

15-43883

COG OPERATING, LLC

LEA COUNTY, NM

LUSK BSS

NERVOUS PURVIS STATE #8H

OWB

Plan: DWD Plan 1

Standard Planning Report

05 August, 2016

COG Operating LLC

Planning Report

Database:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well NERVOUS PERVIS STATE #8H
Company:	NEW MEXICO BASIN	TVD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Project:	LEA COUNTY, NM	MD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Site:	LUSK BSS	North Reference:	Grid
Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	DWD Plan 1		

Project	LEA COUNTY, NM		
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	LUSK BSS		
Site Position:		Northing:	546,609.70 usft
From:	Map	Easting:	583,312.20 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 30' 8.821 N
		Longitude:	104° 3' 47.146 W
		Grid Convergence:	0.15 °

Well	NERVOUS PURVIS STATE #8H		
Well Position	+N-S	75,998.1 usft	Northing: 622,607.80 usft
	+E-W	74,837.8 usft	Easting: 658,150.00 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	3,498.7 usft
		Latitude:	32° 42' 38.131 N
		Longitude:	103° 49' 8.981 W
		Ground Level:	3,667.0 usft

Wellbore	OWB		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM2015	8/5/2016	7.21	60.47	48,280

Design	DWD Plan 1		
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Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)
	0.0	0.0	0.0
			Direction (°)
			182.37

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,557.6	0.00	0.00	8,557.6	0.0	0.0	0.00	0.00	0.00	0.00	
9,299.2	88.99	182.37	9,035.0	-468.6	-19.4	12.00	12.00	0.00	182.37	
13,850.6	88.99	182.37	9,115.2	-5,015.5	-207.1	0.00	0.00	0.00	0.00	Nervous Pervis

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Site:	LUSK BSS	North Reference:	Grid
Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	DWD Plan 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
Nervous Pervis State #8H - SHL									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00

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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,557.6	0.00	0.00	8,557.6	0.0	0.0	0.0	0.00	0.00	0.00	
8,600.0	5.09	182.37	8,599.9	-1.9	-0.1	1.9	12.00	12.00	0.00	
8,700.0	17.09	182.37	8,697.9	-21.1	-0.9	21.1	12.00	12.00	0.00	
8,800.0	29.09	182.37	8,789.7	-60.2	-2.5	60.2	12.00	12.00	0.00	
8,900.0	41.09	182.37	8,871.4	-117.5	-4.9	117.6	12.00	12.00	0.00	
9,000.0	53.09	182.37	8,939.4	-190.5	-7.9	190.7	12.00	12.00	0.00	
9,100.0	65.09	182.37	8,990.6	-276.1	-11.4	276.3	12.00	12.00	0.00	
9,200.0	77.09	182.37	9,023.0	-370.5	-15.3	370.8	12.00	12.00	0.00	
9,299.2	88.99	182.37	9,035.0	-468.6	-19.4	469.0	12.00	12.00	0.00	
9,300.0	88.99	182.37	9,035.0	-469.5	-19.4	469.9	0.00	0.00	0.00	
9,400.0	88.99	182.37	9,036.8	-569.4	-23.5	569.8	0.00	0.00	0.00	
9,500.0	88.99	182.37	9,038.5	-669.3	-27.6	669.8	0.00	0.00	0.00	
9,600.0	88.99	182.37	9,040.3	-769.2	-31.8	769.8	0.00	0.00	0.00	
9,700.0	88.99	182.37	9,042.1	-869.1	-35.9	869.8	0.00	0.00	0.00	
9,800.0	88.99	182.37	9,043.8	-969.0	-40.0	969.8	0.00	0.00	0.00	
9,900.0	88.99	182.37	9,045.6	-1,068.9	-44.1	1,069.8	0.00	0.00	0.00	
10,000.0	88.99	182.37	9,047.3	-1,168.8	-48.3	1,169.8	0.00	0.00	0.00	
10,100.0	88.99	182.37	9,049.1	-1,268.7	-52.4	1,269.7	0.00	0.00	0.00	
10,200.0	88.99	182.37	9,050.9	-1,368.6	-56.5	1,369.7	0.00	0.00	0.00	
10,300.0	88.99	182.37	9,052.6	-1,468.5	-60.6	1,469.7	0.00	0.00	0.00	
10,400.0	88.99	182.37	9,054.4	-1,568.4	-64.8	1,569.7	0.00	0.00	0.00	

COG Operating LLC

Planning Report

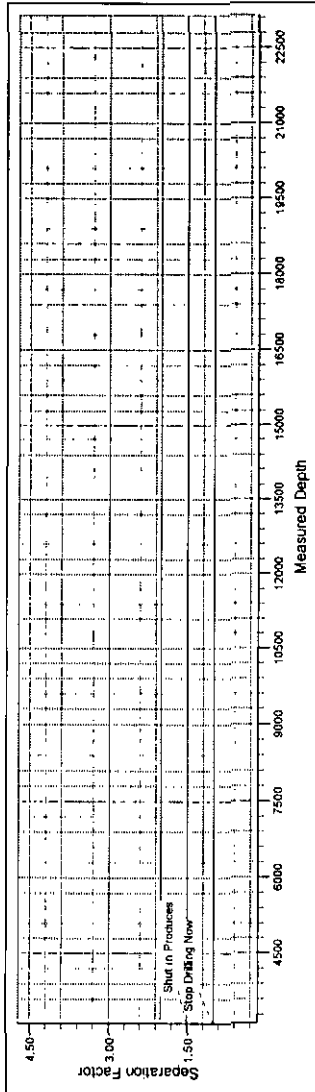
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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
10,500.0	88.99	182.37	9,056.2	-1,668.3	-68.9	1,669.7	0.00	0.00	0.00	
10,600.0	88.99	182.37	9,057.9	-1,768.2	-73.0	1,769.7	0.00	0.00	0.00	
10,700.0	88.99	182.37	9,059.7	-1,868.1	-77.2	1,869.6	0.00	0.00	0.00	
10,800.0	88.99	182.37	9,061.4	-1,968.0	-81.3	1,969.6	0.00	0.00	0.00	
10,900.0	88.99	182.37	9,063.2	-2,067.9	-85.4	2,069.6	0.00	0.00	0.00	
11,000.0	88.99	182.37	9,065.0	-2,167.8	-89.5	2,169.6	0.00	0.00	0.00	
11,100.0	88.99	182.37	9,066.7	-2,267.7	-93.7	2,269.6	0.00	0.00	0.00	
11,200.0	88.99	182.37	9,068.5	-2,367.6	-97.8	2,369.6	0.00	0.00	0.00	
11,300.0	88.99	182.37	9,070.3	-2,467.5	-101.9	2,469.6	0.00	0.00	0.00	
11,400.0	88.99	182.37	9,072.0	-2,567.4	-106.0	2,569.5	0.00	0.00	0.00	
11,500.0	88.99	182.37	9,073.8	-2,667.2	-110.2	2,669.5	0.00	0.00	0.00	
11,600.0	88.99	182.37	9,075.5	-2,767.1	-114.3	2,769.5	0.00	0.00	0.00	
11,700.0	88.99	182.37	9,077.3	-2,867.0	-118.4	2,869.5	0.00	0.00	0.00	
11,800.0	88.99	182.37	9,079.1	-2,966.9	-122.5	2,969.5	0.00	0.00	0.00	
11,900.0	88.99	182.37	9,080.8	-3,066.8	-126.7	3,069.5	0.00	0.00	0.00	
12,000.0	88.99	182.37	9,082.6	-3,166.7	-130.8	3,169.4	0.00	0.00	0.00	
12,100.0	88.99	182.37	9,084.4	-3,266.6	-134.9	3,269.4	0.00	0.00	0.00	
12,200.0	88.99	182.37	9,086.1	-3,366.5	-139.0	3,369.4	0.00	0.00	0.00	
12,300.0	88.99	182.37	9,087.9	-3,466.4	-143.2	3,469.4	0.00	0.00	0.00	
12,400.0	88.99	182.37	9,089.6	-3,566.3	-147.3	3,569.4	0.00	0.00	0.00	
12,500.0	88.99	182.37	9,091.4	-3,666.2	-151.4	3,669.4	0.00	0.00	0.00	
12,600.0	88.99	182.37	9,093.2	-3,766.1	-155.5	3,769.4	0.00	0.00	0.00	
12,700.0	88.99	182.37	9,094.9	-3,866.0	-159.7	3,869.3	0.00	0.00	0.00	
12,800.0	88.99	182.37	9,096.7	-3,965.9	-163.8	3,969.3	0.00	0.00	0.00	
12,900.0	88.99	182.37	9,098.5	-4,065.8	-167.9	4,069.3	0.00	0.00	0.00	
13,000.0	88.99	182.37	9,100.2	-4,165.7	-172.0	4,169.3	0.00	0.00	0.00	
13,100.0	88.99	182.37	9,102.0	-4,265.6	-176.2	4,269.3	0.00	0.00	0.00	
13,200.0	88.99	182.37	9,103.7	-4,365.5	-180.3	4,369.3	0.00	0.00	0.00	
13,300.0	88.99	182.37	9,105.5	-4,465.4	-184.4	4,469.2	0.00	0.00	0.00	
13,400.0	88.99	182.37	9,107.3	-4,565.3	-188.6	4,569.2	0.00	0.00	0.00	
13,500.0	88.99	182.37	9,109.0	-4,665.2	-192.7	4,669.2	0.00	0.00	0.00	
13,600.0	88.99	182.37	9,110.8	-4,765.1	-196.8	4,769.2	0.00	0.00	0.00	
13,700.0	88.99	182.37	9,112.6	-4,865.0	-200.9	4,869.2	0.00	0.00	0.00	
13,800.0	88.99	182.37	9,114.3	-4,964.9	-205.1	4,969.2	0.00	0.00	0.00	
13,850.6	88.99	182.37	9,115.2	-5,015.5	-207.1	5,019.8	0.00	0.00	0.00	
Nervous Purvis State #8H - BHL										

