COG Production LLC

Lea County, NM
Sec. 27, T 21S. , R 33 E
Raspberry State Com 3H

Wellbore #1

Plan: Plan#1

Standard Survey Report

11 April, 2016

Integrity Directional Services, LLC

Survey Report

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Raspberry State Com 3H
Project:	Lea County, NM	**TVD Reference:**	KB=26' @ 3724.0usft
Site:	Sec. 27 T 21S , R 33 E	**MD Reference:**	KB=26' @ 3724.0usft
Well:	Raspberry State Com 3H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan#1	**Database:**	EDM 5000.1 Multi User Db

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 Sec. 27 T 21S , R 33 E

Site Position:		**Northing:**	525,881.10 usft	**Latitude:**	32° 26' 36.008 N
From:	Map	**Easting:**	741,064.50 usft	**Longitude:**	103° 33' 6.911 W
Position Uncertainty:	5.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.42 °

Well Raspberry State Com 3H

Well Position	**+N/-S**	0.0 usft	**Northing:**	525,832.50 usft	**Latitude:**	32° 26' 35.751 N
	+E/-W	0.0 usft	**Easting:**	737,951.10 usft	**Longitude:**	103° 33' 43.244 W
Position Uncertainty		5.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	3,698.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/11/2016	7.09	60.28	48,190

Design Plan#1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	359.49

Survey Tool Program Date 4/11/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	20,935.7	Plan#1 (Wellbore #1)	MWD	MWD - Standard

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
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

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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
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00

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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
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	0.00

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9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	0.00
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	0.00
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	0.00
10,200.0	0.00	0.00	10,200.0	0.0	0.0	0.0	0.00	0.00	0.00
10,300.0	0.00	0.00	10,300.0	0.0	0.0	0.0	0.00	0.00	0.00
10,400.0	0.00	0.00	10,400.0	0.0	0.0	0.0	0.00	0.00	0.00
10,400.1	0.00	0.00	10,400.1	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 10.00									
10,500.0	9.99	359.49	10,499.5	8.7	-0.1	8.7	10.00	10.00	0.00
10,600.0	19.99	359.49	10,596.0	34.5	-0.3	34.5	10.00	10.00	0.00
10,700.0	29.99	359.49	10,686.5	76.7	-0.7	76.7	10.00	10.00	0.00
10,800.0	39.99	359.49	10,768.3	134.0	-1.2	134.0	10.00	10.00	0.00
10,900.0	49.99	359.49	10,838.9	204.6	-1.8	204.6	10.00	10.00	0.00
11,000.0	59.99	359.49	10,896.2	286.4	-2.5	286.4	10.00	10.00	0.00
11,100.0	69.99	359.49	10,938.5	376.9	-3.3	376.9	10.00	10.00	0.00
11,200.0	79.99	359.49	10,964.3	473.3	-4.2	473.4	10.00	10.00	0.00
11,300.0	89.99	359.49	10,973.1	572.8	-5.1	572.9	10.00	10.00	0.00
11,303.5	90.35	359.49	10,973.0	576.4	-5.1	576.4	10.00	10.00	0.00
Start 9632.2 hold at 11303.6 MD									
11,400.0	90.35	359.49	10,972.5	672.8	-6.0	672.9	0.00	0.00	0.00
11,500.0	90.35	359.49	10,971.9	772.8	-6.9	772.9	0.00	0.00	0.00
11,600.0	90.35	359.49	10,971.3	872.8	-7.7	872.9	0.00	0.00	0.00
11,700.0	90.35	359.49	10,970.7	972.8	-8.6	972.9	0.00	0.00	0.00
11,800.0	90.35	359.49	10,970.1	1,072.8	-9.5	1,072.8	0.00	0.00	0.00
11,900.0	90.35	359.49	10,969.5	1,172.8	-10.4	1,172.8	0.00	0.00	0.00
12,000.0	90.35	359.49	10,968.9	1,272.8	-11.3	1,272.8	0.00	0.00	0.00
12,100.0	90.35	359.49	10,968.3	1,372.8	-12.2	1,372.8	0.00	0.00	0.00
12,200.0	90.35	359.49	10,967.6	1,472.8	-13.1	1,472.8	0.00	0.00	0.00
12,300.0	90.35	359.49	10,967.0	1,572.8	-13.9	1,572.8	0.00	0.00	0.00
12,400.0	90.35	359.49	10,966.4	1,672.8	-14.8	1,672.8	0.00	0.00	0.00
12,500.0	90.35	359.49	10,965.8	1,772.8	-15.7	1,772.8	0.00	0.00	0.00
12,600.0	90.35	359.49	10,965.2	1,872.8	-16.6	1,872.8	0.00	0.00	0.00
12,700.0	90.35	359.49	10,964.6	1,972.8	-17.5	1,972.8	0.00	0.00	0.00
12,800.0	90.35	359.49	10,964.0	2,072.7	-18.4	2,072.8	0.00	0.00	0.00
12,900.0	90.35	359.49	10,963.4	2,172.7	-19.3	2,172.8	0.00	0.00	0.00
13,000.0	90.35	359.49	10,962.8	2,272.7	-20.1	2,272.8	0.00	0.00	0.00
13,100.0	90.35	359.49	10,962.2	2,372.7	-21.0	2,372.8	0.00	0.00	0.00
13,200.0	90.35	359.49	10,961.6	2,472.7	-21.9	2,472.8	0.00	0.00	0.00
13,300.0	90.35	359.49	10,961.0	2,572.7	-22.8	2,572.8	0.00	0.00	0.00
13,400.0	90.35	359.49	10,960.4	2,672.7	-23.7	2,672.8	0.00	0.00	0.00
13,500.0	90.35	359.49	10,959.8	2,772.7	-24.6	2,772.8	0.00	0.00	0.00
13,600.0	90.35	359.49	10,959.2	2,872.7	-25.5	2,872.8	0.00	0.00	0.00

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Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan#1	**Database:**	EDM 5000.1 Multi User Db

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)
13,700.0	90.35	359.49	10,958.6	2,972.7	-26.4	2,972.8	0.00	0.00	0.00
13,800.0	90.35	359.49	10,958.0	3,072.7	-27.2	3,072.8	0.00	0.00	0.00
13,900.0	90.35	359.49	10,957.4	3,172.7	-28.1	3,172.8	0.00	0.00	0.00
14,000.0	90.35	359.49	10,956.8	3,272.7	-29.0	3,272.8	0.00	0.00	0.00
14,100.0	90.35	359.49	10,956.2	3,372.7	-29.9	3,372.8	0.00	0.00	0.00
14,200.0	90.35	359.49	10,955.6	3,472.7	-30.8	3,472.8	0.00	0.00	0.00
14,300.0	90.35	359.49	10,955.0	3,572.7	-31.7	3,572.8	0.00	0.00	0.00
14,400.0	90.35	359.49	10,954.4	3,672.7	-32.6	3,672.8	0.00	0.00	0.00
14,500.0	90.35	359.49	10,953.8	3,772.7	-33.4	3,772.8	0.00	0.00	0.00
14,600.0	90.35	359.49	10,953.2	3,872.6	-34.3	3,872.8	0.00	0.00	0.00
14,700.0	90.35	359.49	10,952.6	3,972.6	-35.2	3,972.8	0.00	0.00	0.00
14,800.0	90.35	359.49	10,952.0	4,072.6	-36.1	4,072.8	0.00	0.00	0.00
14,900.0	90.35	359.49	10,951.4	4,172.6	-37.0	4,172.8	0.00	0.00	0.00
15,000.0	90.35	359.49	10,950.8	4,272.6	-37.9	4,272.8	0.00	0.00	0.00
15,100.0	90.35	359.49	10,950.2	4,372.6	-38.8	4,372.8	0.00	0.00	0.00
15,200.0	90.35	359.49	10,949.6	4,472.6	-39.7	4,472.8	0.00	0.00	0.00
15,300.0	90.35	359.49	10,949.0	4,572.6	-40.5	4,572.8	0.00	0.00	0.00
15,400.0	90.35	359.49	10,948.4	4,672.6	-41.4	4,672.8	0.00	0.00	0.00
15,500.0	90.35	359.49	10,947.8	4,772.6	-42.3	4,772.8	0.00	0.00	0.00
15,600.0	90.35	359.49	10,947.2	4,872.6	-43.2	4,872.8	0.00	0.00	0.00
15,700.0	90.35	359.49	10,946.6	4,972.6	-44.1	4,972.8	0.00	0.00	0.00
15,800.0	90.35	359.49	10,946.0	5,072.6	-45.0	5,072.8	0.00	0.00	0.00
15,900.0	90.35	359.49	10,945.4	5,172.6	-45.9	5,172.8	0.00	0.00	0.00
16,000.0	90.35	359.49	10,944.8	5,272.6	-46.7	5,272.8	0.00	0.00	0.00
16,100.0	90.35	359.49	10,944.2	5,372.6	-47.6	5,372.8	0.00	0.00	0.00
16,200.0	90.35	359.49	10,943.6	5,472.6	-48.5	5,472.8	0.00	0.00	0.00
16,300.0	90.35	359.49	10,943.0	5,572.5	-49.4	5,572.8	0.00	0.00	0.00
16,400.0	90.35	359.49	10,942.4	5,672.5	-50.3	5,672.8	0.00	0.00	0.00
16,500.0	90.35	359.49	10,941.8	5,772.5	-51.2	5,772.8	0.00	0.00	0.00
16,600.0	90.35	359.49	10,941.2	5,872.5	-52.1	5,872.8	0.00	0.00	0.00
16,700.0	90.35	359.49	10,940.6	5,972.5	-52.9	5,972.8	0.00	0.00	0.00
16,800.0	90.35	359.49	10,940.0	6,072.5	-53.8	6,072.8	0.00	0.00	0.00
16,900.0	90.35	359.49	10,939.3	6,172.5	-54.7	6,172.8	0.00	0.00	0.00
17,000.0	90.35	359.49	10,938.7	6,272.5	-55.6	6,272.8	0.00	0.00	0.00
17,100.0	90.35	359.49	10,938.1	6,372.5	-56.5	6,372.8	0.00	0.00	0.00
17,200.0	90.35	359.49	10,937.5	6,472.5	-57.4	6,472.8	0.00	0.00	0.00
17,300.0	90.35	359.49	10,936.9	6,572.5	-58.3	6,572.7	0.00	0.00	0.00
17,400.0	90.35	359.49	10,936.3	6,672.5	-59.2	6,672.7	0.00	0.00	0.00
17,500.0	90.35	359.49	10,935.7	6,772.5	-60.0	6,772.7	0.00	0.00	0.00
17,600.0	90.35	359.49	10,935.1	6,872.5	-60.9	6,872.7	0.00	0.00	0.00
17,700.0	90.35	359.49	10,934.5	6,972.5	-61.8	6,972.7	0.00	0.00	0.00
17,800.0	90.35	359.49	10,933.9	7,072.5	-62.7	7,072.7	0.00	0.00	0.00
17,900.0	90.35	359.49	10,933.3	7,172.5	-63.6	7,172.7	0.00	0.00	0.00

