	22,342.82	12,610.73	186.00	187.17	-128.40	-9,971.59	420.00	421.12	113.62	307.50	1.369 Level 3			
22,100.00	12,348.39	22,442.81	12,611.56	187.83	189.00	-128.57	-10,071.57	420.92	422.11	112.15	309.95	1.362 Level 3			
22,151.83	12,348.00	22,494.64	12,611.99	188.78	189.95	-128.65	-10,123.39	421.39	422.62	111.40	311.22	1.358 Level 3, SF			

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 11H - Slot 11H

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 11H

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 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	Warning		
0.00	0.00	0.00	0.00	0.00	0.00	-90.43	-0.30	-39.90	39.90						
100.00	100.00	100.00	100.00	0.08	0.08	-90.43	-0.30	-39.90	39.90	39.73	0.17	236.697			
200.00	200.00	200.00	200.00	0.31	0.31	-90.43	-0.30	-39.90	39.90	39.28	0.62	64.554			
300.00	300.00	300.00	300.00	0.53	0.53	-90.43	-0.30	-39.90	39.90	38.83	1.07	37.373			
400.00	400.00	400.00	400.00	0.76	0.76	-90.43	-0.30	-39.90	39.90	38.38	1.52	26.300			
500.00	500.00	500.00	500.00	0.98	0.98	-90.43	-0.30	-39.90	39.90	37.93	1.97	20.288			
600.00	600.00	600.00	600.00	1.21	1.21	-90.43	-0.30	-39.90	39.90	37.48	2.42	16.514			
700.00	700.00	700.00	700.00	1.43	1.43	-90.43	-0.30	-39.90	39.90	37.04	2.87	13.923			
800.00	800.00	800.00	800.00	1.66	1.66	-90.43	-0.30	-39.90	39.90	36.59	3.32	12.035			
900.00	900.00	900.00	900.00	1.88	1.88	-90.43	-0.30	-39.90	39.90	36.14	3.76	10.598			
1,000.00	1,000.00	1,000.00	1,000.00	2.11	2.11	-90.43	-0.30	-39.90	39.90	35.69	4.21	9.468			
1,100.00	1,100.00	1,100.00	1,100.00	2.33	2.33	-90.43	-0.30	-39.90	39.90	35.24	4.66	8.555			
1,200.00	1,200.00	1,200.00	1,200.00	2.56	2.56	-90.43	-0.30	-39.90	39.90	34.79	5.11	7.803	CC, ES		
1,300.00	1,300.00	1,311.93	1,299.47	2.78	2.80	-89.56	0.31	-40.51	40.51	34.93	5.58	7.254			
1,400.00	1,400.00	1,400.54	1,399.43	3.01	3.00	-87.79	1.61	-41.81	41.85	35.85	6.00	6.973			
1,500.00	1,500.00	1,500.56	1,499.40	3.23	3.22	-86.13	2.92	-43.12	43.22	36.77	6.44	6.706			
1,600.00	1,600.00	1,600.58	1,599.37	3.46	3.44	-84.57	4.22	-44.42	44.63	37.74	6.89	6.478			
1,700.00	1,700.00	1,700.60	1,699.33	3.68	3.66	-83.11	5.52	-45.72	46.06	38.73	7.33	6.281			
1,800.00	1,800.00	1,800.61	1,799.30	3.91	3.88	-81.74	6.83	-47.03	47.53	39.75	7.78	6.110			
1,900.00	1,900.00	1,900.63	1,899.26	4.13	4.10	-80.45	8.13	-48.33	49.02	40.79	8.22	5.960			
2,000.00	2,000.00	2,000.65	1,999.23	4.35	4.32	-79.23	9.44	-49.64	50.53	41.86	8.67	5.828			
2,100.00	2,100.00	2,100.66	2,099.20	4.58	4.55	-78.09	10.74	-50.94	52.07	42.95	9.12	5.711			
2,200.00	2,200.00	2,200.68	2,199.16	4.80	4.77	-77.02	12.05	-52.25	53.62	44.06	9.56	5.607			