Design Targets										
Target Name	hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape		(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
Nervous Purvis State	- plan hits target center	0.00	0.00	0.0	0.0	0.0	622,607.80	658,150.00	32° 42' 38.131 N	103° 49' 8.981 W
	- Point									
Nervous Purvis State	- plan misses target center by 0.2usft at 13850.6usft MD (9115.2 TVD, -5015.5 N, -207.1 E)	0.00	0.00	9,115.0	-5,015.5	-207.1	617,592.30	657,942.90	32° 41' 48.511 N	103° 49' 11.689 W
	- Point									

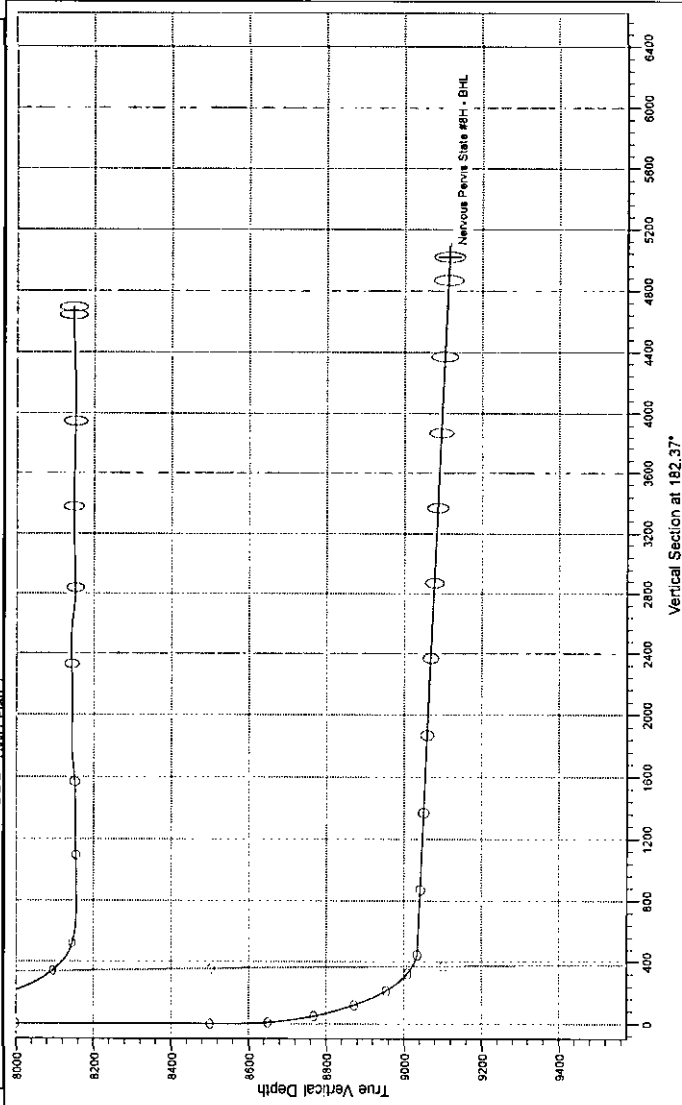


Project: LEA COUNTY, NM
Site: LUSK BSS
Well: NERVOUS PURVIS STATE #8H
Wellbore: OWB
Design: DWD Plan 1

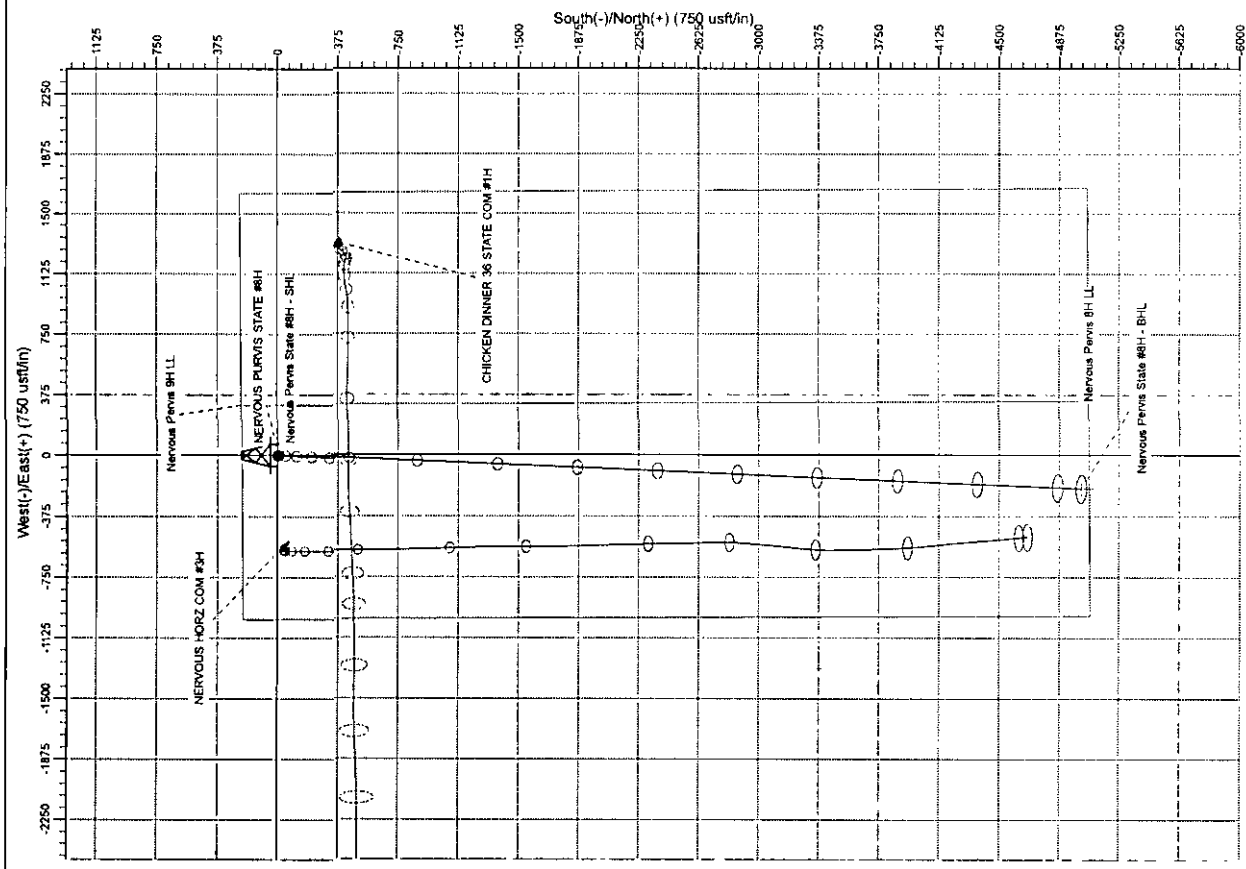


LEGEND

- NERVOUS HORZ COM #3H, OWB, ACTUAL WELLPATH V0
- CHICKEN DINNER 36 STATE COM #1H, OWB, ACTUAL WELLPATH V0
- DWD Plan 1



Vertical Section at 182.37°



Nervous Purvis State #8H

	Hole					
	Size	Casing	Wt	Depth	Cmt	TOC
Surface	17.5	13 3/8	54.5	1000'	790	0
Intrmd	12.25	9 5/8	40	2750'	800	0
Prod	8.75	5.5	17	13851'	1950	2250'

Plan to drill a 17.5" hole to 1000' with fresh water. Run 13 3/8", 54.5# J-55 csg and cmt to surface. Drill a 12.25" hole to 2750' with brine, and run 9 5/8" 40# J55 and cement to surface in one stage. Drill out 8.75" intermediate, kick off and drill an 8.75" curve and lateral to 13851' with cut brine. Run 5-1/2" 17# P110 production string and cement to 2250'.

Well Control

Type	Pressure	Test	Manufacture
Double Ram	5000	5000	Cameron

COG OPERATING, LLC
LEA COUNTY, NM
LUSK BSS
NERVOUS PURVIS STATE #8H

OWB
DWD Plan 1

Anticollision Report

05 August, 2016

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well NERVOUS PERVIS STATE #8H
Project:	LEA COUNTY, NM	TVD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Reference Site:	LUSK BSS	MD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Reference	DWD Plan 1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 usft	Error Surface:	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 8/5/2016	
From (usft)	To (usft)	Survey (Wellbore)
0.0	13,849.8	DWD Plan 1 (OWB)
		Tool Name
		MWD
		Description
		OWSG MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
LUSK BSS						
CHICKEN DINNER 36 STATE COM #1H - OWB - ACTU	9,208.8	9,065.8	1,256.6	1,192.4	19.595	CC, ES
CHICKEN DINNER 36 STATE COM #1H - OWB - ACTU	9,299.2	9,077.4	1,260.0	1,195.5	19.537	SF
NERVOUS HORZ COM #3H - OWB - ACTUAL WELLPA	481.0	476.0	526.7	521.9	108.533	CC
NERVOUS HORZ COM #3H - OWB - ACTUAL WELLPA	600.0	592.1	527.1	521.6	96.340	ES
NERVOUS HORZ COM #3H - OWB - ACTUAL WELLPA	13,600.0	12,564.0	1,016.1	848.8	6.073	SF