Integrity Directional Services, LLC

Survey Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Raspberry State Com 3H
Project:	Lea County, NM	TVD Reference:	KB=26' @ 3724.0usft
Site:	Sec. 27, T.21S., R.33 E.	MD Reference:	KB=26' @ 3724.0usft
Well:	Raspberry State Com 3H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan#1	Database:	EDM 5000.1 Multi User Db

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)
18,000.0	90.35	359.49	10,932.7	7,272.5	-64.5	7,272.7	0.00	0.00	0.00
18,100.0	90.35	359.49	10,932.1	7,372.4	-65.4	7,372.7	0.00	0.00	0.00
18,200.0	90.35	359.49	10,931.5	7,472.4	-66.2	7,472.7	0.00	0.00	0.00
18,300.0	90.35	359.49	10,930.9	7,572.4	-67.1	7,572.7	0.00	0.00	0.00
18,400.0	90.35	359.49	10,930.3	7,672.4	-68.0	7,672.7	0.00	0.00	0.00
18,500.0	90.35	359.49	10,929.7	7,772.4	-68.9	7,772.7	0.00	0.00	0.00
18,600.0	90.35	359.49	10,929.1	7,872.4	-69.8	7,872.7	0.00	0.00	0.00
18,700.0	90.35	359.49	10,928.5	7,972.4	-70.7	7,972.7	0.00	0.00	0.00
18,800.0	90.35	359.49	10,927.9	8,072.4	-71.6	8,072.7	0.00	0.00	0.00
18,900.0	90.35	359.49	10,927.3	8,172.4	-72.5	8,172.7	0.00	0.00	0.00
19,000.0	90.35	359.49	10,926.7	8,272.4	-73.3	8,272.7	0.00	0.00	0.00
19,100.0	90.35	359.49	10,926.1	8,372.4	-74.2	8,372.7	0.00	0.00	0.00
19,200.0	90.35	359.49	10,925.5	8,472.4	-75.1	8,472.7	0.00	0.00	0.00
19,300.0	90.35	359.49	10,924.9	8,572.4	-76.0	8,572.7	0.00	0.00	0.00
19,400.0	90.35	359.49	10,924.3	8,672.4	-76.9	8,672.7	0.00	0.00	0.00
19,500.0	90.35	359.49	10,923.7	8,772.4	-77.8	8,772.7	0.00	0.00	0.00
19,600.0	90.35	359.49	10,923.1	8,872.4	-78.7	8,872.7	0.00	0.00	0.00
19,700.0	90.35	359.49	10,922.5	8,972.4	-79.5	8,972.7	0.00	0.00	0.00
19,800.0	90.35	359.49	10,921.9	9,072.3	-80.4	9,072.7	0.00	0.00	0.00
19,900.0	90.35	359.49	10,921.3	9,172.3	-81.3	9,172.7	0.00	0.00	0.00
20,000.0	90.35	359.49	10,920.7	9,272.3	-82.2	9,272.7	0.00	0.00	0.00
20,100.0	90.35	359.49	10,920.1	9,372.3	-83.1	9,372.7	0.00	0.00	0.00
20,200.0	90.35	359.49	10,919.5	9,472.3	-84.0	9,472.7	0.00	0.00	0.00
20,300.0	90.35	359.49	10,918.9	9,572.3	-84.9	9,572.7	0.00	0.00	0.00
20,400.0	90.35	359.49	10,918.3	9,672.3	-85.8	9,672.7	0.00	0.00	0.00
20,500.0	90.35	359.49	10,917.7	9,772.3	-86.6	9,772.7	0.00	0.00	0.00
20,600.0	90.35	359.49	10,917.1	9,872.3	-87.5	9,872.7	0.00	0.00	0.00
20,700.0	90.35	359.49	10,916.5	9,972.3	-88.4	9,972.7	0.00	0.00	0.00
20,800.0	90.35	359.49	10,915.9	10,072.3	-89.3	10,072.7	0.00	0.00	0.00
20,900.0	90.35	359.49	10,915.3	10,172.3	-90.2	10,172.7	0.00	0.00	0.00
20,935.7	90.35	359.49	10,915.0	10,208.0	-90.5	10,208.4	0.00	0.00	0.00
TD at 20935.7									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Raspberry State Com - plan hits target center - Point	0.00	0.00	10,915.0	10,208.0	-90.5	536,040.50	737,860.60	32° 28' 16.767 N	103° 33' 43.440 W
3H Target Window - plan misses target center by 239.8usft at 10852.6usft MD (10807.0 TVD, 169.6 N, -1.5 E) - Rectangle (sides W100.0 H10,208.0 D20.0)	-0.34	359.49	10,976.5	0.0	0.0	525,832.50	737,951.10	32° 26' 35.751 N	103° 33' 43.244 W

Integrity Directional Services, LLC

Survey Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Raspberry State Com 3H
Project:	Lea County, NM	TVD Reference:	KB=26' @ 3724.0usft
Site:	Sec. 27 T 21S R 33 E	MD Reference:	KB=26' @ 3724.0usft
Well:	Raspberry State Com 3H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan#1	Database:	EDM 5000.1 Multi User Db

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
10,400	10,400	0	0	Start Build 10.00
11,304	10,973	576	-5	Start 9632.2 hold at 11303.5 MD
20,936	10,915	10,208	-91	TD at 20935.7

Checked By: _____ Approved By: _____ Date: _____

COG Production LLC

Lea County, NM
Sec. 27, T 21S. , R 33 E
Raspberry State Com 3H

Wellbore #1
Plan#1

Anticollision Report

11 April, 2016

Integrity Directional Services, LLC

Anticollision Report

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Raspberry State Com 3H
Project:	Lea County, NM	**TVD Reference:**	KB=26' @ 3724.0usft
Reference Site:	Sec. 27, T 21S., R 33 E	**MD Reference:**	KB=26' @ 3724.0usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Raspberry State Com 3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
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:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 us	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	**Casing Method:**	Not applied

Survey Tool Program **Date** 4/11/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	20,935.7	Plan#1 (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec. 27, T 21S., R 33 E						
Pygmy 27 State 2H - Wellbore #1 - Actual Wellbore	10,230.9	14,825.0	43.8	-14.6	0.751	Level 1, CC, ES, SF

Offset Design Sec. 27, T 21S., R 33 E - Pygmy 27 State 2H - Wellbore #1 - Actual Wellbore — Offset Site Error: 0.0 usft