2,300.00	2,300.00	2,300.70	2,299.13	5.03	4.99	-76.00	13.35	-53.55	55.20	45.19	10.01	5.514			
2,400.00	2,400.00	2,400.71	2,399.09	5.25	5.22	-75.04	14.65	-54.85	56.79	46.33	10.46	5.430			
2,500.00	2,500.00	2,500.73	2,499.06	5.48	5.44	-74.14	15.96	-56.16	58.39	47.48	10.91	5.354			
2,600.00	2,600.00	2,600.75	2,599.03	5.70	5.67	-73.28	17.26	-57.46	60.01	48.65	11.35	5.286			
2,700.00	2,700.00	2,700.77	2,698.99	5.93	5.89	-72.47	18.57	-58.77	61.64	49.84	11.80	5.223			
2,800.00	2,800.00	2,800.78	2,798.96	6.15	6.12	-71.70	19.87	-60.07	63.28	51.03	12.25	5.166			
2,900.00	2,900.00	2,900.80	2,898.92	6.38	6.34	-70.96	21.18	-61.38	64.93	52.24	12.70	5.114			
3,000.00	3,000.00	3,000.82	2,998.89	6.60	6.57	-70.27	22.48	-62.68	66.60	53.45	13.15	5.066			
3,100.00	3,100.00	3,100.83	3,098.86	6.83	6.79	-69.61	23.78	-63.98	68.27	54.68	13.59	5.022			
3,200.00	3,200.00	3,200.85	3,198.82	7.05	7.02	-68.98	25.09	-65.29	69.95	55.91	14.04	4.982			
3,300.00	3,300.00	3,300.87	3,298.79	7.28	7.24	-68.38	26.39	-66.59	71.64	57.15	14.49	4.944			
3,400.00	3,400.00	3,399.12	3,398.75	7.50	7.46	-67.81	27.70	-67.90	73.34	58.40	14.94	4.910			
3,500.00	3,500.00	3,500.90	3,498.72	7.73	7.69	-67.26	29.00	-69.20	75.04	59.65	15.39	4.877			
3,600.00	3,600.00	3,600.92	3,598.68	7.95	7.92	-66.74	30.30	-70.50	76.75	60.92	15.84	4.846			
3,700.00	3,700.00	3,700.94	3,698.65	8.18	8.14	-66.24	31.61	-71.81	78.47	62.18	16.29	4.818			
3,800.00	3,800.00	3,800.95	3,798.62	8.40	8.37	-65.76	32.91	-73.11	80.19	63.46	16.73	4.792			
3,900.00	3,900.00	3,900.97	3,898.58	8.63	8.59	-65.31	34.22	-74.42	81.92	64.74	17.18	4.767			
4,000.00	4,000.00	4,000.99	3,998.55	8.85	8.82	-64.87	35.52	-75.72	83.65	66.02	17.63	4.744			
4,100.00	4,100.00	4,101.00	4,098.51	9.07	9.05	-64.45	36.83	-77.03	85.39	67.31	18.08	4.722			
4,200.00	4,200.00	4,201.02	4,198.48	9.30	9.27	-64.04	38.13	-78.33	87.13	68.60	18.53	4.702			
4,300.00	4,300.00	4,301.04	4,298.45	9.52	9.50	-63.66	39.43	-79.63	88.88	69.90	18.98	4.683			
4,400.00	4,400.00	4,401.06	4,398.41	9.75	9.72	-63.28	40.74	-80.94	90.63	71.20	19.43	4.664			
4,500.00	4,500.00	4,501.07	4,498.38	9.97	9.95	-62.92	42.04	-82.24	92.38	72.50	19.88	4.647			
4,600.00	4,600.00	4,601.09	4,598.34	10.20	10.18	-62.58	43.35	-83.55	94.14	73.81	20.33	4.631			
4,700.00	4,700.00	4,701.11	4,698.31	10.42	10.40	-62.25	44.65	-84.85	95.90	75.12	20.78	4.616			
4,800.00	4,800.00	4,801.12	4,798.28	10.65	10.63	-61.92	45.95	-86.15	97.66	76.43	21.23	4.601			
4,900.00	4,900.00	4,901.14	4,898.24	10.87	10.85	-61.62	47.26	-87.46	99.43	77.75	21.67	4.587			
5,000.00	5,000.00	5,001.16	4,998.21	11.10	11.08	-61.32	48.56	-88.76	101.20	79.07	22.12	4.574			