Offset Design											
LUSK BSS - CHICKEN DINNER 36 STATE COM #1H - OWB - ACTUAL WELLPATH											
Survey Program: 100-MWD											
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	
0.0	0.0	0.0	0.0	0.0	3.0	106.69	-393.1	1,310.9	1,368.5		
100.0	100.0	90.5	90.5	0.1	3.0	106.70	-393.2	1,311.0	1,368.7	1,365.5	3.15 434.933
200.0	200.0	190.1	190.1	0.5	3.0	106.70	-393.4	1,311.3	1,369.0	1,365.5	3.54 386.810
300.0	300.0	288.3	288.3	0.9	3.1	106.69	-393.2	1,311.8	1,369.4	1,365.5	3.97 344.820
400.0	400.0	386.3	386.3	1.2	3.2	106.67	-393.1	1,312.4	1,370.0	1,365.6	4.44 308.562
500.0	500.0	490.8	490.8	1.6	3.4	106.68	-393.3	1,312.9	1,370.5	1,365.6	4.95 276.843
600.0	600.0	600.0	600.0	1.9	3.6	106.69	-393.7	1,312.7	1,370.5	1,365.0	5.50 249.347
700.0	700.0	695.2	695.2	2.3	3.7	106.71	-393.9	1,312.4	1,370.3	1,364.2	6.04 226.807
705.0	705.0	700.0	700.0	2.3	3.8	106.71	-393.9	1,312.4	1,370.3	1,364.2	6.07 225.770
800.0	800.0	791.7	791.7	2.7	4.0	106.72	-394.2	1,312.5	1,370.4	1,363.8	6.61 207.214
900.0	900.0	890.5	890.5	3.0	4.2	106.73	-394.5	1,312.7	1,370.7	1,363.5	7.21 190.103
1,000.0	1,000.0	990.3	990.3	3.4	4.5	106.73	-394.6	1,313.0	1,371.0	1,363.2	7.82 175.227
1,100.0	1,100.0	1,090.3	1,090.3	3.7	4.7	106.73	-394.7	1,313.3	1,371.4	1,362.9	8.45 162.245
1,200.0	1,200.0	1,188.9	1,188.9	4.1	5.0	106.74	-395.0	1,313.6	1,371.8	1,362.7	9.09 150.941
1,300.0	1,300.0	1,289.1	1,289.1	4.4	5.3	106.75	-395.4	1,314.0	1,372.2	1,362.5	9.74 140.921
1,400.0	1,400.0	1,389.7	1,389.7	4.8	5.6	106.76	-395.8	1,314.3	1,372.6	1,362.2	10.40 132.036
1,500.0	1,500.0	1,487.2	1,487.1	5.2	5.9	106.77	-396.3	1,314.6	1,373.1	1,362.0	11.05 124.245
1,600.0	1,600.0	1,582.3	1,582.3	5.5	6.2	106.79	-396.8	1,315.2	1,373.8	1,362.1	11.71 117.365
1,700.0	1,700.0	1,684.9	1,684.9	5.9	6.5	106.80	-397.3	1,316.0	1,374.7	1,362.3	12.39 110.975
1,800.0	1,800.0	1,784.5	1,784.5	6.2	6.8	106.80	-397.5	1,316.7	1,375.4	1,362.4	13.06 105.301
1,900.0	1,900.0	1,883.3	1,883.3	6.6	7.1	106.78	-397.4	1,317.6	1,376.2	1,362.5	13.74 100.187
2,000.0	2,000.0	1,985.5	1,985.5	7.0	7.5	106.74	-396.6	1,318.6	1,377.0	1,362.6	14.42 95.490

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well NERVOUS PERVIS STATE #8H
Project:	LEA COUNTY, NM	TVD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Reference Site:	LUSK BSS	MD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum.

Offset Design LUSK BSS - CHICKEN DINNER 36 STATE COM #1H - OWB - ACTUAL WELLPATH												Offset Site Error: 0.0 usft	
Survey Program: 100-MWD												Offset Well Error: 3.0 usft	
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre -N-S (usft)	Offset Wellbore Centre -E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,100.0	2,100.0	2,077.3	2,077.2	7.3	7.8	106.67	-395.1	1,320.0	1,378.0	1,362.9	15.07	91.426	
2,200.0	2,200.0	2,165.3	2,165.2	7.7	8.0	106.58	-393.5	1,322.0	1,379.7	1,363.9	15.71	87.794	
2,300.0	2,300.0	2,257.2	2,257.1	8.0	8.3	106.48	-391.9	1,324.9	1,382.2	1,365.8	16.37	84.412	
2,400.0	2,400.0	2,351.2	2,350.9	8.4	8.7	106.38	-390.4	1,328.2	1,385.1	1,368.1	17.04	81.270	
2,500.0	2,500.0	2,458.6	2,458.3	8.7	9.0	106.27	-388.9	1,332.2	1,388.3	1,370.5	17.76	78.169	
2,600.0	2,600.0	2,579.1	2,578.7	9.1	9.4	106.17	-387.2	1,335.1	1,390.2	1,371.7	18.52	75.070	
2,700.0	2,700.0	2,698.3	2,697.9	9.5	9.8	106.09	-385.5	1,336.2	1,390.7	1,371.4	19.27	72.161	
2,800.0	2,800.0	2,803.3	2,802.9	9.8	10.2	106.05	-384.3	1,336.1	1,390.3	1,370.3	19.97	69.608	
2,900.0	2,900.0	2,904.8	2,904.4	10.2	10.5	106.01	-383.2	1,335.7	1,389.6	1,369.0	20.66	67.257	
3,000.0	3,000.0	3,006.9	3,006.5	10.5	10.8	105.97	-382.1	1,335.3	1,388.9	1,367.6	21.35	65.042	
3,100.0	3,100.0	3,119.9	3,119.5	10.9	11.2	105.93	-380.9	1,334.1	1,387.6	1,365.5	22.08	62.841	
3,200.0	3,200.0	3,230.6	3,230.1	11.3	11.5	105.92	-379.9	1,331.8	1,385.4	1,362.6	22.80	60.758	
3,300.0	3,300.0	3,335.2	3,334.8	11.6	11.9	105.92	-379.2	1,329.1	1,382.7	1,359.2	23.50	58.830	
3,400.0	3,400.0	3,437.6	3,437.1	12.0	12.2	105.95	-379.0	1,326.0	1,379.7	1,355.5	24.20	57.017	
3,500.0	3,500.0	3,537.9	3,537.4	12.3	12.6	105.98	-378.8	1,322.8	1,376.6	1,351.7	24.89	55.313	
3,600.0	3,600.0	3,634.9	3,634.3	12.7	12.9	106.00	-378.5	1,319.8	1,373.6	1,348.0	25.57	53.721	
3,700.0	3,700.0	3,727.8	3,727.2	13.0	13.2	106.02	-378.2	1,317.4	1,371.0	1,344.8	26.24	52.254	
3,800.0	3,800.0	3,824.4	3,823.7	13.4	13.5	106.03	-377.9	1,315.3	1,368.8	1,341.9	26.92	50.848	
3,900.0	3,900.0	3,922.7	3,922.0	13.8	13.8	106.04	-377.6	1,313.3	1,366.8	1,339.2	27.61	49.507	
4,000.0	4,000.0	4,025.7	4,025.0	14.1	14.2	106.06	-377.3	1,311.1	1,364.7	1,336.4	28.31	48.197	
4,100.0	4,100.0	4,123.1	4,122.4	14.5	14.5	106.06	-376.9	1,309.1	1,362.6	1,333.5	29.00	46.980	
4,200.0	4,200.0	4,218.0	4,217.3	14.8	14.8	106.06	-376.3	1,307.5	1,360.7	1,331.0	29.68	45.841	
4,300.0	4,300.0	4,311.7	4,310.9	15.2	15.2	106.06	-375.9	1,306.2	1,359.3	1,329.0	30.36	44.772	
4,400.0	4,400.0	4,407.1	4,406.4	15.6	15.5	106.06	-375.9	1,305.2	1,358.3	1,327.3	31.04	43.754	
4,500.0	4,500.0	4,509.4	4,508.6	15.9	15.8	106.08	-375.9	1,304.3	1,357.4	1,325.7	31.75	42.750	
4,600.0	4,600.0	4,610											