Survey Program: 100-NS-GYRO-MS, 9680-MWD — Offset Well Error: 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (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
0.0	0.0	19.4	19.4	5.0	5.0	-0.56	4,791.5	-48.9	4,791.8				
100.0	100.0	100.0	100.0	5.0	5.0	-0.56	4,792.0	-48.8	4,792.3	4,782.3	10.00	479.150	
200.0	200.0	179.1	179.1	5.0	5.0	-0.56	4,792.6	-48.5	4,793.3	4,783.2	10.02	478.431	
300.0	300.0	337.7	337.7	5.0	5.0	-0.54	4,793.4	-45.4	4,793.6	4,783.6	10.07	476.120	
400.0	400.0	440.2	440.2	5.1	5.1	-0.54	4,793.2	-45.2	4,793.4	4,783.3	10.12	473.771	
500.0	500.0	545.7	545.7	5.1	5.1	-0.54	4,792.9	-45.3	4,793.2	4,783.0	10.18	470.841	
600.0	600.0	633.5	633.4	5.1	5.1	-0.55	4,792.5	-46.0	4,792.8	4,782.5	10.25	467.536	
611.8	611.8	640.4	640.3	5.1	5.1	-0.55	4,792.5	-46.1	4,792.7	4,782.5	10.26	467.162	
700.0	700.0	700.0	700.0	5.2	5.1	-0.56	4,792.8	-48.9	4,793.1	4,782.8	10.33	464.116	
800.0	800.0	843.1	843.1	5.3	5.2	-0.59	4,792.9	-48.9	4,793.2	4,782.8	10.45	458.496	
900.0	900.0	933.6	933.6	5.3	5.2	-0.60	4,792.7	-50.1	4,792.9	4,782.4	10.58	452.973	
919.9	919.9	948.4	948.4	5.4	5.2	-0.60	4,792.7	-50.3	4,792.9	4,782.3	10.61	451.892	
1,000.0	1,000.0	1,011.3	1,011.3	5.4	5.3	-0.61	4,792.8	-51.0	4,793.1	4,782.4	10.72	447.309	
1,100.0	1,100.0	1,113.4	1,113.3	5.5	5.4	-0.62	4,793.1	-51.7	4,793.4	4,782.5	10.88	440.542	
1,200.0	1,200.0	1,200.0	1,199.9	5.6	5.4	-0.63	4,793.5	-52.4	4,793.9	4,782.8	11.05	433.807	
1,300.0	1,300.0	1,338.3	1,338.2	5.7	5.6	-0.64	4,793.2	-53.5	4,793.5	4,782.2	11.27	425.204	
1,315.7	1,315.7	1,344.5	1,344.5	5.7	5.6	-0.64	4,793.2	-53.5	4,793.5	4,782.2	11.30	424.321	
1,400.0	1,400.0	1,400.0	1,399.9	5.8	5.6	-0.64	4,793.5	-53.5	4,793.8	4,782.4	11.43	419.250	
1,500.0	1,500.0	1,485.7	1,485.6	6.0	5.7	-0.64	4,794.3	-53.2	4,794.6	4,783.2	11.61	412.983	
1,600.0	1,600.0	1,612.4	1,612.4	6.1	5.7	-0.63	4,795.0	-52.8	4,795.3	4,783.5	11.83	405.446	
1,700.0	1,700.0	1,700.0	1,699.9	6.2	5.8	-0.63	4,795.6	-52.7	4,795.9	4,783.9	12.03	398.510	
1,800.0	1,800.0	1,816.4	1,816.3	6.3	5.9	-0.62	4,796.2	-51.6	4,796.5	4,784.2	12.27	390.864	
1,900.0	1,900.0	1,927.1	1,927.0	6.5	6.0	-0.59	4,796.3	-49.2	4,796.6	4,784.1	12.50	383.749	
2,000.0	2,000.0	2,016.9	2,016.8	6.6	6.1	-0.56	4,796.5	-46.7	4,796.7	4,784.0	12.72	376.980	
2,100.0	2,100.0	2,100.0	2,099.8	6.8	6.2	-0.54	4,796.9	-44.9	4,797.2	4,784.3	12.96	370.218	
2,200.0	2,200.0	2,185.9	2,185.7	6.9	6.3	-0.52	4,797.7	-43.3	4,798.1	4,784.9	13.21	363.222	

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

Integrity Directional Services, LLC

Anticollision Report

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Raspberry State Com 3H
Project:	Lea County, NM	**TVD Reference:**	KB=26' @ 3724.0usft
Reference Site:	Sec. 27, T 21S., R 33 E	**MD Reference:**	KB=26' @ 3724.0usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Raspberry State Com 3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 27, T 21S., R 33 E - Pygmy 27 State 2H - Wellbore #1 - Actual Wellbore — Offset Site Error: 0.0 usft

Survey Program: 100-NS-GYRO-MS, 9680-MWD — Offset Well Error: 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (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
2,300.0	2,300.0	2,313.8	2,313.6	7.1	6.4	-0.49	4,798.5	-40.6	4,798.7	4,785.2	13.52	354.916	
2,400.0	2,400.0	2,414.2	2,414.0	7.3	6.6	-0.46	4,798.5	-38.8	4,799.0	4,785.2	13.81	347.520	
2,500.0	2,500.0	2,500.0	2,499.8	7.4	6.7	-0.45	4,799.2	-37.4	4,799.4	4,785.4	14.09	340.820	
2,600.0	2,600.0	2,598.7	2,598.4	7.6	6.8	-0.42	4,799.8	-35.5	4,800.1	4,785.7	14.40	333.316	
2,700.0	2,700.0	2,678.8	2,678.5	7.8	6.9	-0.41	4,800.5	-34.0	4,800.9	4,786.2	14.69	326.720	
2,800.0	2,800.0	2,802.4	2,802.1	7.9	7.1	-0.38	4,801.6	-32.2	4,801.8	4,786.7	15.07	318.731	
2,900.0	2,900.0	2,900.0	2,899.7	8.1	7.3	-0.37	4,802.2	-30.9	4,802.4	4,787.0	15.40	311.772	
3,000.0	3,000.0	2,996.8	2,996.5	8.3	7.5	-0.35	4,802.8	-29.6	4,803.0	4,787.3	15.75	304.982	
3,100.0	3,100.0	3,070.4	3,070.1	8.5	7.6	-0.34	4,803.5	-28.4	4,804.0	4,787.9	16.06	299.129	
3,200.0	3,200.0	3,260.7	3,260.3	8.6	7.9	-0.28	4,803.3	-23.1	4,803.5	4,786.9	16.56	290.010	
3,294.6	3,294.6	3,323.5	3,323.1	8.8	8.0	-0.26	4,803.2	-21.4	4,803.2	4,786.4	16.85	285.133	
3,300.0	3,300.0	3,327.5	3,327.1	8.8	8.0	-0.25	4,803.2	-21.3	4,803.2	4,786.3	16.88	284.840	
3,400.0	3,400.0	3,402.4	3,401.9	9.0	8.2	-0.23	4,803.4	-19.4	4,803.5	4,786.3	17.19	279.498	
3,500.0	3,500.0	3,529.9	3,529.4	9.2	8.4	-0.20	4,803.7	-18.7	4,803.7	4,786.1	17.61	272.727	
3,600.0	3,600.0	3,643.1	3,642.6	9.4	8.6	-0.18	4,803.5	-15.4	4,803.6	4,785.6	18.01	266.711	
3,700.0	3,700.0	3,748.0	3,747.4	9.6	8.8	-0.17	4,803.1	-14.5	4,803.2	4,784.8	18.38	261.275	
3,800.0	3,800.0	3,848.4	3,847.9	9.8	9.0	-0.17	4,802.7	-14.0	4,802.8	4,784.1	18.75	256.212	
3,900.0	3,900.0	3,953.1	3,952.5	10.0	9.2	-0.16	4,802.3	-13.2	4,802.4	4,783.2	19.12	251.166	
4,000.0	4,000.0	4,050.4	4,049.8	10.2	9.3	-0.15	4,801.8	-12.6	4,801.8	4,782.4	19.49	246.428	
4,100.0	4,100.0	4,145.0	4,144.5	10.4	9.5	-0.15	4,801.4	-12.2	4,801.5	4,781.7	19.83	242.103	
4,200.0	4,200.0	4,247.3	4,246.8	10.6	9.6	-0.14	4,801.1	-12.1	4,801.1	4,781.0	20.18	237.930	
4,300.0	4,300.0	4,337.6	4,337.1	10.8	9.8	-0.14	4,800.8	-11.5	4,800.8	4,780.3	20.53	233.810	
4,336.5	4,336.5	4,365.6	4,365.0	10.8	9.8	-0.14	4,800.7	-11.4	4,800.8	4,780.1	20.66	232.342	
4,400.0	4,400.0	4,416.2	4,415.7	11.0	9.9	-0.13	4,800.8	-11.1	4,800.9	4,780.0	20.89	228.775	
4,500.0	4,500.0	4,506.3	4,505.8	11.2	10.1	-0.12	4,801.2	-10.2	4,801.2	4,780.0	21.29	225.560	
4,600.0	4,600.0	4,618.3	4,617.8	11.4	10.4	-0.10	4,801.4	-8.4	4,801.5	4,779.7	21.73	220.973	
4,700.0	4,700.0	4,700.0	4,699.4	11.6	10.5	-0.08	4,802.0	-6.9	4,802.1	4,780.0	22.11	217.215	
4,800.0	4,800.0	4,761.5	4,760.9	11.8	10.7	-0.07	4,802.8	-5.8	4,803.1	4,780.6	22.48	213.647	
4,900.0	4,900.0	4,900.0	4,899.4	12.0	11.0	-0.05	4,803.8	-4.3	4,803.9	4,780.9	22.94	209.423	
5,000.0	5,000.0	4,977.6	4,977.0	12.2	11.1	-0.04	4,804.4	-3.0	4,804.7	4,781.4	23.31	206.091	
5,100.0	5,100.0	5,079.3	5,078.6	12.4	11.4	-0.01	4,805.6	-1.2	4,805.8	4,782.1	23.74	202.411	
5,200.0	5,200.0	5,164.3	5,163.7	12.6	11.6	0.01	4,806.5	0.6	4,807.0	4,782.8	24.14	199.145	
5,300.0	5,300.0	5,300.0	5,299.3	12.8	11.9	0.04	4,808.0	3.5	4,808.1	4,783.5	24.65	195.063	
5,400.0	5,400.0	5,382.9	5,382.2	13.0	12.1	0.07	4,808.8	5.5	4,808.9	4,783.8	25.05	191.993	
5,500.0	5,500.0	14,825.0	10,259.4	13.2	85.4	-19.20	41.4	-14.4	4,731.1	4,683.0	48.15	98.258	
5,600.0	5,600.0	14,825.0	10,259.4	13.4	85.4	-19.20	41.4	-14.4	4,631.1	4,582.8	48.36	95.767	
5,700.0	5,700.0	14,825.0	10,259.4	13.6	85.4	-19.20	41.4	-14.4	4,531.1	4,482.5	48.57	93.298	
5,800.0	5,800.0	14,825.0	10,259.4	13.8	85.4	-19.20	41.4	-14.4	4,431.1	4,382.3	48.78	90.846	
5,900.0	5,900.0	14,825.0	10,259.4	14.0	85.4	-19.20	41.4	-14.4	4,331.1	4,282.1	48.99	88.415	
6,000.0	6,000.0	14,825.0	10,259.4	14.3	85.4	-19.20	41.4	-14.4	4,231.1	4,181.9	49.20	86.005	
6,100.0	6,100.0	14,825.0	10,259.4	14.5	85.4	-19.20	41.4	-14.4	4,131.1	4,081.7	49.41	83.614	
6,200.0	6,200.0	14,825.0	10,259.4	14.7	85.4	-19.20	41.4	-14.4	4,031.1	3,981.5	49.62	81.243	
6,300.0	6,300.0	14,825.0	10,259.4	14.9	85.4	-19.20	41.4	-14.4	3,931.1	3,881.3	49.83	78.892	
6,400.0	6,400.0	14,825.0	10,259.4	15.1	85.4	-19.20	41.4	-14.4	3,831.2	3,781.1	50.04	76.559	
6,500.0	6,500.0	14,825.0	10,259.4	15.3	85.4	-19.20	41.4	-14.4	3,731.2	3,680.9	50.25	74.246	
6,600.0	6,600.0	14,825.0	10,259.4	15.5	85.4	-19.20	41.4	-14.4	3,631.2	3,580.7	50.47	71.952	
6,700.0	6,700.0	14,825.0	10,259.4	15.7	85.4	-19.20	41.4	-14.4	3,531.2	3,480.5	50.68	69.677	
6,800.0	6,800.0	14,825.0	10,259.4	15.9	85.4	-19.20	41.4	-14.4	3,431.2	3,380.3	50.89	67.420	
6,900.0	6,900.0	14,825.0	10,259.4	16.2	85.4	-19.20	41.4	-14.4	3,331.2	3,280.1	51.11	65.182	
7,000.0	7,000.0	14,825.0	10,259.4	16.4	85.4	-19.20	41.4	-14.4	3,231.2	3,179.9	51.32	62.962	
7,100.0	7,100.0	14,825.0	10,259.4	16.6	85.4	-19.20	41.4	-14.4	3,131.2	3,079.7	51.53	60.760	
7,200.0	7,200.0	14,825.0	10,259.4	16.8	85.4	-19.20	41.4	-14.4	3,031.2	2,979.5	51.75	58.576	