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



Anticollision Report

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Site Error: 0.00 ft

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Reference Well: White Falcon 16 Fed Com 11H

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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 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		
5,100.00	5,100.00	5,101.17	5,098.17	11.32	11.31	-81.03	49.87	-90.07	102.97	80.39	22.57	4.561		
5,200.00	5,200.00	5,201.19	5,198.14	11.55	11.53	-80.75	51.17	-91.37	104.74	81.72	23.02	4.549		
5,300.00	5,300.00	5,301.21	5,298.11	11.77	11.76	-80.48	52.48	-92.68	106.52	83.05	23.47	4.538		
5,400.00	5,400.00	5,401.23	5,398.07	12.00	11.99	-80.22	53.78	-93.98	108.30	84.37	23.92	4.527		
5,500.00	5,500.00	5,501.24	5,498.04	12.22	12.21	-79.97	55.08	-95.28	110.08	85.71	24.37	4.517		
5,600.00	5,600.00	5,601.26	5,598.00	12.45	12.44	-79.72	56.39	-96.59	111.86	87.04	24.82	4.507		
5,700.00	5,700.00	5,701.28	5,697.97	12.67	12.66	-79.49	57.69	-97.89	113.65	88.38	25.27	4.497		
5,800.00	5,800.00	5,801.29	5,797.94	12.90	12.89	-79.26	59.00	-99.20	115.43	89.71	25.72	4.488		
5,900.00	5,900.00	5,901.31	5,897.90	13.12	13.12	-79.04	60.30	-100.50	117.22	91.05	26.17	4.479		
6,000.00	6,000.00	6,001.33	5,997.87	13.35	13.34	-78.82	61.60	-101.80	119.01	92.39	26.62	4.471		
6,100.00	6,100.00	6,101.34	6,097.83	13.57	13.57	-78.61	62.91	-103.11	120.80	93.74	27.07	4.463		
6,200.00	6,200.00	6,201.36	6,197.80	13.80	13.80	-78.41	64.21	-104.41	122.60	95.08	27.52	4.455		
6,300.00	6,300.00	6,301.38	6,297.77	14.02	14.02	-78.21	65.52	-105.72	124.39	96.43	27.97	4.448		
6,400.00	6,400.00	6,401.40	6,397.73	14.24	14.25	-78.02	66.82	-107.02	126.19	97.77	28.42	4.441		
6,500.00	6,500.00	6,501.41	6,497.70	14.47	14.47	-77.83	68.13	-108.33	127.99	99.12	28.87	4.434		
6,600.00	6,600.00	6,601.43	6,597.66	14.69	14.70	-77.65	69.43	-109.63	129.79	100.47	29.32	4.427		
6,700.00	6,700.00	6,701.45	6,697.63	14.92	14.93	-77.48	70.73	-110.93	131.59	101.82	29.77	4.421		
6,800.00	6,800.00	6,801.46	6,797.60	15.14	15.15	-77.31	72.04	-112.24	133.39	103.17	30.21	4.415		
6,900.00	6,900.00	6,901.48	6,897.56	15.37	15.38	-77.14	73.34	-113.54	135.19	104.53	30.66	4.409		
7,000.00	7,000.00	7,001.50	6,997.53	15.59	15.61	-76.98	74.65	-114.85	137.00	105.88	31.11	4.403		
7,100.00	7,100.00	7,101.51	7,097.49	15.82	15.83	-76.82	75.95	-116.15	138.80	107.24	31.56	4.397		
7,200.00	7,200.00	7,201.53	7,197.46	16.04	16.06	-76.67	77.26	-117.46	140.61	108.59	32.01	4.392		
7,300.00	7,300.00	7,301.55	7,297.43	16.27	16.29	-76.52	78.56	-118.76	142.41	109.95	32.46	4.387		
7,400.00	7,400.00	7,401.57	7,397.39	16.49	16.51	-76.37	79.86	-120.06	144.22	111.31	32.91	4.382		
7,500.00	7,500.00	7,501.58	7,497.36	16.72	16.74	-76.23	81.17	-121.37	146.03	112.67	33.36	4.377		
7,600.00	7,600.00	7,601.60	7,597.32	16.94	16.97	-76.09	82.47	-122.67	147.84	114.03	33.81	4.372		
7,700.00	7,700.00	7,701.62	7,697.29	17.17	17.19	-75.95	83.78	-123.98	149.65	115.39	34.26	4.368		
7,800.00	7,800.00	7,801.63	7,797.26	17.39	17.42	-75.82	85.08	-125.28	151.46	116.75	34.71	4.364		
7,900.00	7,900.00	7,901.65	7,897.22	17.62	17.65	-75.69	86.38	-126.58	153.28	118.11	35.16	4.359		
8,000.00	8,000.00	8,001.67	7,997.19	17.84	17.87	-75.56	87.69	-127.89	155.09	119.48	35.61	4.355		
8,100.00	8,100.00	8,101.68	8,097.15	18.07	18.10	-75.44	88.99	-129.19	156.90	120.84	36.06	4.351		
8,200.00	8,200.00	8,198.30	8,197.12	18.29	18.32	-75.32	90.30	-130.50	158.72	122.21	36.50	4.348		
8,300.00	8,300.00	8,301.72	8,297.09	18.52	18.55	-75.20	91.60	-131.80	160.53	123.57	36.96	4.343		
8,400.00	8,400.00	8,401.74	8,397.05	18.74	18.78	-75.09	92.91	-133.11	162.35	124.94	37.41	4.340		
8,500.00	8,500.00	8,501.75	8,497.02	18.96	19.00	-74.97	94.21	-134.41	164.17	126.31	37.86	4.336		
8,600.00	8,600.00	8,601.77	8,596.98	19.19	19.23	-74.86	95.51	-135.71	165.98	127.67	38.31	4.333		
8,700.00	8,700.00	8,701.79	8,696.95	19.41	19.46	-74.75	96.82	-137.02	167.80	129.04	38.76	4.329		
8,800.00	8,800.00	8,801.80	8,796.92	19.64	19.68	-74.65	98.12	-138.32	169.62	130.41	39.21	4.326		
8,900.00	8,900.00	8,901.82	8,896.88	19.86	19.91	-74.55	99.43	-139.63	171.44	131.78	39.66	4.323		
9,000.00	9,000.00	9,001.84	8,996.85	20.09	20.14	-74.44	100.73	-140.93	173.26	133.15	40.11	4.320		
9,100.00	9,100.00	9,101.86	9,096.81	20.31	20.36	-74.35	102.03	-142.23	175.08	134.52	40.56	4.317		
9,200.00	9,200.00	9,201.87	9,196.78	20.54	20.59	-74.25	103.34	-143.54	176.90	135.89	41.01	4.314		
9,300.00	9,300.00	9,301.89	9,296.75	20.76	20.82	-74.15	104.64	-144.84	178.72	137.26	41.46	4.311		
9,400.00	9,400.00	9,401.91	9,396.71	20.99	21.04	-74.06	105.95	-146.15	180.54	138.63	41.91	4.308		
9,500.00	9,500.00	9,501.92	9,496.68	21.21	21.27	-73.97	107.25	-147.45	182.36	140.00	42.36	4.305		
9,600.00	9,600.00	9,601.94	9,596.64	21.44	21.50	-73.88	108.56	-148.76	184.18	141.38	42.81	4.303		
9,700.00	9,700.00	9,701.96	9,696.61	21.66	21.72	-73.79	109.86	-150.06	186.01	142.75	43.26	4.300		
9,800.00	9,800.00	9,801.97	9,796.58	21.89	21.95	-73.71	111.16	-151.36	187.83	144.12	43.71	4.298		
9,900.00	9,900.00	9,901.99	9,896.54	22.11	22.18	-73.62	112.47	-152.67	189.65	145.50	44.16	4.295		
10,000.00	10,000.00	10,002.01	9,996.51	22.34	22.40	-73.54	113.77	-153.97	191.48	146.87	44.61	4.293		
10,100.00	10,100.00	10,102.03	10,096.47	22.56	22.63	-73.46	115.08	-155.28	193.30	148.25	45.06	4.290		