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

COG Operating LLC

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Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUSK BSS - CHICKEN DINNER 36 STATE COM #1H - OWB - ACTUAL WELLPATH														Offset Site Error:	0.0 usft
Survey Program: 100-MWD														Offset Well Error:	3.0 usft
Reference	Measured Depth (usft)	Vertical Depth (usft)	Offset	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
	7,100.0	7,100.0	7,124.6	7,123.6	25.2	24.9	106.14	-375.4	1,297.0	1,350.5	1,300.4	50.09	26.960		
	7,200.0	7,200.0	7,220.2	7,219.2	25.6	25.2	106.09	-373.8	1,295.6	1,348.6	1,297.8	50.78	26.556		
	7,300.0	7,300.0	7,323.9	7,322.9	26.0	25.5	106.05	-372.3	1,293.9	1,346.7	1,295.2	51.50	26.149		
	7,400.0	7,400.0	7,434.4	7,433.3	26.3	25.9	106.06	-371.7	1,291.3	1,344.3	1,292.0	52.24	25.730		
	7,500.0	7,500.0	7,539.6	7,538.4	26.7	26.3	106.12	-372.2	1,287.7	1,341.1	1,288.2	52.97	25.319		
	7,600.0	7,600.0	7,637.0	7,635.7	27.0	26.6	106.23	-373.9	1,284.0	1,338.0	1,284.3	53.67	24.931		
	7,700.0	7,700.0	7,732.8	7,731.5	27.4	27.0	106.39	-376.6	1,280.3	1,335.1	1,280.7	54.36	24.560		
	7,800.0	7,800.0	7,826.8	7,825.4	27.7	27.3	106.56	-379.7	1,277.0	1,332.6	1,277.5	55.05	24.208		
	7,900.0	7,900.0	7,923.5	7,922.0	28.1	27.6	106.73	-382.8	1,273.9	1,330.4	1,274.7	55.74	23.867		
	8,000.0	8,000.0	8,020.2	8,018.6	28.5	28.0	106.89	-385.9	1,271.0	1,328.5	1,272.1	56.44	23.538		
	8,100.0	8,100.0	8,112.0	8,110.3	28.8	28.3	107.06	-389.3	1,268.6	1,327.0	1,269.9	57.12	23.233		
	8,200.0	8,200.0	8,203.3	8,201.4	29.2	28.6	107.24	-393.0	1,266.6	1,326.2	1,268.4	57.80	22.946		
	8,300.0	8,300.0	8,304.4	8,302.4	29.5	29.0	107.45	-397.5	1,264.7	1,325.7	1,267.2	58.51	22.658		
	8,400.0	8,400.0	8,406.1	8,404.0	29.9	29.3	107.66	-402.1	1,262.6	1,325.1	1,265.9	59.22	22.374		
	8,500.0	8,500.0	8,518.7	8,516.5	30.3	29.7	107.90	-406.9	1,259.7	1,323.9	1,264.0	59.98	22.074		
	8,557.6	8,557.6	8,583.3	8,581.0	30.5	30.0	108.03	-409.4	1,257.6	1,322.9	1,262.4	60.41	21.897		
	8,575.0	8,575.0	8,602.7	8,600.3	30.5	30.0	-74.36	-410.1	1,256.9	1,322.4	1,261.8	60.54	21.843		
	8,600.0	8,599.9	8,629.7	8,627.3	30.6	30.1	-74.50	-411.1	1,255.9	1,321.4	1,260.7	60.72	21.763		
	8,625.0	8,624.8	8,656.6	8,654.3	30.7	30.2	-74.74	-412.0	1,254.9	1,320.0	1,259.1	60.89	21.678		
	8,650.0	8,649.4	8,683.4	8,681.0	30.8	30.3	-75.08	-412.9	1,253.9	1,318.2	1,257.1	61.06	21.587		
	8,675.0	8,673.8	8,709.3	8,706.8	30.8	30.4	-75.53	-413.7	1,252.8	1,316.0	1,254.8	61.23	21.492		
	8,700.0	8,697.9	8,733.6	8,731.1	30.9	30.5	-76.05	-414.4	1,251.9	1,313.6	1,252.2	61.40	21.395		
	8,725.0	8,721.6	8,757.6	8,755.1	31.0	30.6	-76.66	-415.1	1,250.9	1,310.8	1,249.3	61.56	21.294		
	8,750.0	8,744.8	8,781.2	8,778.6	31.1	30.6	-77.35	-415.7	1,250.0	1,307.8	1,246.1	61.71	21.192		
	8,775.0	8,767.6	8,804.2	8,801.7	31.1	30.7	-78.11	-416.3	1,249.1	1,304.6	1,242.7	61.87	21.087		
	8,800.0	8,789.7	8,826.7	8,824.1	31.2	30.8	-78.94	-416.9	1,248.2	1,301.2	1,239.2	62.02	20.980		
	8,825.0	8,811.2	8,848.6	8,846.0	31.3	30.9	-79.82	-417.5	1,247.4	1,297.6	1,235.4	62.17	20.872		
	8,850.0	8,832.1	8,869.8	8,867.1	31.4	31.0	-80.75	-418.0	1,246.6	1,293.9	1,231.6	62.32	20.763		
	8,875.0	8,852.1	8,890.2	8,887.5	31.4	31.0	-81.72	-418.4	1,245.8	1,290.1	1,227.7	62.46	20.655		
	8,900.0	8,871.4	8,909.6	8,907.0	31.5	31.1	-82.71	-418.8	1,245.1	1,286.4	1,223.8	62.60	20.548		
	8,925.0	8,889.8	8,928.0	8,925.3	31.6	31.2	-83.70	-419.2	1,244.4	1,282.6	1,219.9	62.74	20.443		
	8,950.0	8,907.3	8,945.5	8,942.8	31.6	31.2	-84.69	-419.6	1,243.7	1,278.9	1,216.0	62.88	20.341		
	8,975.0	8,923.8	8,962.1	8,959.4	31.7	31.3	-85.67	-419.9	1,243.1	1,275.4	1,212.4	63.01	20.241		
	9,000.0	8,939.4	8,977.7	8,975.0	31.8	31.3	-86.62	-420.2	1,242.5	1,272.0	1,208.8	63.14	20.146		
	9,025.0	8,953.8	8,992.3	8,989.5	31.9	31.4	-87.53	-420.5	1,242.0	1,268.8	1,205.6	63.27	20.056		
	9,050.0	8,967.2	9,005.9	9,003.1	31.9	31.4	-88.39	-420.8	1,241.5	1,265.9	1,202.6	63.39	19.971		
	9,075.0	8,979.5	9,018.5	9,015.7	32.0	31.5	-89.20	-421.0	1,241.1	1,263.4	1,199.9	63.51	19.892		
	9,100.0	8,990.6	9,029.9	9,027.2	32.1	31.5	-89.92	-421.2	1,240.7	1,261.2	1,197.5	63.63	19.819		
	9,125.0	9,000.6	9,040.2	9,037.4	32.2	31.6	-90.57	-421.4	1,240.3	1,259.3	1,195.6	63.75	19.754		
	9,150.0	9,009.3	9,049.3	9,046.5	32.3	31.6	-91.12	-421.6	1,240.0	1,257.9	1,194.1	63.87	19.696		
	9,175.0	9,016.8	9,057.1	9,054.3	32.4	31.6	-91.57	-421.7	1,239.7	1,257.0	1,193.0	63.98	19.647		
	9,200.0	9,023.0	9,063.8	9,060.9	32.4	31.6	-91.91	-421.8	1,239.5	1,256.6	1,192.5	64.09	19.607		
	9,208.8	9,024.9	9,065.8	9,063.0	32.5	31.7	-92.01	-421.8	1,239.4	1,256.6	1,192.4	64.13	19.595 CC, ES		
	9,225.0	9,027.9	9,069.1	9,066.3	32.5	31.7	-92.14	-421.9	1,239.3	1,256.7	1,192.5	64.20	19.576		
	9,250.0	9,031.6	9,073.2	9,070.4	32.6	31.7	-92.25	-422.0	1,239.2	1,257.3	1,193.0	64.30	19.553		
	9,275.0	9,034.0	9,076.0	9,073.1	32.7	31.7	-92.24	-422.0	1,239.1	1,258.4	1,194.0	64.40	19.541		
	9,299.2	9,035.0	9,077.4	9,074.6	32.8	31.7	-92.11	-422.0	1,239.0	1,260.0	1,195.5	64.49	19.537 SF		
	9,400.0	9,036.8	9,081.0	9,078.2	33.2	31.7	-92.28	-422.1	1,238.9	1,271.8	1,206.9	64.92	19.592		
	9,500.0	9,038.5	9,084.6	9,081.7	33.7	31.7	-92.44	-422.2	1,238.8	1,291.2	1,225.8	65.41	19.739		
	9,600.0	9,040.3	9,088.1	9,085.3	34.2	31.7	-92.60	-422.2	1,238.7	1,317.9	1,251.9	65.98	19.973		
	9,700.0	9,042.1	9,091.6	9,088.8	34.9	31.7	-92.76	-422.3	1,238.5	1,351.5	1,284.8	66.62	20.286		
	9,800.0	9,043.8	9,095.1	9,092.3	35.6	31.8	-92.92	-422.3	1,238.4	1,391.4	1,324.1	67.33	20.667		