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

Integrity Directional Services, LLC

Anticollision Report

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Raspberry State Com 3H
Project:	Lea County, NM	**TVD Reference:**	KB=26' @ 3724.0usft
Reference Site:	Sec. 27, T 21S., R 33 E	**MD Reference:**	KB=26' @ 3724.0usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Raspberry State Com 3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 27, T 21S., R 33 E - Pygmy 27 State 2H - Wellbore #1 - Actual Wellbore — Offset Site Error: 0.0 usft

Survey Program: 100-NS-GYRO-MS, 9680-MWD — Offset Well Error: 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (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
7,300.0	7,300.0	14,825.0	10,259.4	17.0	85.4	-19.20	41.4	-14.4	2,931.2	2,879.3	51.96	56.409	
7,400.0	7,400.0	14,825.0	10,259.4	17.2	85.4	-19.20	41.4	-14.4	2,831.2	2,779.1	52.18	54.261	
7,500.0	7,500.0	14,825.0	10,259.4	17.4	85.4	-19.20	41.4	-14.4	2,731.3	2,678.9	52.39	52.129	
7,600.0	7,600.0	14,825.0	10,259.4	17.7	85.4	-19.20	41.4	-14.4	2,631.3	2,578.7	52.61	50.015	
7,700.0	7,700.0	14,825.0	10,259.4	17.9	85.4	-19.20	41.4	-14.4	2,531.3	2,478.5	52.82	47.918	
7,800.0	7,800.0	14,825.0	10,259.4	18.1	85.4	-19.20	41.4	-14.4	2,431.3	2,378.3	53.04	45.838	
7,900.0	7,900.0	14,825.0	10,259.4	18.3	85.4	-19.20	41.4	-14.4	2,331.3	2,278.1	53.26	43.775	
8,000.0	8,000.0	14,825.0	10,259.4	18.5	85.4	-19.20	41.4	-14.4	2,231.3	2,177.9	53.47	41.728	
8,100.0	8,100.0	14,825.0	10,259.4	18.7	85.4	-19.20	41.4	-14.4	2,131.4	2,077.7	53.69	39.698	
8,200.0	8,200.0	14,825.0	10,259.4	19.0	85.4	-19.20	41.4	-14.4	2,031.4	1,977.5	53.91	37.683	
8,300.0	8,300.0	14,825.0	10,259.4	19.2	85.4	-19.20	41.4	-14.4	1,931.4	1,877.3	54.12	35.685	
8,400.0	8,400.0	14,825.0	10,259.4	19.4	85.4	-19.20	41.4	-14.4	1,831.4	1,777.1	54.34	33.703	
8,500.0	8,500.0	14,825.0	10,259.4	19.6	85.4	-19.20	41.4	-14.4	1,731.5	1,676.9	54.56	31.736	
8,600.0	8,600.0	14,825.0	10,259.4	19.8	85.4	-19.20	41.4	-14.4	1,631.5	1,576.7	54.78	29.785	
8,700.0	8,700.0	14,825.0	10,259.4	20.0	85.4	-19.20	41.4	-14.4	1,531.5	1,476.5	54.99	27.850	
8,800.0	8,800.0	14,825.0	10,259.4	20.3	85.4	-19.20	41.4	-14.4	1,431.6	1,376.4	55.21	25.929	
8,900.0	8,900.0	14,825.0	10,259.4	20.5	85.4	-19.20	41.4	-14.4	1,331.6	1,276.2	55.43	24.024	
9,000.0	9,000.0	14,825.0	10,259.4	20.7	85.4	-19.20	41.4	-14.4	1,231.7	1,176.0	55.65	22.134	
9,100.0	9,100.0	14,825.0	10,259.4	20.9	85.4	-19.20	41.4	-14.4	1,131.8	1,075.9	55.86	20.259	
9,200.0	9,200.0	14,825.0	10,259.4	21.1	85.4	-19.20	41.4	-14.4	1,031.8	975.8	56.08	18.398	
9,300.0	9,300.0	14,825.0	10,259.4	21.4	85.4	-19.20	41.4	-14.4	931.9	875.6	56.30	16.553	
9,400.0	9,400.0	14,825.0	10,259.4	21.6	85.4	-19.20	41.4	-14.4	832.1	775.5	56.52	14.721	
9,500.0	9,500.0	14,825.0	10,259.4	21.8	85.4	-19.20	41.4	-14.4	732.2	675.5	56.74	12.905	
9,600.0	9,600.0	14,825.0	10,259.4	22.0	85.4	-19.20	41.4	-14.4	632.4	575.5	56.96	11.103	
9,700.0	9,700.0	14,825.0	10,259.4	22.2	85.4	-19.20	41.4	-14.4	532.7	475.5	57.18	9.317	
9,800.0	9,800.0	14,825.0	10,259.4	22.4	85.4	-19.20	41.4	-14.4	433.1	375.7	57.40	7.548	
9,900.0	9,900.0	14,825.0	10,259.4	22.7	85.4	-19.20	41.4	-14.4	333.8	276.2	57.61	5.793	
10,000.0	10,000.0	14,825.0	10,259.4	22.9	85.4	-19.20	41.4	-14.4	235.0	177.2	57.83	4.064	
10,100.0	10,100.0	14,825.0	10,259.4	23.1	85.4	-19.20	41.4	-14.4	136.0	80.0	58.05	2.378	
10,200.0	10,200.0	14,825.0	10,259.4	23.3	85.4	-19.20	41.4	-14.4	53.6	-4.7	58.27	0.920	Level 1
10,230.9	10,230.9	14,825.0	10,259.4	23.4	85.4	-19.20	41.4	-14.4	43.8	-14.6	58.34	0.751	Level 1, CC, ES, SF
10,300.0	10,300.0	14,825.0	10,259.4	23.5	85.4	-19.20	41.4	-14.4	81.8	23.3	58.49	1.399	Level 3
10,400.1	10,400.1	14,825.0	10,259.4	23.8	85.4	-19.20	41.4	-14.4	174.8	116.1	58.71	2.977	
10,450.0	10,449.9	14,825.0	10,259.4	23.9	85.4	-13.55	41.4	-14.4	223.0	168.9	54.08	4.123	
10,500.0	10,499.5	14,825.0	10,259.4	24.0	85.4	-10.09	41.4	-14.4	270.9	219.8	51.12	5.300	
10,550.0	10,548.3	14,825.0	10,259.4	24.1	85.4	-7.73	41.4	-14.4	318.5	268.9	49.58	6.423	
10,600.0	10,596.0	14,817.8	10,259.7	24.2	85.3	-5.77	46.6	-14.4	365.3	316.6	48.68	7.504	
10,650.0	10,642.2	14,796.9	10,260.5	24.3	84.9	-4.19	69.4	-14.4	410.7	362.5	48.24	8.514	
10,700.0	10,686.5	14,772.2	10,261.4	24.4	84.5	-3.19	94.2	-14.3	454.1	405.9	48.17	9.426	
10,750.0	10,728.7	14,745.3	10,262.4	24.5	84.0	-2.53	121.0	-14.2	495.2	447.0	48.21	10.271	
10,800.0	10,768.3	14,716.1	10,263.4	24.6	83.5	-2.05	150.1	-14.1	533.8	485.6	48.22	11.071	
10,850.0	10,805.2	14,685.2	10,264.2	24.8	83.0	-1.69	181.1	-13.8	569.8	521.6	48.14	11.836	
10,900.0	10,838.9	14,652.0	10,264.8	24.9	82.4	-1.40	214.2	-13.3	602.8	554.9	47.93	12.577	
10,950.0	10,869.4	14,617.6	10,265.2	25.1	81.8	-1.15	248.7	-12.7	632.7	585.2	47.59	13.296	
11,000.0	10,896.2	14,582.8	10,265.3	25.3	81.2	-0.95	283.4	-12.0	659.5	612.4	47.13	13.994	
11,050.0	10,919.3	14,548.8	10,264.9	25.5	80.6	-0.79	319.5	-11.3	683.1	636.5	46.57	14.668	
11,100.0	10,938.5	14,505.7	10,264.0	25.7	79.9	-0.64	360.5	-10.5	703.2	657.3	45.91	15.315	
11,150.0	10,953.5	14,461.4	10,262.9	25.9	79.2	-0.51	404.8	-9.7	719.4	674.2	45.22	15.909	
11,200.0	10,964.3	14,407.1	10,261.5	26.2	78.3	-0.36	459.0	-8.6	731.5	687.0	44.50	16.437	
11,250.0	10,970.9	14,344.0	10,260.8	26.5	77.3	-0.17	522.1	-6.8	738.5	694.7	43.83	16.849	
11,303.5	10,973.0	14,291.9	10,260.8	26.9	76.4	-0.03	574.3	-5.5	740.8	697.4	43.40	17.068	
11,348.7	10,972.8	14,249.0	10,260.6	27.2	75.7	0.05	617.1	-4.8	740.7	697.5	43.21	17.144	