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



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Minimum Curvature

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VON_EDM

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Offset Datum

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White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 22H - Lateral - Plan #1													Offset Well Error:	0.00 ft
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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	10,200.00	10,202.04	10,196.44	22.79	22.86	-53.38	116.38	-156.58	195.13	149.62	45.51	4.288		
10,300.00	10,300.00	10,302.06	10,296.41	23.01	23.08	-53.30	117.68	-157.88	196.95	151.00	45.96	4.286		
10,400.00	10,400.00	10,402.08	10,396.37	23.24	23.31	-53.22	118.99	-159.19	198.78	152.37	46.41	4.284		
10,500.00	10,500.00	10,502.09	10,496.34	23.46	23.54	-53.15	120.29	-160.49	200.60	153.75	46.86	4.281		
10,600.00	10,600.00	10,597.89	10,596.30	23.68	23.75	-53.07	121.60	-161.80	202.43	155.13	47.30	4.280		
10,700.00	10,700.00	10,702.13	10,696.27	23.91	23.99	-53.00	122.90	-163.10	204.26	156.50	47.75	4.277		
10,800.00	10,800.00	10,802.14	10,796.23	24.13	24.22	-52.93	124.21	-164.41	206.08	157.88	48.20	4.275		
10,900.00	10,900.00	10,902.16	10,896.20	24.36	24.44	-52.86	125.51	-165.71	207.91	159.26	48.65	4.273		
11,000.00	11,000.00	11,002.18	10,996.17	24.58	24.67	-52.79	126.81	-167.01	209.74	160.63	49.10	4.271		
11,100.00	11,100.00	11,102.20	11,096.13	24.81	24.90	-52.72	128.12	-168.32	211.57	162.01	49.55	4.269		
11,200.00	11,200.00	11,202.21	11,196.10	25.03	25.12	-52.66	129.42	-169.62	213.39	163.39	50.00	4.268		
11,300.00	11,300.00	11,302.23	11,296.06	25.26	25.35	-52.59	130.73	-170.93	215.22	164.77	50.45	4.266		
11,400.00	11,400.00	11,402.25	11,396.03	25.48	25.58	-52.53	132.03	-172.23	217.05	166.15	50.90	4.264		
11,500.00	11,500.00	11,502.26	11,496.00	25.71	25.80	-52.46	133.33	-173.53	218.88	167.53	51.35	4.262		
11,600.00	11,600.00	11,602.28	11,595.96	25.93	26.03	-52.40	134.64	-174.84	220.71	168.91	51.80	4.261		
11,700.00	11,700.00	11,702.30	11,695.93	26.16	26.26	-52.34	135.94	-176.14	222.55	170.30	52.25	4.259		
11,800.00	11,799.41	11,803.03	11,795.18	26.32	26.48	-52.28	137.24	-177.44	230.41	177.76	52.64	4.377		
11,900.00	11,895.66	11,892.85	11,891.04	26.49	26.69	-52.22	138.49	-178.69	250.21	197.19	53.01	4.720		
12,000.00	11,985.81	12,017.83	12,015.32	26.64	26.92	-52.16	139.74	-179.94	278.63	225.25	53.38	5.220		
12,100.00	12,067.13	12,158.27	12,148.45	26.82	27.15	-52.10	141.04	-181.19	307.10	253.47	53.75	5.726		
12,200.00	12,137.14	12,311.09	12,276.54	27.06	27.39	-52.04	142.34	-182.44	335.57	278.87	54.12	6.178		
12,300.00	12,193.72	12,473.16	12,383.52	27.37	27.71	-51.98	143.64	-183.69	364.03	299.27	54.49	6.520		
12,400.00	12,235.15	12,638.64	12,453.47	27.78	28.24	-51.92	144.94	-184.94	392.49	313.62	54.89	6.714		