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well NERVOUS PERVIS STATE #8H
Project:	LEA COUNTY, NM	TVD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Reference Site:	LUSK BSS	MD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUSK BSS - CHICKEN DINNER 36 STATE COM #1H - OWB - ACTUAL WELLPATH														Offset Site Error:	0.0 usft
Survey Program 100-MWD														Offset Well Error:	3.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi Major Axis (usft)	Highside Toolface (")	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
9,900.0	9,045.6	9,098.6	9,095.8	36.3	31.8	-93.08		-422.4	1,238.3	1,437.2	1,369.1	68.09	21.106		
10,000.0	9,047.3	9,102.1	9,099.3	37.1	31.8	-93.24		-422.5	1,238.2	1,488.3	1,419.4	68.92	21.595		
10,100.0	9,049.1	9,105.6	9,102.7	38.0	31.8	-93.40		-422.5	1,238.1	1,544.2	1,474.4	69.80	22.124		
10,200.0	9,050.9	9,109.0	9,106.2	38.9	31.8	-93.55		-422.6	1,237.9	1,604.4	1,533.7	70.73	22.683		
10,300.0	9,052.6	9,112.5	9,109.6	39.9	31.8	-93.71		-422.6	1,237.8	1,668.4	1,596.7	71.71	23.266		
10,400.0	9,054.4	9,115.9	9,113.1	40.9	31.8	-93.87		-422.7	1,237.7	1,735.8	1,663.1	72.73	23.865		
10,500.0	9,056.2	9,119.4	9,116.5	42.0	31.8	-94.03		-422.7	1,237.6	1,806.2	1,732.4	73.80	24.476		
10,600.0	9,057.9	9,122.8	9,120.0	43.0	31.9	-94.18		-422.8	1,237.5	1,879.3	1,804.4	74.90	25.091		
10,700.0	9,059.7	9,126.3	9,123.4	44.2	31.9	-94.34		-422.9	1,237.3	1,954.8	1,878.8	76.04	25.709		
10,800.0	9,061.4	9,129.7	9,126.9	45.3	31.9	-94.50		-422.9	1,237.2	2,032.4	1,955.2	77.20	26.324		
10,900.0	9,063.2	9,133.1	9,130.3	46.5	31.9	-94.65		-423.0	1,237.1	2,111.8	2,033.4	78.40	26.935		
11,000.0	9,065.0	9,136.6	9,133.7	47.7	31.9	-94.81		-423.0	1,237.0	2,193.0	2,113.3	79.63	27.539		
11,100.0	9,066.7	9,140.0	9,137.1	49.0	31.9	-94.96		-423.1	1,236.9	2,275.6	2,194.7	80.88	28.134		
11,200.0	9,068.5	9,143.4	9,140.5	50.2	31.9	-95.12		-423.1	1,236.8	2,359.6	2,277.4	82.16	28.719		
11,300.0	9,070.3	9,146.8	9,143.9	51.5	31.9	-95.27		-423.2	1,236.6	2,444.8	2,361.3	83.46	29.293		
11,400.0	9,072.0	9,150.2	9,147.3	52.8	32.0	-95.43		-423.3	1,236.5	2,531.0	2,446.2	84.78	29.854		
11,500.0	9,073.8	9,153.6	9,150.7	54.2	32.0	-95.58		-423.3	1,236.4	2,618.3	2,532.1	86.12	30.403		
11,600.0	9,075.5	9,157.0	9,154.1	55.5	32.0	-95.74		-423.4	1,236.3	2,706.4	2,618.9	87.47	30.939		
11,700.0	9,077.3	9,160.4	9,157.5	56.9	32.0	-95.89		-423.4	1,236.2	2,795.3	2,706.4	88.85	31.462		
11,800.0	9,079.1	9,163.8	9,160.9	58.2	32.0	-96.04		-423.5	1,236.1	2,884.9	2,794.7	90.23	31.971		
11,900.0	9,080.8	9,167.1	9,164.3	59.6	32.0	-96.20		-423.5	1,236.0	2,975.2	2,883.5	91.64	32.468		
12,000.0	9,082.6	9,170.5	9,167.6	61.0	32.0	-96.35		-423.6	1,235.8	3,066.1	2,973.0	93.05	32.951		
12,100.0	9,084.4	9,173.9	9,171.0	62.4	32.0	-96.50		-423.6	1,235.7	3,157.5	3,063.0	94.48	33.421		
12,200.0	9,086.1	9,177.2	9,174.3	63.9	32.0	-96.65		-423.7	1,235.6	3,249.4	3,153.5	95.92	33.878		
12,300.0	9,087.9	9,180.6	9,177.7	65.3	32.1	-96.80		-423.7	1,235.5	3,341.8	3,244.5	97.37	34.322		
12,400.0	9,089.6	9,183.9	9,181.0	66.8	32.1	-96.96		-423.8	1,235.4	3,434.6	3,335.8	98.83	34.755		
12,500.0	9,091.4	9,187.3	9,184.4	68.2	32.1	-97.11		-423.8	1,235.3	3,527.8	3,427.5	100.29	35.175		
12,600.0	9,093.2	9,190.6	9,187.7	69.7	32.1	-97.26		-423.9	1,235.2	3,621.4	3,519.6	101.77	35.584		
12,700.0	9,094.9	9,193.9	9,191.0	71.2	32.1	-97.41		-424.0	1,235.1	3,715.3	3,612.0	103.26	35.981		
12,800.0	9,096.7	9,197.3	9,194.4	72.6	32.1	-97.56		-424.0	1,235.0	3,809.5	3,704.8	104.75	36.367		
12,900.0	9,098.5	9,200.6	9,197.7	74.1	32.1	-97.71		-424.1	1,234.8	3,904.0	3,797.7	106.25	36.743		
13,000.0	9,100.2	9,204.3	9,201.4	75.6	32.1	-97.87		-424.1	1,234.7	3,998.7	3,891.0	107.76	37.107		
13,100.0	9,102.0	9,207.9	9,205.0	77.1	32.2	-98.04		-424.2	1,234.6	4,093.7	3,984.5	109.28	37.462		
13,200.0	9,103.7	9,211.5	9,208.5	78.6	32.2	-98.20		-424.2	1,234.5	4,189.0	4,078.2	110.80	37.807		
13,300.0	9,105.5	9,215.0	9,212.1	80.1	32.2	-98.36		-424.3	1,234.4	4,284.4	4,172.1	112.33	38.143		
13,400.0	9,107.3	9,218.6	9,215.7	81.7	32.2	-98.52		-424.3	1,234.2	4,380.1	4,266.2	113.86	38.470		
13,500.0	9,109.0	9,222.2	9,219.3	83.2	32.2	-98.68		-424.4	1,234.1	4,475.9	4,360.5	115.40	38.787		
13,600.0	9,110.8	9,225.7	9,222.8	84.7	32.2	-98.84		-424.5	1,234.0	4,571.9	4,455.0	116.94	39.097		
13,700.0	9,112.6	9,229.3	9,226.4	86.3	32.2	-99.00		-424.5	1,233.9	4,668.1	4,549.6	118.49	39.398		
13,800.0	9,114.3	9,232.8	9,229.9	87.8	32.2	-99.16		-424.6	1,233.7	4,764.4	4,644.4	120.04	39.691		
13,850.6	9,115.2	12,187.0	10,621.9	88.6	62.4	161.91		-459.0	-539.2	4,812.2	4,661.3	150.94	31.882		