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

Integrity Directional Services, LLC

Anticollision Report

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Raspberry State Com 3H
Project:	Lea County, NM	**TVD Reference:**	KB=26' @ 3724.0usft
Reference Site:	Sec. 27, T 21S., R 33 E	**MD Reference:**	KB=26' @ 3724.0usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Raspberry State Com 3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 27, T 21S., R 33 E - Pygmy 27 State 2H - Wellbore #1 - Actual Wellbore — Offset Site Error: 0.0 usft

Survey Program: 100-NS-GYRO-MS, 9680-MWD — Offset Well Error: 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (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
11,400.0	10,972.5	14,206.4	10,260.1	27.6	75.0	0.11	659.7	-4.4	741.0	698.0	43.03	17.222	
11,500.0	10,971.9	14,118.9	10,257.6	28.4	73.5	0.27	747.1	-3.1	743.2	700.6	42.69	17.412	
11,600.0	10,971.3	14,008.6	10,254.0	29.3	71.7	0.64	857.3	0.7	745.9	703.7	42.24	17.662	
11,700.0	10,970.7	13,899.0	10,253.0	30.3	69.9	1.17	966.7	6.6	746.4	704.5	41.85	17.835	
11,800.0	10,970.1	13,809.7	10,251.9	31.4	68.4	1.61	1,056.0	11.7	747.1	705.5	41.64	17.942	
11,900.0	10,969.5	13,698.8	10,249.8	32.5	66.7	2.18	1,166.6	18.1	748.7	707.4	41.34	18.109	
12,000.0	10,968.9	13,574.7	10,251.2	33.7	64.7	2.68	1,290.5	23.5	747.1	706.1	41.00	18.224	
12,100.0	10,968.3	13,481.7	10,253.2	35.0	63.2	2.82	1,383.6	24.4	744.6	703.7	40.84	18.232	
12,186.2	10,967.7	13,411.8	10,253.4	36.1	62.0	2.85	1,453.5	24.1	743.6	703.0	40.76	18.240	
12,200.0	10,967.6	13,397.0	10,253.2	36.3	61.8	2.88	1,468.2	24.1	743.8	703.1	40.74	18.256	
12,300.0	10,967.0	13,290.4	10,252.8	37.6	60.1	2.96	1,574.9	24.4	743.8	703.2	40.63	18.349	
12,400.0	10,966.4	13,188.4	10,253.7	39.0	58.5	3.14	1,678.8	25.7	742.3	702.0	40.38	18.384	
12,466.9	10,966.0	13,129.7	10,253.9	39.9	57.6	3.26	1,735.5	26.8	741.9	701.5	40.38	18.373	
12,500.0	10,965.8	13,096.7	10,253.6	40.4	57.0	3.34	1,768.5	27.6	742.0	701.6	40.35	18.389	
12,600.0	10,965.2	12,990.7	10,254.4	41.9	55.4	3.66	1,874.4	30.7	740.9	700.6	40.26	18.404	
12,630.7	10,965.1	12,965.8	10,254.4	42.3	55.0	3.72	1,899.4	31.2	740.7	700.5	40.27	18.393	
12,700.0	10,964.6	12,903.7	10,253.6	43.3	54.0	3.80	1,961.5	31.7	741.2	701.0	40.27	18.408	
12,800.0	10,964.0	12,797.6	10,252.4	44.9	52.4	4.01	2,067.5	33.6	742.0	701.8	40.19	18.463	
12,892.6	10,963.5	12,703.7	10,252.3	46.3	50.9	4.23	2,161.4	35.5	741.7	701.5	40.17	18.465	
12,900.0	10,963.4	12,697.2	10,252.3	46.4	50.8	4.24	2,167.9	35.7	741.7	701.5	40.17	18.463	
13,000.0	10,962.8	12,599.6	10,251.3	47.9	49.3	4.48	2,265.4	37.9	742.4	702.2	40.19	18.470	
13,100.0	10,962.2	12,484.4	10,251.2	49.5	47.5	4.62	2,380.7	38.6	741.9	701.8	40.09	18.506	
13,200.0	10,961.6	12,389.2	10,252.3	51.1	46.0	4.67	2,475.8	38.3	740.3	700.2	40.11	18.457	
13,300.0	10,961.0	12,295.5	10,252.2	52.7	44.5	4.76	2,569.6	38.6	739.9	699.7	40.17	18.421	
13,400.0	10,960.4	12,185.1	10,252.3	54.3	42.8	4.89	2,680.0	39.2	739.4	699.2	40.14	18.419	
13,500.0	10,959.8	12,093.9	10,252.8	56.0	41.5	5.01	2,771.2	39.9	738.3	698.0	40.26	18.341	
13,600.0	10,959.2	11,976.3	10,254.1	57.6	39.8	5.31	2,888.7	42.6	737.0	696.7	40.28	18.297	
13,700.0	10,958.6	11,888.0	10,255.6	59.3	38.5	5.62	2,976.9	45.6	735.1	694.6	40.51	18.148	
13,800.0	10,958.0	11,773.4	10,257.9	60.9	36.8	5.95	3,091.4	48.5	732.7	692.1	40.61	18.044	
13,900.0	10,957.4	11,676.6	10,260.3	62.6	35.5	6.23	3,188.2	50.9	730.1	689.3	40.82	17.884	
14,000.0	10,956.8	11,570.3	10,263.5	64.3	34.0	6.49	3,294.4	52.9	728.7	685.7	41.00	17.724	
14,100.0	10,956.2	11,471.4	10,266.4	66.0	32.6	6.71	3,393.3	54.4	723.6	682.3	41.23	17.546	
14,200.0	10,955.6	11,369.6	10,269.7	67.7	31.3	6.80	3,495.0	54.1	719.8	678.4	41.42	17.379	
14,300.0	10,955.0	11,275.1	10,272.2	69.4	30.0	6.90	3,589.5	54.3	716.7	675.0	41.68	17.196	
14,400.0	10,954.4	11,180.6	10,274.3	71.1	28.8	7.09	3,683.9	55.5	714.1	672.1	41.99	17.006	
14,500.0	10,953.8	11,093.1	10,275.3	72.8	27.7	7.29	3,771.5	57.0	712.9	670.4	42.38	16.819	
14,512.2	10,953.7	11,083.1	10,275.3	73.0	27.6	7.31	3,781.4	57.2	712.7	670.3	42.43	16.799	
14,600.0	10,953.2	10,999.1	10,274.3	74.5	26.7	7.44	3,865.4	58.1	713.5	670.8	42.74	16.694	
14,700.0	10,952.6	10,889.2	10,274.4	76.2	25.5	7.51	3,975.3	57.9	712.8	669.7	43.04	16.562	
14,788.3	10,952.1	10,807.0	10,274.4	77.8	24.6	7.56	4,057.6	57.7	712.4	669.0	43.38	16.419	
14,800.0	10,952.0	10,796.3	10,274.4	78.0	24.5	7.56	4,068.2	57.7	712.4	668.9	43.43	16.401	
14,900.0	10,951.4	10,705.6	10,273.2	79.7	23.6	7.64	4,158.9	57.9	713.1	669.2	43.88	16.251	
15,000.0	10,950.8	10,617.3	10,270.9	81.5	22.8	7.72	4,247.2	58.4	715.3	670.9	44.38	16.117	
15,100.0	10,950.2	10,562.0	10,268.3	83.2	22.4	7.77	4,302.4	58.9	720.5	675.6	44.98	16.016	
15,200.0	10,949.6	10,501.0	10,260.8	84.9	21.9	7.83	4,362.9	60.0	732.4	686.8	45.59	16.065	
15,300.0	10,949.0	10,469.0	10,254.4	86.7	21.7	7.86	4,394.3	61.0	751.6	705.4	46.27	16.244	
15,400.0	10,948.4	10,424.8	10,242.7	88.5	21.4	7.92	4,436.8	63.0	778.2	731.3	46.94	16.577	
15,500.0	10,947.8	10,374.0	10,225.9	90.2	21.2	7.95	4,484.7	65.3	810.9	763.3	47.60	17.036	
15,600.0	10,947.2	10,343.0	10,213.9	92.0	21.0	7.92	4,513.3	66.3	849.4	801.1	48.27	17.596	
15,700.0	10,946.6	10,311.0	10,199.9	93.7	20.9	7.86	4,542.0	67.1	893.6	844.7	48.92	18.267	
15,800.0	10,946.0	10,267.8	10,178.6	95.5	20.7	7.70	4,579.6	67.3	942.9	893.4	49.51	19.044	
15,900.0	10,945.4	10,248.0	10,167.9	97.3	20.7	7.60	4,596.2	67.2	997.3	947.1	50.17	19.878	