12,500.00	12,260.17	12,800.60	12,477.97	28.28	29.00	-51.86	146.24	-186.19	420.95	322.34	55.32	6.760		
12,600.00	12,268.13	12,932.66	12,478.18	28.88	29.79	-51.80	147.54	-187.44	449.41	329.82	55.79	6.772		
12,700.00	12,269.23	13,067.18	12,478.37	29.57	30.72	-51.74	148.84	-188.69	477.87	332.60	56.39	6.697		
12,800.00	12,270.34	13,167.59	12,478.51	30.36	31.51	-51.68	150.14	-189.94	506.33	330.85	57.02	6.549		
12,900.00	12,271.44	13,267.59	12,478.65	31.24	32.37	-51.62	151.44	-191.19	534.85	328.95	61.00	6.392		
13,000.00	12,272.55	13,367.58	12,478.79	32.20	33.31	-51.56	152.74	-192.44	563.37	326.91	65.00	6.228		
13,100.00	12,273.65	13,467.58	12,478.93	33.24	34.33	-51.50	154.04	-193.69	591.89	324.74	69.00	6.060		
13,200.00	12,274.76	13,567.57	12,479.07	34.35	35.42	-51.44	155.34	-194.94	620.41	322.44	73.00	5.888		
13,300.00	12,275.86	13,667.57	12,479.21	35.51	36.57	-51.38	156.64	-196.19	648.93	320.03	77.00	5.716		
13,400.00	12,276.97	13,767.56	12,479.35	36.74	37.77	-51.32	157.94	-197.44	677.45	317.52	81.00	5.545		
13,500.00	12,278.07	13,867.56	12,479.49	38.01	39.03	-51.26	159.24	-198.69	705.97	314.91	85.00	5.376		
13,600.00	12,279.18	13,967.55	12,479.63	39.33	40.33	-51.20	160.54	-199.94	734.49	312.21	89.00	5.210		
13,700.00	12,280.28	14,067.55	12,479.77	40.70	41.67	-51.14	161.84	-201.19	763.01	309.42	93.00	5.048		
13,800.00	12,281.38	14,167.54	12,479.91	42.10	43.05	-51.08	163.14	-202.44	791.53	306.56	97.00	4.891		
13,900.00	12,282.49	14,267.54	12,480.05	43.53	44.47	-51.02	164.44	-203.69	820.05	303.63	101.00	4.738		
14,000.00	12,283.59	14,367.54	12,480.19	44.99	45.91	-50.96	165.74	-204.94	848.57	300.63	105.00	4.591		
14,100.00	12,284.70	14,467.53	12,480.32	46.48	47.39	-50.90	167.04	-206.19	877.09	297.57	109.00	4.449		
14,200.00	12,285.80	14,567.53	12,480.46	48.00	48.89	-50.84	168.34	-207.44	905.61	294.46	113.00	4.313		
14,300.00	12,286.91	14,667.52	12,480.60	49.54	50.41	-50.78	169.64	-208.69	934.13	291.30	117.00	4.182		
14,400.00	12,288.01	14,767.52	12,480.74	51.10	51.95	-50.72	170.94	-209.94	962.65	288.09	121.00	4.056		
14,500.00	12,289.12	14,867.51	12,480.88	52.68	53.52	-50.66	172.24	-211.19	991.17	284.84	125.00	3.935		
14,600.00	12,290.22	14,967.51	12,481.02	54.27	55.10	-50.60	173.54	-212.44	1019.69	281.54	129.00	3.820		
14,700.00	12,291.33	15,067.50	12,481.16	55.89	56.70	-50.54	174.84	-213.69	1048.21	278.21	133.00	3.709		
14,800.00	12,292.43	15,167.50	12,481.30	57.51	58.31	-50.48	176.14	-214.94	1076.73	274.84	137.00	3.603		
14,900.00	12,293.54	15,267.49	12,481.44	59.15	59.94	-50.42	177.44	-216.19	1105.25	271.44	141.00	3.502		
15,000.00	12,294.64	15,367.49	12,481.58	60.80	61.58	-50.36	178.74	-217.44	1133.77	268.01	145.00	3.405		
15,100.00	12,295.75	15,467.48	12,481.72	62.46	63.23	-50.30	180.04	-218.69	1162.29	264.55	149.00	3.312		
15,200.00	12,296.85	15,567.48	12,481.86	64.14	64.89	-50.24	181.34	-219.94	1190.81	261.06	153.00	3.223		