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well NERVOUS PERVIS STATE #8H
Project:	LEA COUNTY, NM	TVD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Reference Site:	LUSK BSS	MD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUSK BSS - NERVOUS HORZ COM #3H - OWB - ACTUAL WELLPATH											Offset Site Error:	0.0 usft
Survey Program: 100-MWD											Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
0.0	0.0	0.0	0.0	0.0	3.0	-97.56	-69.4	-523.1	527.7			
100.0	100.0	95.4	95.4	0.1	3.0	-97.58	-69.6	-523.0	527.6	524.5	3.15	167.666
200.0	200.0	196.0	196.0	0.5	3.0	-97.62	-70.0	-522.8	527.5	523.9	3.54	148.916
300.0	300.0	296.0	296.0	0.9	3.1	-97.67	-70.3	-522.6	527.3	523.3	3.98	132.523
400.0	400.0	397.7	397.7	1.2	3.2	-97.68	-70.4	-522.2	526.9	522.5	4.45	118.320
481.0	481.0	476.0	476.0	1.5	3.3	-97.67	-70.3	-522.0	526.7	521.9	4.85	108.533 CC
500.0	500.0	494.3	494.3	1.6	3.4	-97.67	-70.3	-522.0	526.7	521.8	4.95	106.430
600.0	600.0	592.1	592.1	1.9	3.5	-97.65	-70.2	-522.4	527.1	521.6	5.47	96.340 ES
700.0	700.0	689.7	689.6	2.3	3.7	-97.60	-69.8	-523.2	527.9	521.9	6.02	87.712
800.0	800.0	790.1	790.1	2.7	3.9	-97.54	-69.4	-524.3	528.9	522.3	6.59	80.207
900.0	900.0	888.5	888.5	3.0	4.2	-97.48	-69.0	-525.4	529.9	522.7	7.18	73.759
1,000.0	1,000.0	988.1	988.1	3.4	4.4	-97.42	-68.6	-526.7	531.2	523.4	7.79	68.148
1,100.0	1,100.0	1,087.9	1,087.8	3.7	4.7	-97.38	-68.4	-528.1	532.5	524.1	8.42	63.254
1,200.0	1,200.0	1,186.0	1,186.0	4.1	5.0	-97.32	-68.1	-529.6	534.0	525.0	9.05	59.007
1,300.0	1,300.0	1,285.6	1,285.5	4.4	5.3	-97.24	-67.5	-531.4	535.8	526.1	9.70	55.262
1,400.0	1,400.0	1,385.5	1,385.4	4.8	5.5	-97.16	-67.0	-533.3	537.6	527.2	10.35	51.940
1,500.0	1,500.0	1,485.4	1,485.3	5.2	5.8	-97.06	-66.3	-535.2	539.4	528.4	11.01	48.984
1,600.0	1,600.0	1,585.0	1,585.8	5.5	6.2	-96.95	-65.5	-537.1	541.1	529.5	11.68	46.326
1,700.0	1,700.0	1,686.7	1,686.5	5.9	6.5	-96.86	-64.8	-538.8	542.8	530.4	12.36	43.926
1,800.0	1,800.0	1,787.4	1,787.2	6.2	6.8	-96.77	-64.2	-540.4	544.3	531.2	13.04	41.751
1,900.0	1,900.0	1,889.1	1,888.9	6.6	7.1	-96.69	-63.6	-541.8	545.5	531.8	13.72	39.756
2,000.0	2,000.0	1,990.2	1,990.0	7.0	7.5	-96.58	-62.6	-542.9	546.6	532.1	14.41	37.930
2,100.0	2,100.0	2,090.8	2,090.6	7.3	7.8	-96.44	-61.4	-543.9	547.4	532.3	15.10	36.260
2,200.0	2,200.0	2,193.8	2,193.6	7.7	8.1	-96.26	-59.8	-544.7	548.0	532.2	15.79	34.697
2,300.0	2,300.0	2,293.5	2,293.3	8.0	8.4	-96.04	-57.7	-545.2	548.2	531.7	16.48	33.267
2,400.0	2,400.0	2,393.0	2,392.8	8.4	8.8	-95.80	-55.4	-545.8	548.6	531.4	17.17	31.956
2,500.0	2,500.0	2,493.1	2,492.8	8.7	9.1	-95.55	-53.1	-546.4	549.0	531.1	17.86	30.740
2,600.0	2,600.0	2,592.5	2,592.1	9.1	9.4	-95.32	-50.9	-547.1	549.4	530.9	18.55	29.618
2,700.0	2,700.0	2,688.8	2,688.5	9.5	9.8	-95.08	-48.7	-548.1	550.3	531.0	19.24	28.608
2,800.0	2,800.0	2,787.1	2,786.7	9.8	10.1	-94.86	-46.7	-549.6	551.6	531.7	19.93	27.680
2,900.0	2,900.0	2,883.3	2,882.9	10.2	10.4	-94.67	-45.1	-551.5	553.4	532.8	20.62	26.844
3,000.0	3,000.0	2,984.9	2,984.5	10.5	10.8	-94.49	-43.4	-553.6	555.6	534.2	21.33	26.052
3,100.0	3,100.0	3,087.8	3,087.3	10.9	11.1	-94.32	-42.0	-555.6	557.2	535.2	22.04	25.284
3,200.0	3,200.0	3,190.6	3,190.1	11.3	11.5	-94.19	-40.8	-556.8	558.3	535.6	22.75	24.540
3,300.0	3,300.0	3,295.3	3,294.8	11.6	11.9	-94.09	-39.8	-557.4	558.8	535.3	23.47	23.809
3,400.0	3,400.0	3,396.4	3,395.9	12.0	12.2	-94.01	-39.1	-557.4	558.7	534.6	24.17	23.113
3,444.8	3,444.8	3,440.3	3,439.8	12.1	12.4	-93.97	-38.7	-557.4	558.7	534.2	24.48	22.818
3,500.0	3,500.0	3,494.3	3,493.8	12.3	12.5	-93.92	-38.2	-557.4	558.8	533.9	24.87	22.469
3,600.0	3,600.0	3,593.8	3,593.3	12.7	12.9	-93.83	-37.3	-557.8	559.0	533.5	25.57	21.862
3,700.0	3,700.0	3,694.5	3,694.0	13.0	13.2	-93.73	-36.3	-558.1	559.3	533.0	26.28	21.283
3,800.0	3,800.0	3,793.1	3,792.6	13.4	13.6	-93.63	-35.5	-558.4	559.6	532.6	26.98	20.741
3,900.0	3,900.0	3,892.6	3,892.0	13.8	13.9	-93.56	-34.8	-559.0	560.1	532.4	27.68	20.230
4,000.0	4,000.0	3,991.3	3,990.8	14.1	14.3	-93.50	-34.3	-559.6	560.7	532.3	28.39	19.751
4,100.0	4,100.0	4,092.1	4,091.5	14.5	14.6	-93.46	-33.9	-560.4	561.4	532.3	29.10	19.293
4,200.0	4,200.0	4,191.7	4,191.2	14.8	15.0	-93.44	-33.7	-561.0	562.0	532.2	29.80	18.857
4,300.0	4,300.0	4,290.7	4,290.2	15.2	15.3	-93.43	-33.7	-561.8	562.8	532.3	30.51	18.448
4,400.0	4,400.0	4,389.7	4,389.2	15.6	15.7	-93.43	-33.7	-562.7	563.8	532.5	31.21	18.063
4,500.0	4,500.0	4,489.6	4,489.1	15.9	16.0	-93.43	-33.8	-563.8	564.8	532.9	31.92	17.696
4,600.0	4,600.0	4,590.7	4,590.1	16.3	16.4	-93.42	-33.7	-564.7	565.8	533.1	32.63	17.340
4,700.0	4,700.0	4,692.5	4,691.9	16.6	16.7	-93.40	-33.6	-565.5	566.5	533.1	33.34	16.990
4,800.0	4,800.0	4,793.4	4,792.8	17.0	17.1	-93.42	-33.8	-565.9	566.9	532.9	34.05	16.651
4,900.0	4,900.0	4,892.9	4,892.3	17.4	17.4	-93.45	-34.1	-566.3	567.4	532.6	34.75	16.328

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well NERVOUS PERVIS STATE #8H
Project:	LEA COUNTY, NM	TVD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Reference Site:	LUSK BSS	MD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUSK BSS - NERVOUS HORZ COM #3H - OWB - ACTUAL WELLPATH														Offset Site Error:	0.0 usft
Survey Program: 100-MWD														Offset Well Error:	3.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
5,000.0	5,000.0	4,991.8	4,991.3	17.7	17.7	-93.47	-34.4	-566.9	567.9	532.5	35.45	16.021			
5,100.0	5,100.0	5,090.7	5,090.2	18.1	18.1	-93.49	-34.6	-567.6	568.7	532.5	36.15	15.730			
5,200.0	5,200.0	5,188.8	5,188.3	18.4	18.4	-93.49	-34.7	-568.6	569.7	532.8	36.85	15.458			
5,300.0	5,300.0	5,288.1	5,287.5	18.8	18.8	-93.48	-34.6	-569.8	570.9	533.4	37.56	15.200			
5,400.0	5,400.0	5,387.5	5,386.9	19.1	19.1	-93.46	-34.5	-571.2	572.3	534.0	38.27	14.954			
5,500.0	5,500.0	5,486.9	5,486.3	19.5	19.5	-93.43	-34.3	-572.7	573.8	534.8	38.98	14.720			
5,600.0	5,600.0	5,586.8	5,586.2	19.9	19.8	-93.40	-34.1	-574.2	575.3	535.6	39.69	14.494			
5,700.0	5,700.0	5,686.7	5,686.1	20.2	20.2	-93.37	-33.9	-575.8	576.8	536.4	40.40	14.277			
5,800.0	5,800.0	5,786.4	5,787.8	20.6	20.5	-93.35	-33.8	-577.2	578.3	537.1	41.12	14.062			
5,900.0	5,900.0	5,886.7	5,888.0	20.9	20.9	-93.37	-34.1	-578.4	579.5	537.6	41.83	13.852			
6,000.0	6,000.0	5,987.8	5,987.1	21.3	21.2	-93.39	-34.4	-579.7	580.7	538.2	42.54	13.652			
6,100.0	6,100.0	6,086.8	6,086.1	21.7	21.6	-93.42	-34.7	-581.1	582.2	538.9	43.25	13.462			
6,200.0	6,200.0	6,186.7	6,186.0	22.0	21.9	-93.45	-35.1	-582.6	583.7	539.8	43.96	13.280			
6,300.0	6,300.0	6,293.2	6,292.5	22.4	22.3	-93.47	-35.3	-583.7	584.8	540.1	44.69	13.085			
6,400.0	6,400.0	6,391.8	6,391.1	22.7	22.7	-93.46	-35.4	-584.2	585.3	539.9	45.40	12.892			
6,500.0	6,500.0	6,488.5	6,487.8	23.1	23.0	-93.49	-35.7	-585.1	586.2	540.1	46.10	12.717			
6,600.0	6,600.0	6,588.1	6,587.4	23.4	23.4	-93.54	-36.3	-586.3	587.5	540.7	46.80	12.552			
6,700.0	6,700.0	6,694.3	6,693.6	23.8	23.7	-93.66	-37.6	-587.1	588.3	540.8	47.53	12.379			
6,800.0	6,800.0	6,802.7	6,801.9	24.2	24.1	-93.85	-39.5	-586.5	587.8	539.6	48.25	12.184			
6,900.0	6,900.0	6,902.6	6,901.8	24.5	24.4	-94.01	-41.0	-585.2	586.7	537.7	48.93	11.989			
7,000.0	7,000.0	7,000.0	6,999.2	24.9	24.7	-94.09	-41.8	-584.4	585.9	536.3	49.61	11.809			
7,067.6	7,067.6	7,064.1	7,063.3	25.1	25.0	-94.09	-41.8	-584.2	585.7	535.7	50.07	11.698			
7,100.0	7,100.0	7,095.8	7,095.0	25.2	25.1	-94.09	-41.7	-584.2	585.7	535.4	50.30	11.645			
7,101.0	7,101.0	7,096.7	7,096.0	25.2	25.1	-94.09	-41.7	-584.2	585.7	535.4	50.30	11.644			
7,200.0	7,200.0	7,191.8	7,191.1	25.6	25.4	-94.11	-42.0	-584.5	586.0	535.0	50.99	11.494			
7,300.0	7,300.0	7,292.0	7,291.2	26.0	25.7	-94.20	-42.9	-585.1	586.7	535.0	51.69	11.350			
7,400.0	7,400.0	7,392.5	7,391.7	26.3	26.1	-94.32	-44.2	-585.7	587.3	534.9	52.40	11.209			
7,500.0	7,500.0	7,492.9	7,492.1	26.7	26.4	-94.47	-45.8	-586.0	587.8	534.7	53.10	11.070			
7,600.0	7,600.0	7,590.6	7,589.8	27.0	26.8	-94.62	-47.4	-586.6	588.5	534.7	53.79	10.941			
7,700.0	7,700.0	7,693.0	7,691.9	27.4	27.1	-95.34	-54.9	-586.8	589.4	534.9	54.50	10.814			
7,800.0	7,800.0	7,776.0	7,773.4	27.7	27.4	-96.85	-70.4	-586.2	590.8	535.6	55.14	10.715			
7,900.0	7,900.0	7,855.8	7,849.0	28.1	27.7	-99.24	-95.4	-586.3	595.8	540.0	55.75	10.686			
8,000.0	8,000.0	7,925.5	7,910.4	28.5	27.9	-102.32	-128.2	-587.0	606.8	550.4	56.34	10.770			
8,100.0	8,100.0	7,998.0	7,969.7	28.8	28.1	-106.16	-170.0	-586.8	623.7	566.8	56.93	10.956			
8,200.0	8,200.0	8,047.8	8,007.2	29.2	28.3	-109.07	-202.7	-586.4	648.2	590.8	57.45	11.283			
8,300.0	8,300.0	8,085.8	8,033.3	29.5	28.4	-111.45	-230.2	-586.1	681.8	623.9	57.94	11.769			
8,400.0	8,400.0	8,114.9	8,051.4	29.9	28.5	-113.36	-253.0	-585.9	724.8	666.4	58.40	12.412			
8,500.0	8,500.0	8,141.5	8,068.3	30.3	28.6	-115.16	-275.1	-585.8	776.3	717.4	58.85	13.191			
8,557.6	8,557.6	8,157.0	8,074.4	30.5	28.6	-116.21	-288.3	-585.7	809.2	750.1	59.11	13.690			
8,575.0	8,575.0	8,157.0	8,074.4	30.5	28.6	60.10	-288.3	-585.7	819.5	760.3	59.17	13.850			
8,600.0	8,599.9	8,166.1	8,079.0	30.6	28.7	57.66	-296.2	-585.7	834.1	774.8	59.28	14.070			
8,625.0	8,624.8	8,172.4	8,082.0	30.7	28.7	55.52	-301.7	-585.6	848.6	789.2	59.39	14.289			
8,650.0	8,649.4	8,178.8	8,085.0	30.8	28.7	53.48	-307.3	-585.6	862.8	803.3	59.49	14.504			
8,675.0	8,673.8	8,189.0	8,089.6	30.8	28.8	51.36	-316.4	-585.5	876.8	817.2	59.60	14.710			
8,700.0	8,697.9	8,189.0	8,089.6	30.9	28.8	49.85	-316.4	-585.5	890.5	830.8	59.68	14.920			
8,725.0	8,721.6	8,189.0	8,089.6	31.0	28.8	48.41	-316.4	-585.5	903.9	844.2	59.76	15.126			
8,750.0	8,744.8	8,205.7	8,096.7	31.1	28.8	46.39	-331.5	-585.3	916.7	856.8	59.89	15.306			
8,775.0	8,767.6	8,221.0	8,102.7	31.1	28.9	44.60	-345.7	-585.1	929.3	869.3	60.02	15.484			
8,800.0	8,789.7	8,221.0	8,102.7	31.2	28.9	43.46	-345.7	-585.1	941.3	881.2	60.09	15.665			
8,825.0	8,811.2	8,231.2	8,106.4	31.3	28.9	42.08	-355.1	-584.9	952.9	892.7	60.21	15.828			
8,850.0	8,832.1	8,243.6	8,110.8	31.4	29.0	40.75	-366.7	-584.7	963.9	903.6	60.33	15.978			
8,875.0	8,852.1	8,253.0	8,114.0	31.4	29.0	39.63	-375.5	-584.5	974.3	913.8	60.43	16.121			