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

Integrity Directional Services, LLC

Anticollision Report

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Raspberry State Com 3H
Project:	Lea County, NM	**TVD Reference:**	KB=26' @ 3724.0usft
Reference Site:	Sec. 27, T 21S., R 33 E	**MD Reference:**	KB=26' @ 3724.0usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Raspberry State Com 3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 27, T 21S., R 33 E - Pygmy 27 State 2H - Wellbore #1 - Actual Wellbore — Offset Site Error: 0.0 usft

Survey Program: 100-NS-GYRO-MS, 9680-MWD — Offset Well Error: 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (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
16,000.0	10,944.8	10,217.0	10,149.7	99.0	20.6	7.41	4,621.4	66.7	1,056.0	1,005.2	50.77	20.801	
16,100.0	10,944.2	10,185.0	10,129.4	100.8	20.5	7.18	4,646.1	65.6	1,118.8	1,067.4	51.34	21.791	
16,200.0	10,943.6	10,154.0	10,108.6	102.6	20.4	6.95	4,668.9	64.4	1,185.0	1,133.1	51.91	22.826	
16,300.0	10,943.0	10,135.8	10,095.6	104.4	20.4	6.81	4,682.0	63.7	1,254.2	1,201.6	52.55	23.865	
16,400.0	10,942.4	10,122.0	10,085.8	106.1	20.4	6.70	4,691.4	63.1	1,326.2	1,273.0	53.22	24.922	
16,500.0	10,941.8	10,091.0	10,062.5	107.9	20.3	6.46	4,711.8	61.8	1,400.7	1,346.9	53.79	26.040	
16,600.0	10,941.2	10,078.4	10,052.7	109.7	20.3	6.37	4,719.7	61.2	1,477.4	1,422.9	54.46	27.129	
16,700.0	10,940.6	10,059.0	10,037.3	111.5	20.3	6.22	4,731.5	60.4	1,556.0	1,500.9	55.09	28.244	
16,800.0	10,940.0	10,059.0	10,037.3	113.3	20.3	6.22	4,731.5	60.4	1,636.6	1,580.8	55.83	29.317	
16,900.0	10,939.3	10,027.0	10,011.0	115.1	20.3	5.99	4,749.6	59.2	1,718.5	1,662.1	56.40	30.468	
17,000.0	10,938.7	10,027.0	10,011.0	116.9	20.3	5.99	4,749.6	59.2	1,801.9	1,744.8	57.14	31.537	
17,100.0	10,938.1	10,012.1	9,998.3	118.6	20.3	5.89	4,757.4	58.7	1,886.6	1,828.8	57.80	32.642	
17,200.0	10,937.5	9,996.0	9,984.4	120.4	20.3	5.78	4,765.4	58.2	1,972.6	1,914.1	58.46	33.745	
17,300.0	10,936.9	9,996.0	9,984.4	122.2	20.3	5.78	4,765.4	58.2	2,059.5	2,000.3	59.19	34.795	
17,400.0	10,936.3	9,996.0	9,984.4	124.0	20.3	5.78	4,765.4	58.2	2,147.5	2,087.6	59.92	35.839	
17,500.0	10,935.7	9,964.0	9,955.8	125.8	20.3	5.58	4,779.9	57.3	2,236.3	2,175.8	60.51	36.959	
17,600.0	10,935.1	9,964.0	9,955.8	127.6	20.3	5.58	4,779.9	57.3	2,325.6	2,264.4	61.24	37.975	
17,700.0	10,934.5	9,964.0	9,955.8	129.4	20.3	5.58	4,779.9	57.3	2,415.8	2,353.8	61.97	38.980	
17,800.0	10,933.9	9,964.0	9,955.8	131.2	20.3	5.58	4,779.9	57.3	2,506.7	2,444.0	62.71	39.974	
17,900.0	10,933.3	9,933.0	9,927.4	133.0	20.2	5.38	4,792.2	56.3	2,598.1	2,534.8	63.29	41.048	
18,000.0	10,932.7	9,933.0	9,927.4	134.8	20.2	5.38	4,792.2	56.3	2,689.9	2,625.8	64.03	42.010	
18,100.0	10,932.1	9,933.0	9,927.4	136.6	20.2	5.38	4,792.2	56.3	2,782.1	2,717.3	64.76	42.959	
18,200.0	10,931.5	9,933.0	9,927.4	138.4	20.2	5.38	4,792.2	56.3	2,874.9	2,809.4	65.50	43.894	
18,300.0	10,930.9	9,933.0	9,927.4	140.2	20.2	5.38	4,792.2	56.3	2,968.2	2,901.9	66.23	44.815	
18,400.0	10,930.3	9,916.9	9,912.4	142.0	20.2	5.27	4,798.0	55.6	3,061.5	2,994.6	66.88	45.775	
18,500.0	10,929.7	9,901.0	9,897.3	143.8	20.2	5.16	4,803.1	54.8	3,155.6	3,088.0	67.53	46.727	
18,600.0	10,929.1	9,901.0	9,897.3	145.6	20.2	5.16	4,803.1	54.8	3,249.7	3,181.4	68.27	47.603	
18,700.0	10,928.5	9,901.0	9,897.3	147.4	20.2	5.16	4,803.1	54.8	3,344.1	3,275.1	69.00	48.464	
18,800.0	10,927.9	9,901.0	9,897.3	149.2	20.2	5.16	4,803.1	54.8	3,438.9	3,369.2	69.74	49.312	
18,900.0	10,927.3	9,901.0	9,897.3	151.0	20.2	5.16	4,803.1	54.8	3,533.9	3,463.5	70.47	50.145	
19,000.0	10,926.7	9,901.0	9,897.3	152.8	20.2	5.16	4,803.1	54.8	3,629.3	3,558.0	71.21	50.966	
19,100.0	10,926.1	9,901.0	9,897.3	154.6	20.2	5.16	4,803.1	54.8	3,724.8	3,652.9	71.95	51.772	
19,200.0	10,925.5	9,901.0	9,897.3	156.4	20.2	5.16	4,803.1	54.8	3,820.6	3,747.9	72.68	52.565	
19,300.0	10,924.9	9,885.0	9,882.0	158.3	20.2	5.04	4,807.7	53.8	3,916.3	3,843.0	73.33	53.409	
19,400.0	10,924.3	9,869.0	9,866.6	160.1	20.2	4.92	4,811.8	52.8	4,012.6	3,938.6	73.97	54.248	
19,500.0	10,923.7	9,869.0	9,866.6	161.9	20.2	4.92	4,811.8	52.8	4,108.7	4,034.0	74.70	55.001	
19,600.0	10,923.1	9,869.0	9,866.6	163.7	20.2	4.92	4,811.8	52.8	4,205.1	4,129.7	75.44	55.741	
19,700.0	10,922.5	9,869.0	9,866.6	165.5	20.2	4.92	4,811.8	52.8	4,301.6	4,225.4	76.18	56.469	
19,800.0	10,921.9	9,869.0	9,866.6	167.3	20.2	4.92	4,811.8	52.8	4,398.3	4,321.4	76.91	57.185	
19,900.0	10,921.3	9,869.0	9,866.6	169.1	20.2	4.92	4,811.8	52.8	4,495.1	4,417.4	77.65	57.888	
20,000.0	10,920.7	9,869.0	9,866.6	170.9	20.2	4.92	4,811.8	52.8	4,592.0	4,513.6	78.39	58.581	
20,100.0	10,920.1	9,869.0	9,866.6	172.7	20.2	4.92	4,811.8	52.8	4,689.1	4,610.0	79.13	59.261	
20,200.0	10,919.5	9,869.0	9,866.6	174.6	20.2	4.92	4,811.8	52.8	4,786.3	4,706.4	79.86	59.931	
20,300.0	10,918.9	9,869.0	9,866.6	176.4	20.2	4.92	4,811.8	52.8	4,883.6	4,803.0	80.60	60.589	
20,400.0	10,918.3	9,869.0	9,866.6	178.2	20.2	4.92	4,811.8	52.8	4,981.0	4,899.7	81.34	61.237	
20,500.0	10,917.7	9,869.0	9,866.6	180.0	20.2	4.92	4,811.8	52.8	5,078.6	4,996.5	82.08	61.874	
20,600.0	10,917.1	9,869.0	9,866.6	181.8	20.2	4.92	4,811.8	52.8	5,176.2	5,093.4	82.82	62.501	
20,700.0	10,916.5	9,869.0	9,866.6	183.6	20.2	4.92	4,811.8	52.8	5,273.9	5,190.3	83.56	63.118	
20,800.0	10,915.9	9,869.0	9,866.6	185.4	20.2	4.92	4,811.8	52.8	5,371.7	5,287.4	84.30	63.724	
20,900.0	10,915.3	9,853.9	9,851.9	187.2	20.2	4.80	4,815.0	51.7	5,469.2	5,384.3	84.93	64.393	
20,935.7	10,915.0	9,853.4	9,851.4	187.9	20.2	4.80	4,815.1	51.7	5,504.2	5,419.0	85.19	64.607	
20,936.3	10,915.0	9,853.4	9,851.4	187.9	20.2	4.80	4,815.1	51.7	5,504.7	5,419.5	85.20	64.612	