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 11H - Slot 11H

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 11H

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 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		
15,300.00	12,297.96	15,667.47	12,482.00	65.82	66.57	119.13	-3,280.32	-300.65	378.01	257.55	120.46	3.138		
15,400.00	12,299.06	15,767.47	12,482.14	67.51	68.25	119.01	-3,380.31	-299.74	377.53	254.01	123.52	3.056		
15,500.00	12,300.17	15,867.47	12,482.28	69.21	69.94	118.88	-3,480.30	-298.83	377.06	250.45	126.60	2.978		
15,600.00	12,301.27	15,967.46	12,482.42	70.92	71.63	118.75	-3,580.29	-297.92	376.59	246.87	129.71	2.903		
15,700.00	12,302.38	16,067.46	12,482.56	72.63	73.34	118.62	-3,680.28	-297.02	376.12	243.27	132.84	2.831		
15,800.00	12,303.48	16,167.45	12,482.70	74.35	75.05	118.49	-3,780.27	-296.11	375.65	239.65	135.99	2.762		
15,900.00	12,304.58	16,267.45	12,482.84	76.08	76.77	118.37	-3,880.27	-295.20	375.18	236.02	139.17	2.696		
16,000.00	12,305.69	16,367.44	12,482.98	77.81	78.50	118.24	-3,980.26	-294.29	374.72	232.36	142.36	2.632		
16,052.27	12,306.27	16,417.98	12,483.19	78.72	79.37	118.19	-4,030.79	-293.84	374.55	230.55	144.00	2.601		
16,100.00	12,306.79	16,462.93	12,484.04	79.55	80.15	118.24	-4,075.73	-293.43	374.72	229.33	145.40	2.577		
16,200.00	12,307.90	16,561.26	12,487.47	81.29	81.86	118.55	-4,173.99	-292.54	375.85	227.69	148.16	2.537		
16,300.00	12,309.00	16,661.23	12,491.08	83.04	83.60	118.89	-4,273.89	-291.63	377.05	226.13	150.91	2.498		
16,400.00	12,310.11	16,761.19	12,494.69	84.79	85.34	119.22	-4,373.79	-290.72	378.26	224.60	153.66	2.462		
16,500.00	12,311.21	16,861.16	12,498.30	86.55	87.10	119.55	-4,473.69	-289.82	379.48	223.09	156.40	2.426		
16,600.00	12,312.32	16,961.13	12,501.91	88.31	88.85	119.88	-4,573.59	-288.91	380.72	221.60	159.12	2.393		
16,700.00	12,313.42	17,061.10	12,505.52	90.07	90.61	120.21	-4,673.49	-288.00	381.97	220.14	161.83	2.360		
16,800.00	12,314.53	17,161.07	12,509.13	91.84	92.37	120.53	-4,773.39	-287.10	383.23	218.70	164.54	2.329		
16,900.00	12,315.63	17,261.04	12,512.75	93.61	94.14	120.85	-4,873.29	-286.19	384.51	217.28	167.23	2.299		
17,000.00	12,316.74	17,361.01	12,516.36	95.39	95.90	121.17	-4,973.19	-285.28	385.80	215.89	169.90	2.271		
17,100.00	12,317.84	17,460.97	12,519.97	97.16	97.68	121.49	-5,073.09	-284.38	387.09	214.52	172.57	2.243		
17,200.00	12,318.95	17,560.94	12,523.58	98.94	99.45	121.81	-5,172.99	-283.47	388.40	213.18	175.22	2.217		
17,300.00	12,320.05	17,660.91	12,527.19	100.72	101.23	122.12	-5,272.89	-282.56	389.73	211.86	177.86	2.191		
17,400.00	12,321.16	17,760.88	12,530.80	102.51	103.01	122.43	-5,372.78	-281.66	391.06	210.57	180.49	2.167		
17,500.00	12,322.26	17,860.85	12,534.41	104.29	104.79	122.74	-5,472.68	-280.75	392.40	209.30	183.10	2.143		
17,600.00	12,323.37	17,960.82	12,538.02	106.08	106.57	123.05	-5,572.58	-279.84	393.76	208.06	185.70	2.120		
17,700.00	12,324.47	18,060.78	12,541.63	107.87	108.36	123.36	-5,672.48	-278.94	395.13	206.84	188.29	2.099		
17,800.00	12,325.58	18,160.75	12,545.24	109.67	110.15	123.66	-5,772.38	-278.03	396.51	205.65	190.86	2.077		
17,900.00	12,326.68	18,260.72	12,548.85	111.46	111.94	123.96	-5,872.28	-277.12	397.90	204.48	193.42	2.057		
18,000.00	12,327.79	18,360.69	12,552.47	113.26	113.73	124.26	-5,972.18	-276.22	399.30	203.33	195.96	2.038		
18,100.00	12,329.33	18,460.67	12,556.08	115.06	115.53	124.51	-6,072.09	-275.31	400.46	201.88	198.59	2.017		
18,200.00	12,331.08	18,560.65	12,559.69	116.86	117.32	124.73	-6,172.00	-274.40	401.52	200.28	201.24	1.995		
18,300.00	12,332.83	18,660.63	12,563.30	118.66	119.12	124.94	-6,271.92	-273.50	402.59	198.70	203.89	1.975		
18,400.00	12,334.58	18,760.62	12,566.91	120.46	120.92	125.16	-6,371.83	-272.59	403.66	197.13	206.52	1.955		
18,500.00	12,336.33	18,860.60	12,570.52	122.27	122.72	125.38	-6,471.74	-271.68	404.73	195.58	209.15	1.935		
18,600.00	12,338.08	18,960.58	12,574.13	124.07	124.53	125.59	-6,571.66	-270.77	405.81	194.05	211.76	1.916		
18,700.00	12,339.83	19,060.56	12,577.75	125.88	126.33	125.80	-6,671.57	-269.87	406.90	192.53	214.37	1.898		
18,800.00	12,341.58	19,160.55	12,581.36	127.69	128.14	126.02	-6,771.48	-268.96	407.99	191.03	216.96	1.880		
18,900.00	12,343.33	19,260.53	12,584.97	129.50	129.94	126.23	-6,871.40	-268.05	409.09	189.54	219.55	1.863		
19,000.00	12,345.09	19,360.51	12,588.58	131.31	131.75	126.44	-6,971.31	-267.15	410.19	188.07	222.12	1.847		
19,100.00	12,346.84	19,460.50	12,592.19	133.12	133.56	126.65	-7,071.22	-266.24	411.30	186.62	224.69	1.831		
19,200.00	12,348.59	19,560.48	12,595.80	134.94	135.37	126.85	-7,171.13	-265.33	412.42	185.18	227.24	1.815		
19,300.00	12,350.34	19,660.46	12,599.41	136.75	137.18	127.06	-7,271.05	-264.43	413.53	183.75	229.78	1.800		
19,400.00	12,352.09	19,760.44	12,603.03	138.56	138.99	127.26	-7,370.96	-263.52	414.66	182.34	232.32	1.785		
19,500.00	12,353.84	19,860.43	12,606.64	140.38	140.81	127.47	-7,470.87	-262.61	415.79	180.95	234.84	1.771		
19,600.00	12,355.59	19,960.41	12,610.25	142.20	142.74	127.68	-7,570.78	-261.70	416.92	179.56	237.36	1.757		
19,700.00	12,357.34	20,060.39	12,613.86	144.02	144.65	127.88	-7,670.69	-260.79	418.05	178.17	240.00	1.743		
19,800.00	12,359.09	20,160.37	12,617.47	145.83	146.47	128.09	-7,770.60	-259.88	419.18	176.78	242.74	1.729		
19,900.00	12,360.84	20,260.35	12,621.08	147.65	148.28	128.30	-7,870.51	-258.97	420.31	175.39	245.58	1.715		
20,000.00	12,362.59	20,360.33	12,624.69	149.47	150.10	128.51	-7,970.42	-258.06	421.44	174.00	248.50	1.701		
20,100.00	12,364.34	20,460.31	12,628.30	151.29	151.92	128.72	-8,070.33	-257.15	422.57	172.61	251.50	1.687		
20,200.00	12,366.09	20,560.29	12,631.91	153.11	153.73	128.93	-8,170.24	-256.24	423.70	171.22	254.60	1.673		

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 11H
 Well Error: 0.00 ft
 Reference Wellbore: Lateral
 Reference Design: Plan #1

Local Co-ordinate Reference: Well White Falcon 16 Fed Com 11H - Slot 11H
 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
White Falcon 16 Federal Com Pad - White Falcon 16 Fed Com 22H - Lateral - Plan #1													Offset Well Error:	0.00 ft
Survey Program: 0-MWD														
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		
20,300.00	12,361.81	20,672.09	12,602.64	154.94	155.55	126.12	-8,282.43	-255.29	408.55	146.18	262.37	1.557		
20,400.00	12,361.07	20,772.09	12,601.58	156.76	157.37	126.09	-8,382.42	-254.39	408.36	142.86	265.50	1.538		
20,500.00	12,360.32	20,872.09	12,600.51	158.58	159.20	126.05	-8,482.41	-253.48	408.18	139.54	268.64	1.519		
20,600.00	12,359.58	20,972.09	12,599.45	160.41	161.02	126.01	-8,582.40	-252.58	407.99	136.21	271.78	1.501		
20,700.00	12,358.83	21,072.09	12,598.39	162.23	162.84	125.98	-8,682.39	-251.68	407.81	132.88	274.93	1.483	Level 3	
20,800.00	12,358.08	21,172.09	12,597.33	164.06	164.66	125.94	-8,782.38	-250.78	407.62	129.54	278.08	1.466	Level 3	
20,900.00	12,357.34	21,272.09	12,596.27	165.88	166.49	125.91	-8,882.37	-249.88	407.44	126.20	281.23	1.449	Level 3	
21,000.00	12,356.59	21,372.09	12,595.21	167.71	168.31	125.87	-8,982.36	-248.97	407.25	122.86	284.39	1.432	Level 3	
21,100.00	12,355.85	21,472.09	12,594.15	169.54	170.13	125.83	-9,082.35	-248.07	407.07	119.52	287.55	1.416	Level 3	
21,200.00	12,355.10	21,572.09	12,593.09	171.36	171.96	125.80	-9,182.34	-247.17	406.89	116.17	290.72	1.400	Level 3	
21,300.00	12,354.35	21,672.09	12,592.02	173.19	173.79	125.76	-9,282.33	-246.27	406.70	112.81	293.89	1.384	Level 3	
21,400.00	12,353.61	21,772.09	12,590.96	175.02	175.61	125.73	-9,382.32	-245.37	406.52	109.46	297.06	1.368	Level 3	
21,500.00	12,352.86	21,872.09	12,589.90	176.85	177.44	125.69	-9,482.31	-244.47	406.33	106.10	300.23	1.353	Level 3	
21,600.00	12,352.12	21,972.09	12,588.84	178.68	179.27	125.65	-9,582.30	-243.56	406.15	102.74	303.41	1.339	Level 3	
21,700.00	12,351.37	22,072.09	12,587.78	180.51	181.09	125.62	-9,682.29	-242.66	405.97	99.37	306.59	1.324	Level 3	
21,800.00	12,350.62	22,172.08	12,586.72	182.34	182.92	125.58	-9,782.27	-241.76	405.78	96.01	309.78	1.310	Level 3	
21,900.00	12,349.88	22,272.08	12,585.66	184.17	184.75	125.54	-9,882.26	-240.86	405.60	92.63	312.97	1.296	Level 3	
22,000.00	12,349.13	22,372.08	12,584.60	186.00	186.58	125.51	-9,982.25	-239.96	405.42	89.26	316.16	1.282	Level 3	
22,100.00	12,348.39	22,472.08	12,583.53	187.83	188.41	125.47	-10,082.24	-239.05	405.24	85.88	319.35	1.269	Level 3	
22,151.83	12,348.00	22,523.91	12,582.98	188.78	189.36	125.45	-10,134.07	-238.59	405.14	84.13	321.01	1.262	Level 3, SF	

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