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well NERVOUS PERVIS STATE #8H
Project:	LEA COUNTY, NM	TVD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Reference Site:	LUSK BSS	MD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUSK BSS - NERVOUS HORZ COM #3H - OWB - ACTUAL WELLPATH														Offset Site Error:	0.0 usft
Survey Program: 100-MWD														Offset Well Error:	3.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi Major Axis (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	-E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,900.0	8,871.4	8,253.0	8,114.0	31.5	29.0	38.81		-375.5	-584.5	984.2	923.7	60.51	16.265		
8,925.0	8,889.8	8,253.0	8,114.0	31.6	29.0	38.04		-375.5	-584.5	993.7	933.1	60.58	16.403		
8,950.0	8,907.3	8,276.8	8,121.5	31.6	29.1	36.90		-398.1	-584.0	1,001.9	941.1	60.75	16.492		
8,975.0	8,923.8	8,284.2	8,123.6	31.7	29.1	36.16		-405.2	-583.8	1,009.9	949.1	60.85	16.596		
9,000.0	8,939.4	8,291.7	8,125.5	31.8	29.2	35.49		-412.5	-583.7	1,017.4	956.4	60.96	16.689		
9,025.0	8,953.8	8,317.0	8,131.2	31.9	29.3	34.63		-437.1	-583.3	1,024.6	963.5	61.14	16.760		
9,050.0	8,967.2	8,317.0	8,131.2	31.9	29.3	34.22		-437.1	-583.3	1,030.5	969.3	61.21	16.834		
9,075.0	8,979.5	8,317.0	8,131.2	32.0	29.3	33.85		-437.1	-583.3	1,035.8	974.5	61.29	16.900		
9,100.0	8,990.6	8,317.0	8,131.2	32.1	29.3	33.52		-437.1	-583.3	1,040.7	979.3	61.37	16.957		
9,125.0	9,000.6	8,329.7	8,133.5	32.2	29.3	33.12		-449.6	-583.2	1,044.8	983.3	61.51	16.987		
9,150.0	9,009.3	8,337.3	8,134.7	32.3	29.4	32.83		-457.1	-583.1	1,048.3	986.7	61.62	17.012		
9,175.0	9,016.8	8,348.0	8,136.1	32.4	29.4	32.56		-467.7	-583.0	1,051.2	989.4	61.75	17.022		
9,200.0	9,023.0	8,356.6	8,137.1	32.4	29.4	32.38		-476.3	-582.9	1,053.2	991.4	61.87	17.022		
9,225.0	9,027.9	8,371.2	8,138.6	32.5	29.5	32.22		-490.8	-582.7	1,054.5	992.5	62.02	17.001		
9,250.0	9,031.6	8,390.3	8,140.5	32.6	29.6	32.13		-509.8	-582.5	1,054.9	992.7	62.20	16.959		
9,275.0	9,034.0	8,412.0	8,142.5	32.7	29.7	32.12		-531.4	-582.3	1,054.2	991.8	62.39	16.897		
9,299.2	9,035.0	8,430.5	8,144.2	32.8	29.8	32.20		-549.8	-582.1	1,052.5	990.0	62.57	16.823		
9,400.0	9,036.8	8,494.3	8,148.1	33.2	30.1	32.11		-613.5	-581.1	1,045.8	982.5	63.30	16.520		
9,500.0	9,038.5	8,568.9	8,149.5	33.7	30.5	31.92		-688.1	-579.9	1,042.5	978.3	64.19	16.240		
9,600.0	9,040.3	8,666.6	8,150.4	34.2	31.2	31.62		-785.7	-578.0	1,040.0	974.6	65.41	15.899		
9,700.0	9,042.1	8,761.6	8,150.6	34.8	31.9	31.29		-880.8	-575.8	1,038.0	971.3	66.74	15.553		
9,800.0	9,043.8	8,856.6	8,150.2	35.6	32.6	30.93		-975.7	-573.4	1,036.5	968.3	68.13	15.213		
9,900.0	9,045.6	8,953.0	8,149.0	36.3	33.3	30.53		-1,072.0	-570.7	1,035.5	965.9	69.60	14.879		
10,000.0	9,047.3	9,048.5	8,147.5	37.1	34.1	30.13		-1,167.5	-568.1	1,034.9	963.6	71.26	14.524		
10,100.0	9,049.1	9,168.3	8,147.2	38.0	35.3	29.67		-1,287.2	-564.8	1,033.1	959.9	73.26	14.101		
10,200.0	9,050.9	9,257.7	8,147.3	38.9	36.2	29.35		-1,376.7	-562.7	1,031.3	956.2	75.08	13.737		
10,280.3	9,052.3	9,325.0	8,147.0	39.7	36.9	29.12		-1,443.9	-561.7	1,030.8	954.2	76.55	13.465		
10,300.0	9,052.6	9,341.3	8,146.8	39.9	37.0	29.07		-1,460.2	-561.6	1,030.8	953.9	76.91	13.402		
10,400.0	9,054.4	9,429.0	8,145.3	40.9	38.0	28.83		-1,547.9	-562.0	1,032.0	953.2	78.86	13.086		
10,500.0	9,056.2	9,509.7	8,142.6	42.0	38.9	28.59		-1,628.5	-562.5	1,034.8	954.0	80.82	12.804		
10,600.0	9,057.9	9,641.1	8,138.0	43.0	40.4	28.10		-1,759.8	-561.5	1,037.2	953.7	83.43	12.431		
10,700.0	9,059.7	9,784.9	8,138.2	44.2	42.1	27.50		-1,903.5	-556.7	1,035.0	948.7	86.30	11.992		
10,800.0	9,061.4	9,883.0	8,140.1	45.3	43.4	27.10		-2,001.5	-552.5	1,031.0	942.3	88.70	11.623		
10,900.0	9,063.2	9,966.7	8,140.9	46.5	44.5	26.77		-2,085.2	-549.5	1,028.2	937.2	90.98	11.301		
11,000.0	9,065.0	10,050.5	8,140.5	47.7	45.6	26.43		-2,169.0	-547.2	1,027.0	933.7	93.28	11.010		
11,023.6	9,065.4	10,070.3	8,140.3	48.0	45.8	26.36		-2,188.7	-546.7	1,027.0	933.1	93.83	10.944		
11,100.0	9,066.7	10,134.3	8,139.1	49.0	46.6	26.11		-2,252.7	-545.5	1,027.4	931.8	95.62	10.746		
11,200.0	9,068.5	10,233.3	8,136.3	50.2	48.0	25.73		-2,351.7	-544.3	1,029.2	931.0	98.19	10.482		
11,300.0	9,070.3	10,378.7	8,136.0	51.5	49.9	25.25		-2,497.0	-542.1	1,028.6	927.2	101.45	10.139		
11,400.0	9,072.0	10,507.9	8,140.7	52.8	51.7	24.87		-2,626.1	-538.8	1,024.1	919.6	104.56	9.795		
11,500.0	9,073.8	10,598.2	8,144.8	54.2	53.0	24.62		-2,716.3	-536.4	1,018.7	911.5	107.16	9.506		
11,600.0	9,075.5	10,655.4	8,146.4	55.5	53.8	24.48		-2,773.5	-535.8	1,015.7	906.4	109.31	9.292		
11,616.5	9,075.8	10,664.4	8,146.5	55.7	53.9	24.46		-2,782.5	-535.9	1,015.7	906.0	109.66	9.262		
11,700.0	9,077.3	10,717.0	8,146.1	56.9	54.7	24.42		-2,835.0	-537.7	1,017.2	905.6	111.54	9.120		
11,800.0	9,079.1	10,810.2	8,145.1	58.2	56.0	24.44		-2,928.0	-543.3	1,020.6	906.4	114.22	8.935		
11,900.0	9,080.8	10,904.5	8,144.0	59.6	57.3	24.54		-3,022.1	-550.3	1,024.6	907.6	116.93	8.762		
12,000.0	9,082.6	10,999.5	8,142.9	61.0	58.6	24.69		-3,116.7	-558.5	1,029.1	909.4	119.67	8.599		
12,100.0	9,084.4	11,103.7	8,142.3	62.4	60.1	24.97		-3,220.4	-569.3	1,033.9	911.3	122.56	8.435		
12,200.0	9,086.1	11,216.0	8,142.1	63.9	61.7	25.17		-3,332.2	-579.0	1,037.6	912.0	125.59	8.261		
12,300.0	9,087.9	11,343.0	8,141.5	65.3	63.6	25.11		-3,459.1	-584.5	1,039.7	910.8	128.89	8.066		
12,400.0	9,089.6	11,481.7	8,143.6	66.8	65.7	24.67		-3,597.7	-581.5	1,036.9	904.5	132.42	7.830		
12,500.0	9,091.4	11,560.9	8,144.7	68.2	66.9	24.40		-3,676.9	-579.6	1,034.6	899.5	135.08	7.659		

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well NERVOUS PERVIS STATE #8H
Project:	LEA COUNTY, NM	TVD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Reference Site:	LUSK BSS	MD Reference:	3667 + 20 = 3687' @ 3687.0usft (PATRIOT 2)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OWB	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUSK BSS - NERVOUS HORZ COM #3H - OWB - ACTUAL WELLPATH														Offset Site Error:	0.0 usft
Survey Program: 100-MWD														Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Footface (")	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
12,600.0	9,093.2	11,665.9	8,144.8	69.7	68.5	24.07	-3,781.9	-578.2	1,033.9	895.7	138.15	7.484			
12,700.0	9,094.9	11,793.6	8,145.6	71.2	70.4	23.42	-3,909.4	-571.2	1,031.0	889.4	141.58	7.282			
12,800.0	9,096.7	11,888.7	8,146.4	72.6	71.9	22.76	-4,004.1	-562.7	1,026.8	882.2	144.54	7.103			
12,900.0	9,098.5	11,982.4	8,145.9	74.1	73.4	22.06	-4,097.4	-553.7	1,023.5	876.0	147.50	6.939			
13,000.0	9,100.2	12,082.4	8,145.5	75.6	75.0	21.31	-4,196.9	-544.4	1,020.6	870.0	150.57	6.778			
13,100.0	9,102.0	12,174.2	8,145.1	77.1	76.4	20.64	-4,288.3	-536.2	1,017.9	864.4	153.52	6.631			
13,200.0	9,103.7	12,258.2	8,143.7	78.6	77.7	20.02	-4,372.0	-528.9	1,016.7	860.3	156.36	6.502			
13,300.0	9,105.5	12,362.7	8,141.5	80.1	79.4	19.25	-4,476.2	-520.2	1,016.1	856.6	159.53	6.369			
13,400.0	9,107.3	12,481.9	8,140.5	81.7	81.3	18.41	-4,594.9	-510.3	1,014.6	851.7	162.95	6.226			
13,500.0	9,109.0	12,564.0	8,141.0	83.2	82.6	17.82	-4,676.7	-503.1	1,011.9	846.1	165.79	6.104			
13,507.3	9,109.2	12,564.0	8,141.0	83.3	82.6	17.82	-4,676.7	-503.1	1,011.9	846.0	165.90	6.099			
13,600.0	9,110.8	12,564.0	8,141.0	84.7	82.6	17.82	-4,676.7	-503.1	1,016.1	848.8	167.32	6.073 SF			
13,700.0	9,112.6	12,564.0	8,141.0	86.3	82.6	17.82	-4,676.7	-503.1	1,030.1	861.2	168.86	6.100			
13,800.0	9,114.3	12,564.0	8,141.0	87.8	82.6	17.82	-4,676.7	-503.1	1,053.4	883.0	170.40	6.182			
13,850.6	9,115.2	12,564.0	8,141.0	88.6	82.6	17.82	-4,676.7	-503.1	1,068.6	897.4	171.18	6.242			

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

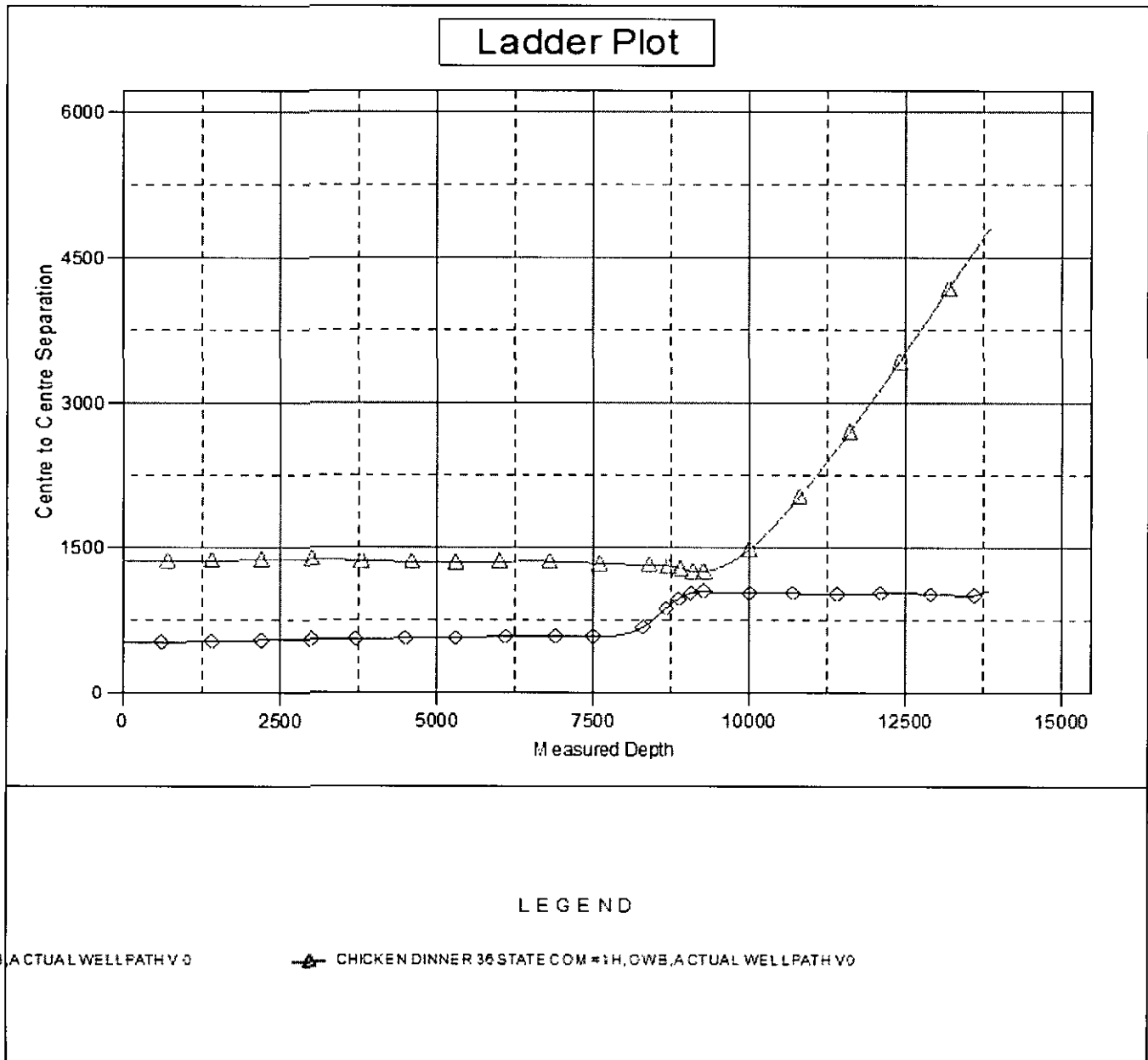
COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well NERVOUS PERVIS STATE #8H
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Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	NERVOUS PURVIS STATE #8H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to 3667 + 20 = 3687' @ 3687.0usft (PAT
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: NERVOUS PERVIS STATE #8H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.28°



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

COG Operating LLC

Anticollision Report

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