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

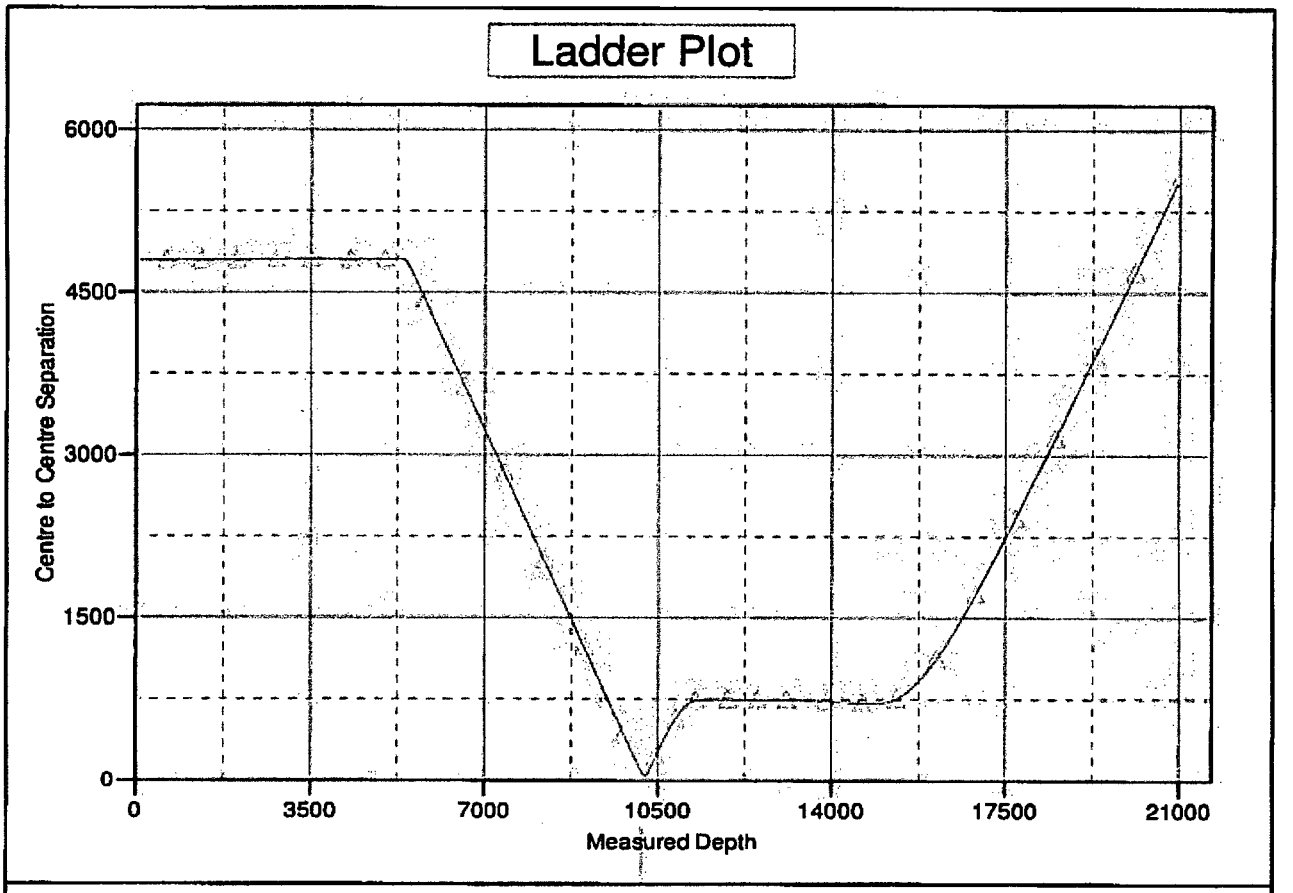
Integrity Directional Services, LLC

Anticollision Report

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Raspberry State Com 3H
Project:	Lea County, NM	**TVD Reference:**	KB=26' @ 3724.0usft
Reference Site:	Sec. 27, T 21S., R 33 E	**MD Reference:**	KB=26' @ 3724.0usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Raspberry State Com 3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at:**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB=26' @ 3724.0usft
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Raspberry State Com 3H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.41°



LEGEND

ny 27 Stato 2H , Wellbore #1, Actual Wellbore V0

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

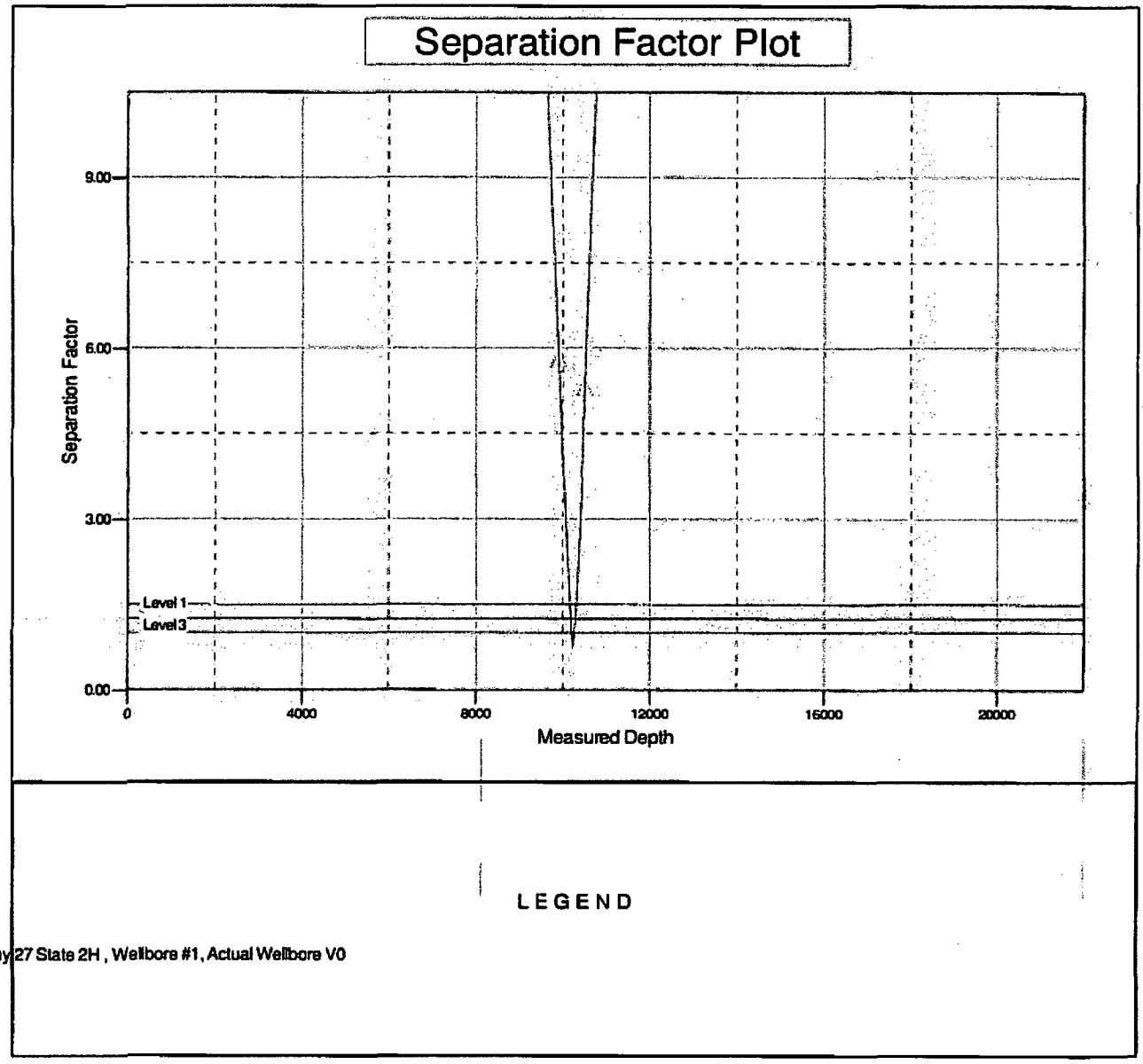
Integrity Directional Services, LLC

Anticollision Report

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Raspberry State Com 3H
Project:	Lea County, NM	**TVD Reference:**	KB=26' @ 3724.0usft
Reference Site:	Sec. 27 T:21S , R 33 E	**MD Reference:**	KB=26' @ 3724.0usft
Site Error:	5.0 usft	**North Reference:**	Grid
Reference Well:	Raspberry State Com 3H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	5.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan#1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB=26' @ 3724.0usft
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Raspberry State Com 3H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.41°



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

CONCHO

COG Production LLC
Project: Lea County, NM
Site: Sec. 27, T 21S. , R 33 E
Well: Raspberry State Com 3H
Wellbore: Wellbore #1
Plan: Plan#1 (Raspberry State Com 3H/Wellbore #1)

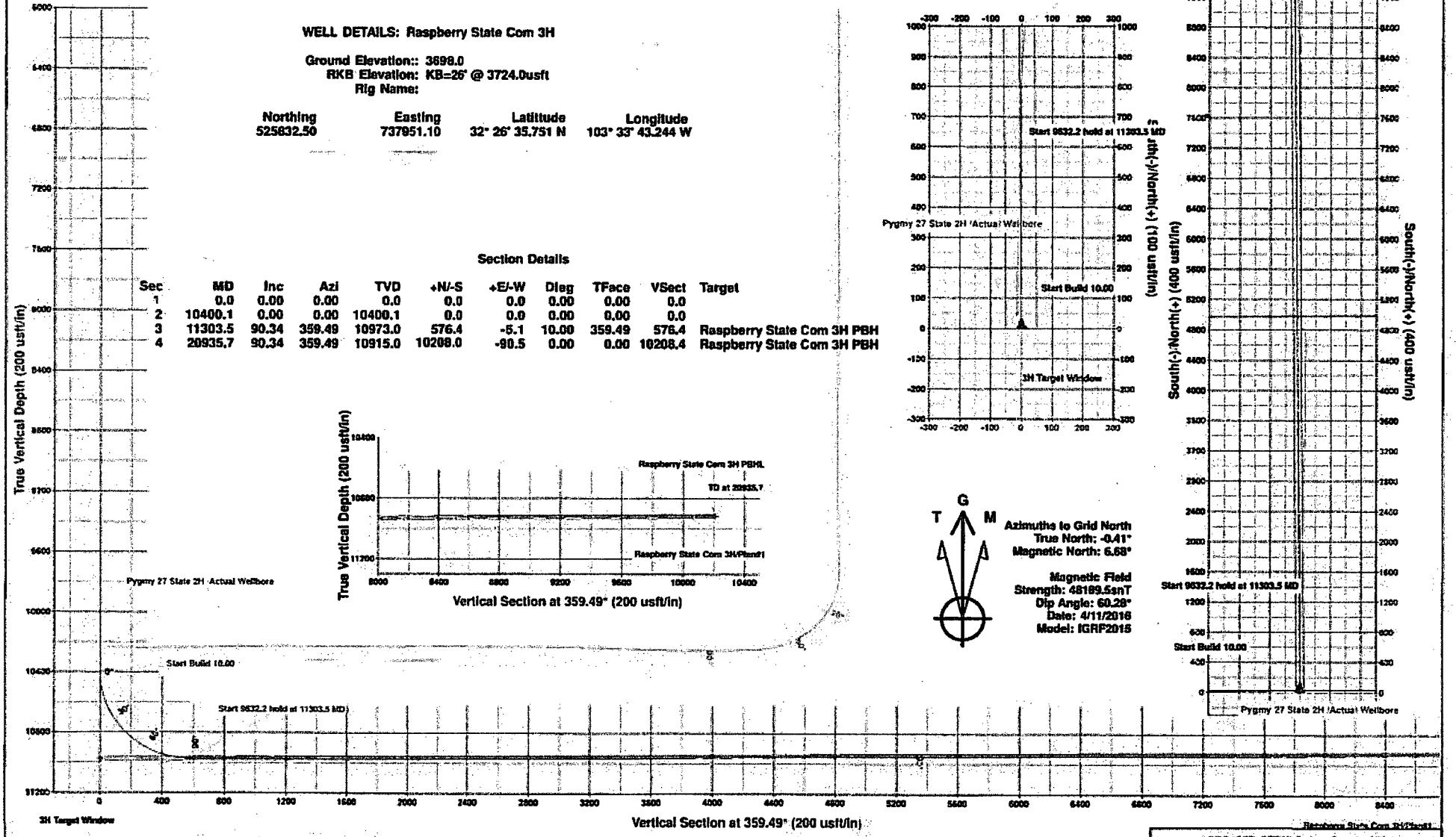
WELL DETAILS: Raspberry State Com 3H

Ground Elevation:: 3698.0
RKB Elevation: KB=26' @ 3724.0usft
Rig Name:

Northing	Easting	Latitude	Longitude
525832.50	737951.10	32° 26' 35.751 N	103° 33' 43.244 W

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	10400.1	0.00	0.00	10400.1	0.0	0.0	0.00	0.00	0.0	
3	11303.5	90.34	359.49	10973.0	576.4	-5.1	10.00	359.49	576.4	Raspberry State Com 3H PBH
4	20935.7	90.34	359.49	10915.0	10208.4	-90.5	0.00	0.00	10208.4	Raspberry State Com 3H PBH



Azimuths to Grid North
True North: -0.41°
Magnetic North: 6.68°

Magnetic Field
Strength: 48189.5snT
Dip Angle: 60.28°
Date: 4/11/2016
Model: IGRF2015

INTEGRITY Directional Services

Integrity Directional Services

PROJECT DETAILS: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid