

HOBBS OCD

APR 21 2016

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COG Production LLC

Lea County, NM (NAD27 NME)

Sec. 29, T 24 S. , R 32E

Azores Federal #12H

Wellbore #1

Plan#1

Anticollision Report

11 March, 2016

APR 22 2016

IDS

Anticollision Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Azores Federal #12H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Reference Site:	Sec. 29, T 24 S., R 32E	MD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Site Error:	5.0 usft	North Reference:	Grid
Reference Well:	Azores Federal #12H	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 Single 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:	MD Interval 100.0usft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 10,000.0 us
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Circular Conic
Casing Method:	Not applied

Survey Tool Program	Date	3/11/2016
From (usft)	To (usft)	Survey (Wellbore)
0.0	13,898.8	Plan#1 (Wellbore #1)
		Tool Name
		MWD
		Description
		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.						
Sec. 29, T 24 S., R 32E						
Azores Federal #4H - Wellbore #1 - Actual Wellbore	9,205.2	9,093.8	327.8	286.7	7.973	CC, ES, SF
Azores Federal #8H - Wellbore #1 - Plan#1	4,600.0	4,598.7	100.0	77.3	4.403	CC
Azores Federal #8H - Wellbore #1 - Plan#1	4,900.0	4,907.0	100.4	76.5	4.215	ES
Azores Federal #8H - Wellbore #1 - Plan#1	13,899.0	13,854.4	449.9	270.9	2.514	SF
Corvo Federal #3H - Wellbore #1 - Actual Wellbore	3,951.8	4,051.1	131.9	110.9	6.277	CC
Corvo Federal #3H - Wellbore #1 - Actual Wellbore	4,700.0	4,800.4	132.0	108.6	5.655	ES, SF

Offset Design												Sec. 29, T 24 S., R 32E - Azores Federal #4H - Wellbore #1 - Actual Wellbore		Offset Site Error: 0.0 usft	
Survey Program: 100-NS-GYRO-MS, 8584-MWD												Offset Well Error: 5.0 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)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
0.0	0.0	4.3	4.3	5.0	5.0	-91.76	-31.4	-1,020.0	1,020.5						
100.0	100.0	101.3	101.3	5.0	5.0	-91.77	-31.5	-1,020.1	1,020.6	1,010.6	10.00	102.046			
200.0	200.0	200.0	200.0	5.0	5.0	-91.77	-31.6	-1,020.5	1,021.0	1,011.0	10.02	101.876			
300.0	300.0	303.4	303.4	5.0	5.0	-91.78	-31.8	-1,020.8	1,021.3	1,011.2	10.06	101.486			
400.0	400.0	405.1	405.1	5.1	5.1	-91.79	-31.8	-1,020.8	1,021.3	1,011.2	10.11	101.032			
458.4	458.4	462.8	462.8	5.1	5.1	-91.78	-31.7	-1,020.8	1,021.3	1,011.1	10.14	100.719			
500.0	500.0	503.8	503.8	5.1	5.1	-91.78	-31.6	-1,020.8	1,021.3	1,011.1	10.17	100.468			
600.0	600.0	601.4	601.4	5.1	5.1	-91.76	-31.4	-1,021.0	1,021.4	1,011.2	10.25	99.643			
700.0	700.0	702.2	702.2	5.2	5.2	-91.75	-31.2	-1,021.2	1,021.7	1,011.3	10.36	98.576			
800.0	800.0	803.5	803.5	5.3	5.2	-91.74	-31.1	-1,021.4	1,021.8	1,011.3	10.50	97.323			
900.0	900.0	900.9	900.9	5.3	5.3	-91.73	-30.9	-1,021.6	1,022.1	1,011.4	10.65	95.949			
1,000.0	1,000.0	1,000.0	1,000.0	5.4	5.4	-91.72	-30.7	-1,022.0	1,022.5	1,011.7	10.83	94.451			
1,100.0	1,100.0	1,097.7	1,097.7	5.5	5.5	-91.71	-30.6	-1,022.6	1,023.1	1,012.1	11.02	92.872			
1,200.0	1,200.0	1,200.6	1,200.6	5.6	5.6	-91.70	-30.4	-1,023.1	1,023.6	1,012.4	11.23	91.137			
1,300.0	1,300.0	1,302.2	1,302.1	5.7	5.7	-91.70	-30.4	-1,023.4	1,023.9	1,012.4	11.45	89.399			
1,400.0	1,400.0	1,400.0	1,400.0	5.8	5.9	-91.70	-30.4	-1,023.8	1,024.3	1,012.6	11.68	87.667			
1,500.0	1,500.0	1,498.0	1,498.0	6.0	6.0	-91.70	-30.3	-1,024.4	1,024.9	1,012.9	11.94	85.851			
1,600.0	1,600.0	1,596.6	1,596.6	6.1	6.1	-91.69	-30.3	-1,025.1	1,025.6	1,013.4	12.21	84.023			
1,700.0	1,700.0	1,700.0	1,700.0	6.2	6.3	-91.69	-30.2	-1,025.7	1,026.2	1,013.7	12.49	82.130			
1,800.0	1,800.0	1,802.8	1,802.8	6.3	6.4	-91.65	-29.5	-1,026.0	1,026.5	1,013.7	12.77	80.354			
1,900.0	1,900.0	1,901.7	1,901.6	6.5	6.6	-91.57	-28.2	-1,026.3	1,026.7	1,013.6	13.04	78.722			

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

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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)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
2,000.0	2,000.0	2,003.6	2,003.6	6.6	6.7	-91.45	-26.0	-1,026.5	1,026.8	1,013.5	13.32	77.077		
2,100.0	2,100.0	2,106.2	2,106.1	6.8	6.8	-91.27	-22.8	-1,026.5	1,026.8	1,013.2	13.61	75.457		
2,149.3	2,149.3	2,153.9	2,153.7	6.9	6.9	-91.18	-21.1	-1,026.5	1,026.7	1,013.0	13.75	74.677		
2,200.0	2,200.0	2,202.8	2,202.6	6.9	7.0	-91.07	-19.2	-1,026.6	1,026.8	1,012.9	13.90	73.888		
2,300.0	2,300.0	2,300.0	2,299.7	7.1	7.1	-90.85	-15.3	-1,027.0	1,027.2	1,013.0	14.20	72.319		
2,400.0	2,400.0	2,400.0	2,399.7	7.3	7.3	-90.62	-11.1	-1,027.6	1,027.7	1,013.2	14.53	70.747		
2,500.0	2,500.0	2,500.0	2,499.6	7.4	7.4	-90.42	-7.6	-1,028.1	1,028.1	1,013.3	14.86	69.193		
2,600.0	2,600.0	2,597.7	2,597.3	7.6	7.6	-90.29	-5.2	-1,028.7	1,028.7	1,013.5	15.20	67.671		
2,700.0	2,700.0	2,693.7	2,693.2	7.8	7.8	-90.17	-3.0	-1,029.5	1,029.6	1,014.1	15.55	66.193		
2,800.0	2,800.0	2,803.8	2,803.3	7.9	8.0	-90.03	-0.6	-1,030.2	1,030.2	1,014.3	15.93	64.654		
2,900.0	2,900.0	2,900.0	2,899.5	8.1	8.2	-89.92	1.4	-1,030.4	1,030.5	1,014.2	16.29	63.263		
3,000.0	3,000.0	2,997.2	2,996.7	8.3	8.4	-89.82	3.2	-1,031.0	1,031.0	1,014.4	16.66	61.886		
3,100.0	3,100.0	3,093.2	3,092.7	8.5	8.6	-89.70	5.3	-1,031.9	1,032.0	1,014.9	17.04	60.565		
3,200.0	3,200.0	3,191.7	3,191.1	8.6	8.8	-89.55	8.1	-1,033.1	1,033.2	1,015.7	17.43	59.282		
3,300.0	3,300.0	3,291.9	3,291.2	8.8	9.0	-89.39	11.0	-1,034.3	1,034.5	1,016.6	17.83	58.030		
3,400.0	3,400.0	3,394.7	3,394.0	9.0	9.2	-89.23	13.8	-1,035.5	1,035.6	1,017.4	18.23	56.796		
3,500.0	3,500.0	3,485.8	3,485.0	9.2	9.4	-89.10	16.2	-1,036.7	1,037.0	1,018.4	18.62	55.688		
3,600.0	3,600.0	3,586.1	3,585.3	9.4	9.6	-88.94	19.1	-1,038.6	1,038.9	1,019.9	19.04	54.579		
3,700.0	3,700.0	3,679.3	3,678.4	9.6	9.9	-88.76	22.6	-1,040.5	1,041.1	1,021.6	19.44	53.559		
3,800.0	3,800.0	3,791.4	3,790.4	9.8	10.1	-88.49	27.6	-1,042.7	1,043.2	1,023.3	19.88	52.470		
3,900.0	3,900.0	3,890.0	3,888.9	10.0	10.3	-88.27	31.5	-1,044.0	1,044.5	1,024.2	20.30	51.462		
4,000.0	4,000.0	4,000.6	3,999.4	10.2	10.6	-88.07	35.3	-1,045.0	1,045.6	1,024.9	20.74	50.417		
4,100.0	4,100.0	4,122.3	4,121.1	10.4	10.8	-87.81	39.9	-1,043.7	1,044.6	1,023.5	21.17	49.352		
4,200.0	4,200.0	4,212.6	4,211.3	10.6	11.0	-87.67	42.4	-1,042.7	1,043.6	1,022.1	21.52	48.484		
4,300.0	4,300.0	4,314.9	4,313.6	10.8	11.1	-87.60	43.7	-1,041.8	1,042.8	1,020.9	21.87	47.680		
4,400.0	4,400.0	4,415.8	4,414.5	11.0	11.2	-87.59	43.9	-1,040.9	1,041.9	1,019.7	22.15	47.030		
4,500.0	4,500.0	4,515.7	4,514.4	11.2	11.3	-87.59	43.8	-1,039.9	1,040.9	1,018.5	22.41	46.446		
4,600.0	4,600.0	4,612.1	4,610.7	11.4	11.3	-87.59	43.7	-1,039.1	1,040.1	1,017.4	22.67	45.882		
4,700.0	4,700.0	4,707.2	4,705.9	11.6	11.4	14.35	43.7	-1,038.8	1,039.3	1,016.4	22.96	45.270		
4,800.0	4,799.9	4,814.1	4,812.8	11.7	11.5	14.42	43.6	-1,038.3	1,035.4	1,012.2	23.24	44.547		
4,900.0	4,899.7	4,912.1	4,910.7	11.9	11.6	14.55	43.5	-1,037.6	1,028.0	1,004.5	23.48	43.774		
5,000.0	4,999.1	5,015.2	5,013.8	12.1	11.6	14.74	43.2	-1,036.7	1,017.0	993.2	23.73	42.855		
5,100.0	5,098.2	5,113.0	5,111.7	12.3	11.7	15.01	43.0	-1,035.8	1,002.6	978.6	24.00	41.776		
5,200.0	5,196.7	5,209.7	5,208.4	12.5	11.8	15.29	43.0	-1,035.0	985.6	961.3	24.30	40.561		
5,300.0	5,295.3	5,302.1	5,300.8	12.7	12.0	15.55	43.0	-1,034.6	968.8	944.2	24.64	39.316		
5,400.0	5,393.8	5,403.6	5,402.3	12.9	12.1	15.85	43.4	-1,034.3	952.2	927.2	25.05	38.014		
5,500.0	5,492.4	5,500.0	5,498.6	13.1	12.3	16.15	43.7	-1,034.0	935.6	910.2	25.47	36.735		
5,600.0	5,591.0	5,600.0	5,598.6	13.4	12.5	16.48	44.2	-1,033.7	919.1	893.2	25.91	35.468		
5,700.0	5,689.5	5,692.5	5,691.1	13.6	12.7	16.81	44.9	-1,033.6	902.8	876.4	26.36	34.253		
5,800.0	5,788.1	5,796.7	5,795.3	13.9	13.0	17.21	45.9	-1,033.6	886.6	859.8	26.84	33.034		
5,900.0	5,886.6	5,897.1	5,895.7	14.1	13.2	17.61	46.8	-1,033.0	870.0	842.7	27.30	31.863		
6,000.0	5,985.2	5,991.8	5,990.4	14.4	13.4	17.99	47.5	-1,032.7	853.5	825.7	27.77	30.736		
6,100.0	6,083.7	6,091.6	6,090.2	14.6	13.6	18.42	48.5	-1,032.4	837.2	808.9	28.26	29.624		
6,200.0	6,182.3	6,188.2	6,186.8	14.9	13.9	18.87	49.6	-1,032.1	820.9	792.2	28.75	28.550		
6,300.0	6,280.8	6,286.3	6,284.9	15.2	14.1	19.33	50.6	-1,032.0	804.9	775.7	29.26	27.507		
6,400.0	6,379.4	6,384.1	6,382.7	15.5	14.3	19.77	51.1	-1,032.1	789.0	759.2	29.77	26.499		
6,500.0	6,477.9	6,480.2	6,478.8	15.7	14.5	20.20	51.4	-1,032.3	773.3	743.0	30.27	25.550		
6,600.0	6,576.5	6,581.7	6,580.3	16.0	14.7	20.65	51.4	-1,032.6	757.7	727.1	30.69	24.694		
6,700.0	6,675.0	6,681.1	6,679.7	16.3	14.7	21.09	51.1	-1,032.7	741.8	710.8	31.03	23.911		
6,800.0	6,773.6	6,779.1	6,777.7	16.6	14.8	21.57	51.1	-1,032.7	726.0	694.6	31.44	23.093		
6,900.0	6,872.1	6,875.9	6,874.5	16.9	15.0	22.06	51.1	-1,032.8	710.4	678.5	31.89	22.276		
7,000.0	6,970.7	6,974.2	6,972.8	17.2	15.1	22.55	50.7	-1,033.2	695.0	662.7	32.30	21.519		

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Reference Design:	Plan#1	Offset TVD Reference:	Offset Datum

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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)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
7,100.0	7,069.2	7,067.1	7,065.7	17.5	15.2	22.99	50.0	-1,033.9	679.9	647.3	32.68	20.804			
7,200.0	7,167.8	7,161.3	7,159.9	17.8	15.2	23.35	48.1	-1,035.8	665.9	632.8	33.08	20.130			
7,300.0	7,266.3	7,260.2	7,258.7	18.2	15.3	23.72	46.2	-1,038.2	652.2	618.7	33.49	19.476			
7,400.0	7,364.9	7,359.2	7,357.6	18.5	15.4	24.09	43.9	-1,040.4	638.4	604.5	33.90	18.832			
7,500.0	7,463.4	7,458.6	7,457.0	18.8	15.5	24.49	41.7	-1,042.7	624.8	590.4	34.32	18.203			
7,600.0	7,562.0	7,562.6	7,561.0	19.1	15.6	24.97	39.8	-1,044.7	610.7	576.0	34.75	17.576			
7,700.0	7,660.5	7,663.7	7,662.0	19.4	15.7	25.53	38.5	-1,045.5	595.9	560.7	35.17	16.944			
7,800.0	7,759.1	7,763.7	7,762.1	19.8	15.8	26.11	37.2	-1,046.3	581.0	545.4	35.58	16.328			
7,900.0	7,857.6	7,867.2	7,865.5	20.1	15.9	26.77	35.9	-1,046.5	565.7	529.7	36.00	15.715			
8,000.0	7,956.2	7,965.9	7,964.2	20.4	16.0	27.44	34.5	-1,046.1	549.8	513.4	36.40	15.104			
8,100.0	8,054.7	8,064.1	8,062.5	20.7	16.1	28.12	33.0	-1,045.9	534.1	497.3	36.80	14.513			
8,200.0	8,153.3	8,164.2	8,162.5	21.1	16.1	28.86	31.5	-1,045.6	518.4	481.2	37.22	13.930			
8,300.0	8,251.9	8,266.5	8,264.7	21.4	16.2	29.67	29.8	-1,044.7	502.4	464.7	37.64	13.349			
8,400.0	8,350.4	8,367.2	8,365.5	21.8	16.3	30.55	28.2	-1,043.1	485.7	447.6	38.07	12.758			
8,500.0	8,449.0	8,466.9	8,465.1	22.1	16.4	31.59	27.2	-1,041.0	468.8	430.2	38.51	12.173			
8,600.0	8,547.5	8,563.0	8,561.2	22.4	16.5	32.66	26.2	-1,038.9	451.9	413.0	38.95	11.602			
8,700.0	8,646.1	8,659.2	8,657.4	22.8	16.6	33.78	25.3	-1,037.4	436.0	396.6	39.40	11.065			
8,800.0	8,744.6	8,758.1	8,756.3	23.1	16.7	-5.46	24.2	-1,036.2	419.0	379.2	39.83	10.520			
8,900.0	8,841.2	8,858.0	8,856.1	23.4	16.8	-43.07	22.7	-1,034.5	395.0	354.7	40.22	9.821			
9,000.0	8,931.9	8,948.3	8,946.4	23.6	16.9	-62.46	20.3	-1,032.5	365.9	325.3	40.55	9.022			
9,100.0	9,012.6	9,025.9	9,023.9	23.8	17.0	-77.97	17.8	-1,031.1	339.9	299.1	40.84	8.323			
9,200.0	9,079.8	9,090.8	9,088.8	24.0	17.1	-90.43	15.6	-1,030.0	327.8	286.7	41.10	7.976			
9,205.2	9,082.9	9,093.8	9,091.8	24.0	17.1	-90.96	15.5	-1,030.0	327.8	286.7	41.11	7.973 CC, ES, SF			
9,300.0	9,130.6	9,137.9	9,135.9	24.2	17.1	-97.54	14.0	-1,029.2	340.2	298.9	41.35	8.228			
9,400.0	9,162.8	9,165.7	9,163.7	24.4	17.2	-97.73	13.0	-1,028.7	381.0	339.4	41.63	9.154			
9,500.0	9,174.9	9,173.7	9,171.6	24.8	17.2	-89.66	12.7	-1,028.6	444.7	402.7	41.96	10.598			
9,600.0	9,175.0	9,170.0	9,167.9	25.2	17.2	-87.87	12.8	-1,028.7	521.4	479.0	42.39	12.300			
9,700.0	9,175.0	9,166.3	9,164.2	25.8	17.2	-87.19	13.0	-1,028.7	604.9	561.9	42.96	14.079			
9,800.0	9,175.0	9,162.7	9,160.6	26.5	17.2	-86.52	13.1	-1,028.8	692.8	649.1	43.67	15.865			
9,900.0	9,175.0	9,159.1	9,157.1	27.3	17.2	-85.86	13.2	-1,028.8	783.6	739.1	44.49	17.613			
10,000.0	9,175.0	9,155.6	9,153.6	28.2	17.2	-85.22	13.4	-1,028.9	876.3	830.9	45.41	19.297			
10,100.0	9,175.0	9,152.2	9,150.2	29.3	17.2	-84.59	13.5	-1,028.9	970.5	924.1	46.43	20.903			
10,200.0	9,175.0	9,148.9	9,146.8	30.4	17.2	-83.98	13.6	-1,029.0	1,065.8	1,018.2	47.53	22.425			
10,300.0	9,175.0	9,145.6	9,143.5	31.5	17.2	-83.37	13.7	-1,029.1	1,161.8	1,113.1	48.69	23.859			
10,400.0	9,175.0	9,142.3	9,140.3	32.8	17.2	-82.78	13.9	-1,029.1	1,258.4	1,208.5	49.92	25.207			
10,500.0	9,175.0	9,139.1	9,137.1	34.1	17.1	-82.20	14.0	-1,029.2	1,355.6	1,304.4	51.21	26.471			
10,600.0	9,175.0	11,721.9	10,532.7	35.4	30.1	-167.81	1,402.5	-1,012.9	1,384.9	1,319.4	65.50	21.144			
10,700.0	9,175.0	11,835.8	10,534.6	36.8	31.7	-167.80	1,516.3	-1,013.6	1,386.7	1,318.2	68.51	20.241			
10,800.0	9,175.0	11,958.8	10,535.1	38.2	33.6	-167.78	1,639.3	-1,014.1	1,387.2	1,315.4	71.76	19.330			
10,900.0	9,175.0	12,054.3	10,534.6	39.6	35.0	-167.78	1,734.9	-1,014.1	1,386.7	1,312.1	74.63	18.582			
10,914.6	9,175.0	12,067.3	10,534.6	39.9	35.2	-167.78	1,747.9	-1,014.1	1,386.7	1,311.7	75.03	18.481			
11,000.0	9,175.0	12,139.7	10,535.0	41.1	36.2	-167.80	1,820.3	-1,013.8	1,387.1	1,309.7	77.35	17.933			
11,100.0	9,175.0	12,219.2	10,536.3	42.6	37.4	-167.80	1,899.7	-1,013.8	1,388.7	1,308.7	80.03	17.352			
11,200.0	9,175.0	12,311.5	10,538.9	44.2	38.8	-167.78	1,992.0	-1,015.0	1,391.7	1,308.8	82.96	16.775			
11,300.0	9,175.0	12,423.4	10,541.4	45.7	40.5	-167.72	2,103.8	-1,016.9	1,394.2	1,308.0	86.27	16.162			
11,400.0	9,175.0	12,526.7	10,543.1	47.3	42.2	-167.67	2,207.0	-1,018.7	1,396.2	1,306.7	89.47	15.604			
11,500.0	9,175.0	12,633.8	10,544.5	48.9	43.9	-167.62	2,314.2	-1,020.3	1,397.8	1,305.1	92.77	15.067			
11,600.0	9,175.0	12,744.7	10,545.3	50.5	45.7	-167.57	2,425.0	-1,021.7	1,398.8	1,302.6	96.19	14.541			
11,700.0	9,175.0	12,848.0	10,545.7	52.1	47.4	-167.54	2,528.3	-1,022.5	1,399.3	1,299.8	99.49	14.064			
11,800.0	9,175.0	12,971.5	10,545.3	53.8	49.4	-167.51	2,651.9	-1,023.2	1,399.2	1,296.0	103.15	13.564			
11,900.0	9,175.0	13,071.2	10,543.1	55.4	51.0	-167.45	2,751.5	-1,024.0	1,397.2	1,290.8	106.43	13.128			
12,000.0	9,175.0	13,154.9	10,542.4	57.1	52.4	-167.39	2,835.2	-1,025.5	1,396.7	1,287.3	109.43	12.763			

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

IDS

Anticollision Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Azores Federal #12H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Reference Site:	Sec. 29, T 24 S., R 32E	MD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Site Error:	5.0 usft	North Reference:	Grid
Reference Well:	Azores Federal #12H	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 Single User Db
Reference Design:	Plan#1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 usft
Sec. 29, T 24 S., R 32E - Azores Federal #4H - Wellbore #1 - Actual Wellbore													Offset Well Error:	5.0 usft
Survey Program: 100-NS-GYRO-MS, 9584-MWD														
Reference		Offset		Semi Major Axis			Distance							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)	Minimum Separation (usft)	Separation Factor		
12,100.0	9,175.0	13,253.9	10,541.8	58.7	54.0	-167.28	2,934.2	-1,028.0	1,396.7	1,284.0	112.70	12.393		
12,200.0	9,175.0	13,360.1	10,540.8	60.4	55.7	-167.15	3,040.3	-1,031.1	1,396.4	1,280.3	116.14	12.024		
12,300.0	9,175.0	13,455.8	10,539.6	62.1	57.3	-167.02	3,136.0	-1,034.0	1,395.9	1,276.5	119.41	11.690		
12,325.4	9,175.0	13,478.5	10,539.4	62.5	57.7	-166.99	3,158.6	-1,034.8	1,395.9	1,275.7	120.22	11.611		
12,400.0	9,175.0	13,541.7	10,539.2	63.8	58.7	-166.90	3,221.8	-1,037.0	1,396.2	1,273.7	122.50	11.397		
12,500.0	9,175.0	13,625.6	10,539.7	65.5	60.1	-166.79	3,305.7	-1,039.9	1,397.6	1,272.0	125.56	11.131		
12,600.0	9,175.0	13,711.3	10,541.1	67.2	61.5	-166.66	3,391.3	-1,043.5	1,400.1	1,271.5	128.67	10.882		
12,700.0	9,175.0	13,808.9	10,543.1	68.9	63.1	-166.46	3,488.7	-1,049.0	1,403.4	1,271.4	132.01	10.631		
12,800.0	9,175.0	13,978.1	10,542.4	70.6	66.0	-166.05	3,657.6	-1,059.2	1,404.6	1,268.0	136.60	10.283		
12,900.0	9,175.0	14,059.0	10,540.3	72.3	67.3	-165.88	3,737.4	-1,062.9	1,403.4	1,263.7	139.66	10.049		
12,933.7	9,175.0	14,087.7	10,539.9	72.9	67.8	-165.83	3,767.0	-1,064.1	1,403.2	1,262.5	140.72	9.971		
13,000.0	9,175.0	14,133.2	10,539.7	74.1	68.5	-165.75	3,812.5	-1,066.1	1,403.7	1,261.1	142.61	9.843		
13,100.0	9,175.0	14,215.8	10,540.7	75.8	69.9	-165.62	3,895.0	-1,069.7	1,405.9	1,260.2	145.70	9.650		
13,200.0	9,175.0	14,323.1	10,542.7	77.5	71.7	-165.49	4,002.2	-1,073.6	1,408.6	1,259.4	149.22	9.440		
13,300.0	9,175.0	14,431.4	10,544.0	79.3	73.5	-165.38	4,110.5	-1,076.6	1,410.5	1,257.7	152.79	9.231		
13,400.0	9,175.0	14,530.0	10,545.0	81.0	75.2	-165.29	4,209.0	-1,079.2	1,412.2	1,256.0	156.19	9.041		
13,500.0	9,175.0	14,643.0	10,545.7	82.8	77.1	-165.21	4,322.0	-1,081.5	1,413.3	1,253.4	159.85	8.841		
13,600.0	9,175.0	14,732.6	10,546.4	84.5	78.6	-165.16	4,411.6	-1,082.9	1,414.4	1,251.3	163.11	8.672		
13,700.0	9,175.0	14,819.3	10,548.1	86.3	80.0	-165.14	4,498.3	-1,083.6	1,416.5	1,250.2	166.30	8.518		
13,800.0	9,175.0	14,927.9	10,550.3	88.1	81.8	-165.13	4,606.9	-1,084.6	1,418.7	1,248.8	169.88	8.351		
13,899.0	9,175.0	15,030.0	10,551.4	89.8	83.6	-165.10	4,708.9	-1,085.8	1,420.0	1,246.7	173.37	8.191		

IDS Anticollision Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Azores Federal #12H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3522.1usft (Scandrift Freedom)
Reference Site:	Sec. 29, T 24 S., R 32E	MD Reference:	KB=26' @ 3522.1usft (Scandrift Freedom)
Site Error:	5.0 usft	North Reference:	Grid
Reference Well:	Azores Federal #12H	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 Single User Db
Reference Design:	Plan#1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	5.0 usft
Reference	Offset	Semi Major Axis		Distance		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)	Minimum Separation (usft)	Separation Factor		
0.0	0.0	0.0	0.0	5.0	5.0	89.43	1.0	100.0	100.0					
100.0	100.0	98.7	98.7	5.0	5.0	89.43	1.0	100.0	100.0	90.0	10.00	9.999		
200.0	200.0	198.7	198.7	5.0	5.0	89.43	1.0	100.0	100.0	90.0	10.02	9.982		
300.0	300.0	298.7	298.7	5.0	5.0	89.43	1.0	100.0	100.0	89.9	10.06	9.945		
400.0	400.0	398.7	398.7	5.1	5.1	89.43	1.0	100.0	100.0	89.9	10.11	9.888		
500.0	500.0	498.7	498.7	5.1	5.1	89.43	1.0	100.0	100.0	89.8	10.19	9.813		
600.0	600.0	598.7	598.7	5.1	5.1	89.43	1.0	100.0	100.0	89.7	10.29	9.722		
700.0	700.0	698.7	698.7	5.2	5.2	89.43	1.0	100.0	100.0	89.6	10.40	9.615		
800.0	800.0	798.7	798.7	5.3	5.3	89.43	1.0	100.0	100.0	89.5	10.53	9.494		
900.0	900.0	898.7	898.7	5.3	5.3	89.43	1.0	100.0	100.0	89.3	10.68	9.361		
1,000.0	1,000.0	998.7	998.7	5.4	5.4	89.43	1.0	100.0	100.0	89.2	10.85	9.217		
1,100.0	1,100.0	1,098.7	1,098.7	5.5	5.5	89.43	1.0	100.0	100.0	89.0	11.03	9.065		
1,200.0	1,200.0	1,198.7	1,198.7	5.6	5.6	89.43	1.0	100.0	100.0	88.8	11.23	8.906		
1,300.0	1,300.0	1,298.7	1,298.7	5.7	5.7	89.43	1.0	100.0	100.0	88.6	11.44	8.741		
1,400.0	1,400.0	1,398.7	1,398.7	5.8	5.8	89.43	1.0	100.0	100.0	88.3	11.67	8.573		
1,500.0	1,500.0	1,498.7	1,498.7	6.0	6.0	89.43	1.0	100.0	100.0	88.1	11.90	8.401		
1,600.0	1,600.0	1,598.7	1,598.7	6.1	6.1	89.43	1.0	100.0	100.0	87.9	12.15	8.229		
1,700.0	1,700.0	1,698.7	1,698.7	6.2	6.2	89.43	1.0	100.0	100.0	87.6	12.41	8.056		
1,800.0	1,800.0	1,798.7	1,798.7	6.3	6.3	89.43	1.0	100.0	100.0	87.3	12.69	7.883		
1,900.0	1,900.0	1,898.7	1,898.7	6.5	6.5	89.43	1.0	100.0	100.0	87.0	12.97	7.712		
2,000.0	2,000.0	1,998.7	1,998.7	6.6	6.6	89.43	1.0	100.0	100.0	86.7	13.26	7.543		
2,100.0	2,100.0	2,098.7	2,098.7	6.8	6.8	89.43	1.0	100.0	100.0	86.4	13.56	7.377		
2,200.0	2,200.0	2,198.7	2,198.7	6.9	6.9	89.43	1.0	100.0	100.0	86.1	13.86	7.213		
2,300.0	2,300.0	2,298.7	2,298.7	7.1	7.1	89.43	1.0	100.0	100.0	85.8	14.18	7.053		
2,400.0	2,400.0	2,398.7	2,398.7	7.3	7.2	89.43	1.0	100.0	100.0	85.5	14.50	6.896		
2,500.0	2,500.0	2,498.7	2,498.7	7.4	7.4	89.43	1.0	100.0	100.0	85.2	14.83	6.743		
2,600.0	2,600.0	2,598.7	2,598.7	7.6	7.6	89.43	1.0	100.0	100.0	84.8	15.17	6.594		
2,700.0	2,700.0	2,698.7	2,698.7	7.8	7.8	89.43	1.0	100.0	100.0	84.5	15.51	6.449		
2,800.0	2,800.0	2,798.7	2,798.7	7.9	7.9	89.43	1.0	100.0	100.0	84.2	15.85	6.308		
2,900.0	2,900.0	2,898.7	2,898.7	8.1	8.1	89.43	1.0	100.0	100.0	83.8	16.20	6.172		
3,000.0	3,000.0	2,998.7	2,998.7	8.3	8.3	89.43	1.0	100.0	100.0	83.4	16.56	6.039		
3,100.0	3,100.0	3,098.7	3,098.7	8.5	8.5	89.43	1.0	100.0	100.0	83.1	16.92	5.910		
3,200.0	3,200.0	3,198.7	3,198.7	8.6	8.6	89.43	1.0	100.0	100.0	82.7	17.29	5.786		
3,300.0	3,300.0	3,298.7	3,298.7	8.8	8.8	89.43	1.0	100.0	100.0	82.4	17.65	5.665		
3,400.0	3,400.0	3,398.7	3,398.7	9.0	9.0	89.43	1.0	100.0	100.0	82.0	18.03	5.548		
3,500.0	3,500.0	3,498.7	3,498.7	9.2	9.2	89.43	1.0	100.0	100.0	81.6	18.40	5.435		
3,600.0	3,600.0	3,598.7	3,598.7	9.4	9.4	89.43	1.0	100.0	100.0	81.2	18.78	5.325		
3,700.0	3,700.0	3,698.7	3,698.7	9.6	9.6	89.43	1.0	100.0	100.0	80.8	19.16	5.219		
3,800.0	3,800.0	3,798.7	3,798.7	9.8	9.8	89.43	1.0	100.0	100.0	80.5	19.55	5.116		
3,900.0	3,900.0	3,898.7	3,898.7	10.0	10.0	89.43	1.0	100.0	100.0	80.1	19.94	5.017		
4,000.0	4,000.0	3,998.7	3,998.7	10.2	10.2	89.43	1.0	100.0	100.0	79.7	20.33	4.920		
4,100.0	4,100.0	4,098.7	4,098.7	10.4	10.4	89.43	1.0	100.0	100.0	79.3	20.72	4.827		
4,200.0	4,200.0	4,198.7	4,198.7	10.6	10.6	89.43	1.0	100.0	100.0	78.9	21.11	4.737		
4,300.0	4,300.0	4,298.7	4,298.7	10.8	10.8	89.43	1.0	100.0	100.0	78.5	21.51	4.649		
4,400.0	4,400.0	4,398.7	4,398.7	11.0	11.0	89.43	1.0	100.0	100.0	78.1	21.91	4.565		
4,500.0	4,500.0	4,498.7	4,498.7	11.2	11.2	89.43	1.0	100.0	100.0	77.7	22.31	4.483		
4,600.0	4,600.0	4,598.7	4,598.7	11.4	11.4	89.43	1.0	100.0	100.0	77.3	22.71	4.403 CC		
4,700.0	4,700.0	4,700.3	4,700.3	11.6	11.6	-168.59	0.8	99.6	100.0	76.9	23.10	4.330		
4,800.0	4,799.9	4,803.7	4,803.6	11.7	11.7	-168.22	-0.6	96.2	100.2	76.7	23.45	4.271		
4,900.0	4,899.7	4,907.0	4,906.7	11.9	11.9	-167.47	-3.4	89.3	100.4	76.5	23.81	4.215 ES		
5,000.0	4,999.1	5,007.1	5,006.3	12.1	12.1	-166.75	-6.8	80.9	102.2	78.0	24.17	4.229		
5,100.0	5,098.2	5,107.0	5,105.8	12.3	12.3	-166.49	-10.3	72.5	107.4	82.9	24.54	4.379		

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

IDS Anticollision Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Azores Federal #12H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Reference Site:	Sec. 29, T 24 S., R 32E	MD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Site Error:	5.0 usft	North Reference:	Grid
Reference Well:	Azores Federal #12H	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 Single User Db
Reference Design:	Plan#1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	5.0 usft
Reference		Offset		Semi Major Axis		Distance								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)	Minimum Separation (usft)	Separation Factor		
5,200.0	5,196.7	5,206.6	5,205.1	12.5	12.4	-166.60	-13.7	64.1	115.4	90.5	24.92	4.632		
5,300.0	5,295.3	5,306.3	5,304.3	12.7	12.6	-166.73	-17.1	55.8	123.7	98.4	25.32	4.884		
5,400.0	5,393.8	5,406.0	5,403.5	12.9	12.8	-166.85	-20.6	47.4	131.9	106.2	25.73	5.127		
5,500.0	5,492.4	5,505.6	5,502.8	13.1	13.0	-166.95	-24.0	39.0	140.1	114.0	26.15	5.359		
5,600.0	5,591.0	5,605.3	5,602.0	13.4	13.2	-167.04	-27.4	30.6	148.4	121.8	26.58	5.582		
5,700.0	5,689.5	5,704.9	5,701.3	13.6	13.4	-167.12	-30.9	22.2	156.6	129.6	27.02	5.796		
5,800.0	5,788.1	5,804.6	5,800.5	13.9	13.6	-167.19	-34.3	13.9	164.9	137.4	27.47	6.001		
5,900.0	5,886.6	5,904.3	5,899.8	14.1	13.8	-167.26	-37.7	5.5	173.1	145.2	27.93	6.197		
6,000.0	5,985.2	6,003.9	5,999.0	14.4	14.0	-167.32	-41.2	-2.9	181.3	152.9	28.40	6.385		
6,100.0	6,083.7	6,103.6	6,098.3	14.6	14.2	-167.37	-44.6	-11.3	189.6	160.7	28.87	6.566		
6,200.0	6,182.3	6,203.2	6,197.5	14.9	14.5	-167.43	-48.0	-19.7	197.8	168.5	29.36	6.738		
6,300.0	6,280.8	6,302.9	6,296.8	15.2	14.7	-167.47	-51.5	-28.0	206.0	176.2	29.85	6.904		
6,400.0	6,379.4	6,402.6	6,396.0	15.5	14.9	-167.51	-54.9	-36.4	214.3	183.9	30.34	7.062		
6,500.0	6,477.9	6,502.2	6,495.3	15.7	15.1	-167.55	-58.3	-44.8	222.5	191.7	30.85	7.214		
6,600.0	6,576.5	6,601.9	6,594.5	16.0	15.3	-167.59	-61.8	-53.2	230.8	199.4	31.36	7.359		
6,700.0	6,675.0	6,701.5	6,693.8	16.3	15.6	-167.62	-65.2	-61.6	239.0	207.1	31.87	7.499		
6,800.0	6,773.6	6,801.2	6,793.0	16.6	15.8	-167.66	-68.6	-69.9	247.2	214.8	32.39	7.632		
6,900.0	6,872.1	6,900.9	6,892.3	16.9	16.0	-167.69	-72.1	-78.3	255.5	222.6	32.92	7.760		
7,000.0	6,970.7	7,000.5	6,991.5	17.2	16.2	-167.71	-75.5	-86.7	263.7	230.3	33.45	7.883		
7,100.0	7,069.2	7,100.2	7,090.8	17.5	16.5	-167.74	-78.9	-95.1	272.0	238.0	33.99	8.001		
7,200.0	7,167.8	7,199.8	7,190.0	17.8	16.7	-167.77	-82.4	-103.5	280.2	245.7	34.53	8.114		
7,300.0	7,266.3	7,299.5	7,289.3	18.2	16.9	-167.79	-85.8	-111.8	288.4	253.4	35.08	8.223		
7,400.0	7,364.9	7,399.2	7,388.5	18.5	17.2	-167.81	-89.2	-120.2	296.7	261.0	35.63	8.327		
7,500.0	7,463.4	7,498.8	7,487.7	18.8	17.4	-167.83	-92.7	-128.6	304.9	268.7	36.18	8.427		
7,600.0	7,562.0	7,598.5	7,587.0	19.1	17.6	-167.85	-96.1	-137.0	313.1	276.4	36.74	8.524		
7,700.0	7,660.5	7,698.1	7,686.2	19.4	17.9	-167.87	-99.5	-145.4	321.4	284.1	37.30	8.616		
7,800.0	7,759.1	7,797.8	7,785.5	19.8	18.1	-167.89	-103.0	-153.7	329.6	291.8	37.86	8.705		
7,900.0	7,857.6	7,897.5	7,884.7	20.1	18.3	-167.90	-106.4	-162.1	337.9	299.4	38.43	8.791		
8,000.0	7,956.2	7,997.1	7,984.0	20.4	18.6	-167.92	-109.8	-170.5	346.1	307.1	39.00	8.874		
8,100.0	8,054.7	8,096.8	8,083.2	20.7	18.8	-167.94	-113.3	-178.9	354.3	314.8	39.58	8.953		
8,200.0	8,153.3	8,196.4	8,182.5	21.1	19.1	-167.95	-116.7	-187.3	362.6	322.4	40.16	9.030		
8,300.0	8,251.9	8,296.1	8,281.7	21.4	19.3	-167.96	-120.1	-195.6	370.8	330.1	40.74	9.103		
8,400.0	8,350.4	8,395.8	8,381.0	21.8	19.6	-167.98	-123.6	-204.0	379.1	337.7	41.32	9.174		
8,500.0	8,449.0	8,495.4	8,480.2	22.1	19.8	-167.99	-127.0	-212.4	387.3	345.4	41.90	9.243		
8,600.0	8,547.5	8,595.1	8,579.5	22.4	20.1	-168.00	-130.4	-220.8	395.5	353.1	42.49	9.309		
8,700.0	8,646.1	8,694.7	8,678.7	22.8	20.3	-168.02	-133.9	-229.2	403.8	360.7	43.08	9.373		
8,800.0	8,744.6	8,793.7	8,777.0	23.1	20.5	151.74	-127.9	-237.5	412.1	368.4	43.63	9.445		
8,900.0	8,841.2	8,891.2	8,870.5	23.4	20.7	116.84	-102.2	-245.3	420.3	376.2	44.09	9.532		
9,000.0	8,931.9	8,987.3	8,955.8	23.6	20.9	104.22	-58.9	-252.5	428.2	383.7	44.48	9.625		
9,100.0	9,012.6	9,082.3	9,030.0	23.8	21.0	97.91	0.0	-258.8	435.2	390.4	44.81	9.711		
9,200.0	9,079.8	9,176.5	9,090.6	24.0	21.1	94.18	71.7	-263.9	441.1	396.0	45.12	9.776		
9,300.0	9,130.6	9,270.0	9,135.7	24.2	21.3	91.88	153.3	-267.7	445.6	400.1	45.48	9.799		
9,400.0	9,162.8	9,363.1	9,164.1	24.4	21.5	90.61	241.8	-270.1	448.5	402.5	45.98	9.754		
9,500.0	9,174.9	9,456.0	9,174.9	24.8	21.9	90.17	333.9	-271.0	449.5	402.8	46.70	9.625		
9,600.0	9,175.0	9,555.3	9,175.0	25.2	22.5	90.17	433.2	-271.0	449.5	401.8	47.72	9.420		
9,700.0	9,175.0	9,655.3	9,175.0	25.8	23.2	90.17	533.2	-271.0	449.5	400.5	49.02	9.170		
9,800.0	9,175.0	9,755.3	9,175.0	26.5	24.1	90.17	633.2	-271.0	449.6	399.0	50.57	8.889		
9,900.0	9,175.0	9,855.3	9,175.0	27.3	25.0	90.17	733.2	-271.0	449.6	397.2	52.35	8.588		
10,000.0	9,175.0	9,955.3	9,175.0	28.2	26.1	90.17	833.2	-271.0	449.6	395.3	54.32	8.277		
10,100.0	9,175.0	10,055.3	9,175.0	29.3	27.2	90.17	933.2	-271.0	449.6	393.1	56.46	7.963		
10,200.0	9,175.0	10,155.3	9,175.0	30.4	28.4	90.17	1,033.2	-271.0	449.6	390.8	58.76	7.651		
10,300.0	9,175.0	10,255.3	9,175.0	31.5	29.7	90.17	1,133.2	-271.0	449.6	388.4	61.19	7.347		

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

IDS Anticollision Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Azores Federal #12H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3522.1usft (Scandrell Freedom)
Reference Site:	Sec. 29, T 24 S., R 32E	MD Reference:	KB=26' @ 3522.1usft (Scandrell Freedom)
Site Error:	5.0 usft	North Reference:	Grid
Reference Well:	Azores Federal #12H	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 Single User Db
Reference Design:	Plan#1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	5.0 usft
Reference		Offset		Semi Major Axis		Distance								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)	Minimum Separation (usft)	Separation Factor		
10,400.0	9,175.0	10,355.3	9,175.0	32.8	31.0	90.17	1,233.2	-271.0	449.6	385.9	63.74	7.053		
10,500.0	9,175.0	10,455.3	9,175.0	34.1	32.3	90.17	1,333.2	-270.9	449.6	383.2	66.40	6.771		
10,600.0	9,175.0	10,555.3	9,175.0	35.4	33.7	90.17	1,433.2	-270.9	449.6	380.5	69.14	6.503		
10,700.0	9,175.0	10,655.3	9,175.0	36.8	35.2	90.17	1,533.2	-270.9	449.6	377.7	71.97	6.247		
10,800.0	9,175.0	10,755.3	9,175.0	38.2	36.7	90.17	1,633.2	-270.9	449.6	374.8	74.87	6.005		
10,900.0	9,175.0	10,855.3	9,175.0	39.6	38.2	90.17	1,733.2	-270.9	449.6	371.8	77.84	5.777		
11,000.0	9,175.0	10,955.3	9,175.0	41.1	39.7	90.17	1,833.2	-270.9	449.7	368.8	80.85	5.561		
11,100.0	9,175.0	11,055.3	9,175.0	42.6	41.3	90.17	1,933.2	-270.9	449.7	365.7	83.92	5.358		
11,200.0	9,175.0	11,155.3	9,175.0	44.2	42.9	90.17	2,033.2	-270.9	449.7	362.6	87.04	5.166		
11,300.0	9,175.0	11,255.3	9,175.0	45.7	44.5	90.17	2,133.2	-270.9	449.7	359.5	90.20	4.986		
11,400.0	9,175.0	11,355.3	9,175.0	47.3	46.1	90.17	2,233.2	-270.9	449.7	356.3	93.39	4.815		
11,500.0	9,175.0	11,455.3	9,175.0	48.9	47.7	90.17	2,333.2	-270.9	449.7	353.1	96.61	4.655		
11,600.0	9,175.0	11,555.3	9,175.0	50.5	49.4	90.17	2,433.2	-270.9	449.7	349.8	99.87	4.503		
11,700.0	9,175.0	11,655.3	9,175.0	52.1	51.0	90.17	2,533.2	-270.9	449.7	346.6	103.15	4.360		
11,800.0	9,175.0	11,755.3	9,175.0	53.8	52.7	90.17	2,633.2	-270.9	449.7	343.3	106.45	4.225		
11,900.0	9,175.0	11,855.3	9,175.0	55.4	54.4	90.17	2,733.2	-270.8	449.7	340.0	109.78	4.097		
12,000.0	9,175.0	11,955.3	9,175.0	57.1	56.1	90.17	2,833.2	-270.8	449.7	336.6	113.12	3.976		
12,100.0	9,175.0	12,055.3	9,175.0	58.7	57.8	90.17	2,933.2	-270.8	449.7	333.3	116.49	3.861		
12,200.0	9,175.0	12,155.3	9,175.0	60.4	59.5	90.17	3,033.2	-270.8	449.8	329.9	119.87	3.752		
12,300.0	9,175.0	12,255.3	9,175.0	62.1	61.2	90.17	3,133.2	-270.8	449.8	326.5	123.27	3.649		
12,400.0	9,175.0	12,355.3	9,175.0	63.8	62.9	90.17	3,233.2	-270.8	449.8	323.1	126.68	3.550		
12,500.0	9,175.0	12,455.3	9,175.0	65.5	64.6	90.17	3,333.2	-270.8	449.8	319.7	130.11	3.457		
12,600.0	9,175.0	12,555.3	9,175.0	67.2	66.4	90.17	3,433.2	-270.8	449.8	316.2	133.54	3.368		
12,700.0	9,175.0	12,655.3	9,175.0	68.9	68.1	90.17	3,533.2	-270.8	449.8	312.8	136.99	3.283		
12,800.0	9,175.0	12,755.3	9,175.0	70.6	69.8	90.17	3,633.2	-270.8	449.8	309.4	140.45	3.203		
12,900.0	9,175.0	12,855.3	9,175.0	72.3	71.6	90.17	3,733.2	-270.8	449.8	305.9	143.92	3.125		
13,000.0	9,175.0	12,955.3	9,175.0	74.1	73.3	90.17	3,833.2	-270.8	449.8	302.4	147.40	3.052		
13,100.0	9,175.0	13,055.3	9,175.0	75.8	75.1	90.17	3,933.2	-270.8	449.8	299.0	150.88	2.981		
13,200.0	9,175.0	13,155.3	9,175.0	77.5	76.8	90.17	4,033.2	-270.8	449.8	295.5	154.38	2.914		
13,300.0	9,175.0	13,255.3	9,175.0	79.3	78.6	90.17	4,133.2	-270.7	449.9	292.0	157.88	2.849		
13,400.0	9,175.0	13,355.3	9,175.0	81.0	80.3	90.17	4,233.2	-270.7	449.9	288.5	161.38	2.788		
13,500.0	9,175.0	13,455.3	9,175.0	82.8	82.1	90.17	4,333.2	-270.7	449.9	285.0	164.90	2.728		
13,600.0	9,175.0	13,555.3	9,175.0	84.5	83.9	90.17	4,433.2	-270.7	449.9	281.5	168.42	2.671		
13,700.0	9,175.0	13,655.3	9,175.0	86.3	85.7	90.17	4,533.2	-270.7	449.9	277.9	171.94	2.616		
13,800.0	9,175.0	13,755.3	9,175.0	88.1	87.4	90.17	4,633.2	-270.7	449.9	274.4	175.47	2.564		
13,899.0	9,175.0	13,854.4	9,175.0	89.8	89.2	90.17	4,732.3	-270.7	449.9	270.9	178.97	2.514 SF		

IDS

Anticollision Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Azores Federal #12H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Reference Site:	Sec. 29, T 24 S., R 32E	MD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Site Error:	5.0 usft	North Reference:	Grid
Reference Well:	Azores Federal #12H	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 Single User Db
Reference Design:	Plan#1	Offset TVD Reference:	Offset Datum

Offset Design													Sec. 29, T 24 S., R 32E - Corvo Federal #3H - Wellbore #1 - Actual Wellbore		Offset Site Error:	0.0 usft
Survey Program: 100-NS-GYRO-MS, 7852-MWD															Offset Well Error:	5.0 usft
Reference		Offset		Semi Major Axis			Distance									
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre	Between	Between	Minimum	Separation			Warning		
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	(usft)	(usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Centres (usft)	Ellipses (usft)	Separation (usft)	Factor				
0.0	0.0	99.8	99.8	5.0	5.0	95.06	-17.7	199.7	200.5							
100.0	100.0	199.0	199.0	5.0	5.0	95.04	-17.6	199.2	200.0	190.0	10.01	19.971				
200.0	200.0	300.5	300.5	5.0	5.0	94.83	-16.8	198.5	199.3	189.2	10.05	19.834				
300.0	300.0	401.8	401.8	5.0	5.1	94.54	-15.7	197.2	197.8	187.7	10.10	19.579				
400.0	400.0	501.8	501.7	5.1	5.1	94.30	-14.7	195.5	196.1	185.9	10.18	19.251				
500.0	500.0	603.2	603.1	5.1	5.2	93.97	-13.4	193.4	193.9	183.6	10.29	18.847				
600.0	600.0	703.4	703.2	5.1	5.3	93.41	-11.4	191.0	191.4	181.0	10.42	18.375				
700.0	700.0	802.9	802.7	5.2	5.4	92.80	-9.2	188.7	188.9	178.4	10.56	17.888				
800.0	800.0	902.2	901.9	5.3	5.5	92.32	-7.5	186.6	186.8	176.1	10.73	17.410				
900.0	900.0	1,001.2	1,001.0	5.3	5.6	91.89	-6.1	185.0	185.1	174.2	10.91	16.958				
1,000.0	1,000.0	1,100.5	1,100.2	5.4	5.7	91.49	-4.8	183.8	183.8	172.7	11.12	16.536				
1,100.0	1,100.0	1,200.5	1,200.2	5.5	5.8	91.11	-3.5	182.8	182.8	171.5	11.34	16.123				
1,200.0	1,200.0	1,300.0	1,299.7	5.6	6.0	90.77	-2.4	181.9	181.9	170.3	11.57	15.718				
1,300.0	1,300.0	1,400.1	1,399.8	5.7	6.1	90.50	-1.6	181.1	181.2	169.3	11.83	15.317				
1,400.0	1,400.0	1,500.2	1,499.9	5.8	6.3	90.19	-0.6	180.3	180.3	168.2	12.09	14.906				
1,500.0	1,500.0	1,600.2	1,599.9	6.0	6.4	89.84	0.5	179.4	179.4	167.0	12.38	14.496				
1,600.0	1,600.0	1,700.0	1,699.7	6.1	6.6	89.52	1.5	178.6	178.6	165.9	12.67	14.098				
1,700.0	1,700.0	1,800.1	1,799.8	6.2	6.8	89.28	2.2	177.8	177.8	164.9	12.97	13.706				
1,800.0	1,800.0	1,900.0	1,899.7	6.3	6.9	89.13	2.7	177.0	177.0	163.7	13.29	13.321				
1,900.0	1,900.0	2,000.1	1,999.8	6.5	7.1	88.99	3.1	176.2	176.2	162.6	13.61	12.944				
2,000.0	2,000.0	2,100.2	2,099.9	6.6	7.3	88.92	3.3	175.3	175.3	161.4	13.94	12.581				
2,100.0	2,100.0	2,200.0	2,199.7	6.8	7.5	88.97	3.1	174.4	174.5	160.2	14.24	12.252				
2,200.0	2,200.0	2,300.3	2,300.0	6.9	7.6	89.13	2.6	173.6	173.6	159.1	14.53	11.946				
2,300.0	2,300.0	2,400.8	2,400.4	7.1	7.7	89.32	2.0	172.5	172.5	157.7	14.83	11.629				
2,400.0	2,400.0	2,501.1	2,500.8	7.3	7.9	89.53	1.4	171.1	171.1	156.0	15.15	11.297				
2,500.0	2,500.0	2,601.6	2,601.3	7.4	8.1	89.77	0.7	169.5	169.5	154.1	15.48	10.954				
2,600.0	2,600.0	2,701.9	2,701.5	7.6	8.2	90.08	-0.2	167.7	167.7	151.9	15.81	10.607				
2,700.0	2,700.0	2,802.6	2,802.2	7.8	8.4	90.36	-1.0	165.5	165.6	149.4	16.16	10.245				
2,800.0	2,800.0	2,903.0	2,902.6	7.9	8.6	90.54	-1.5	163.0	163.0	146.5	16.53	9.866				
2,900.0	2,900.0	3,003.4	3,002.9	8.1	8.8	90.69	-1.9	160.2	160.3	143.4	16.91	9.483				
3,000.0	3,000.0	3,104.4	3,103.8	8.3	9.0	90.66	-1.8	157.0	157.1	139.8	17.30	9.083				
3,100.0	3,100.0	3,204.9	3,204.3	8.5	9.2	90.38	-1.0	153.3	153.4	135.7	17.70	8.666				
3,200.0	3,200.0	3,304.7	3,304.0	8.6	9.5	90.05	-0.1	149.4	149.5	131.4	18.11	8.258				
3,300.0	3,300.0	3,404.4	3,403.6	8.8	9.7	89.75	0.6	145.7	145.8	127.3	18.51	7.874				
3,400.0	3,400.0	3,503.9	3,503.1	9.0	9.9	89.44	1.4	142.2	142.2	123.3	18.93	7.515				
3,500.0	3,500.0	3,602.7	3,601.8	9.2	10.1	89.18	2.0	139.2	139.3	119.9	19.34	7.201				
3,600.0	3,600.0	3,702.1	3,701.2	9.4	10.4	89.15	2.0	136.9	136.9	117.2	19.75	6.933				
3,700.0	3,700.0	3,802.5	3,801.5	9.6	10.6	89.40	1.4	134.6	134.7	114.5	20.16	6.680				
3,800.0	3,800.0	3,900.8	3,899.9	9.8	10.8	89.79	0.5	132.9	132.9	112.3	20.54	6.469				
3,900.0	3,900.0	4,000.0	3,999.0	10.0	10.9	90.40	-0.9	132.0	132.0	111.2	20.87	6.325				
3,951.8	3,951.8	4,051.1	4,050.1	10.1	10.9	90.76	-1.7	131.9	131.9	110.9	21.01	6.277 CC				
4,000.0	4,000.0	4,098.7	4,097.7	10.2	11.0	91.03	-2.4	132.0	132.0	110.9	21.15	6.243				
4,100.0	4,100.0	4,198.8	4,197.8	10.4	11.0	91.57	-3.6	132.4	132.4	111.0	21.40	6.188				
4,200.0	4,200.0	4,299.3	4,298.3	10.6	11.1	92.02	-4.7	132.5	132.6	110.9	21.68	6.116				
4,205.1	4,205.1	4,304.4	4,303.4	10.6	11.1	92.03	-4.7	132.5	132.6	110.9	21.69	6.112				
4,300.0	4,300.0	4,398.7	4,397.7	10.8	11.2	92.33	-5.4	132.7	132.8	110.8	21.95	6.050				
4,400.0	4,400.0	4,498.8	4,497.9	11.0	11.2	92.54	-5.9	133.0	133.2	111.0	22.18	6.004				
4,500.0	4,500.0	4,600.2	4,599.2	11.2	11.3	92.67	-6.2	132.9	133.0	110.5	22.50	5.912				
4,600.0	4,600.0	4,700.2	4,699.2	11.4	11.6	92.83	-6.5	132.2	132.3	109.4	22.92	5.774				
4,676.0	4,676.0	4,776.4	4,775.4	11.5	11.7	-165.18	-6.8	131.6	132.2	109.0	23.23	5.691				
4,700.0	4,700.0	4,800.4	4,799.4	11.6	11.8	-165.13	-6.8	131.4	132.0	108.6	23.34	5.655 ES, SF				
4,800.0	4,799.9	4,900.5	4,899.5	11.7	12.0	-165.33	-7.2	130.4	134.4	110.7	23.74	5.664				

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

IDS

Anticollision Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Azores Federal #12H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Reference Site:	Sec. 29, T 24 S, R 32E	MD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Site Error:	5.0 usft	North Reference:	Grid
Reference Well:	Azores Federal #12H	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 Single User Db
Reference Design:	Plan#1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 usft
Survey Program: 100-NS-GYRO-MS, 7852-MWD													Offset Well Error:	5.0 usft
Reference	Offset	Semi Major Axis		Distance		Warning								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,900.0	4,899.7	5,000.1	4,999.1	11.9	12.2	-165.98	-7.3	129.6	140.3	116.2	24.15	5.812		
5,000.0	4,999.1	5,099.6	5,098.5	12.1	12.5	-167.07	-6.8	128.8	149.7	125.2	24.55	6.099		
5,100.0	5,098.2	5,198.1	5,197.1	12.3	12.7	-168.41	-5.9	128.3	162.8	137.9	24.93	6.529		
5,200.0	5,196.7	5,296.5	5,295.4	12.5	12.8	-169.72	-5.1	128.0	178.9	153.6	25.31	7.070		
5,300.0	5,295.3	5,395.0	5,393.9	12.7	13.0	-170.84	-4.4	127.8	195.4	169.8	25.69	7.609		
5,400.0	5,393.8	5,493.9	5,492.8	12.9	13.2	-171.82	-3.5	127.5	212.0	185.9	26.08	8.127		
5,500.0	5,492.4	5,593.0	5,591.9	13.1	13.4	-172.71	-2.4	126.9	228.4	201.9	26.50	8.617		
5,600.0	5,591.0	5,691.4	5,690.3	13.4	13.6	-173.50	-1.2	126.4	244.7	217.8	26.93	9.087		
5,700.0	5,689.5	5,791.0	5,789.9	13.6	13.8	-174.19	-0.1	125.6	261.0	233.6	27.38	9.532		
5,800.0	5,788.1	5,889.1	5,888.0	13.9	14.0	-174.77	0.9	124.8	277.1	249.3	27.84	9.954		
5,900.0	5,886.6	5,987.8	5,986.7	14.1	14.2	-175.29	1.9	124.1	293.4	265.1	28.31	10.366		
6,000.0	5,985.2	6,086.2	6,085.1	14.4	14.4	-175.74	2.9	123.4	309.8	281.0	28.78	10.762		
6,100.0	6,083.7	6,185.9	6,184.8	14.6	14.6	-176.22	4.2	122.5	326.0	296.8	29.26	11.141		
6,200.0	6,182.3	6,283.9	6,282.8	14.9	14.9	-176.67	5.6	121.5	342.2	312.4	29.75	11.501		
6,300.0	6,280.8	6,382.7	6,381.5	15.2	15.1	-177.02	6.7	120.7	358.5	328.2	30.25	11.851		
6,400.0	6,379.4	6,482.2	6,481.1	15.5	15.3	-177.33	7.7	119.8	374.6	343.9	30.76	12.179		
6,500.0	6,477.9	6,582.5	6,581.3	15.7	15.5	-177.60	8.5	118.5	390.5	359.2	31.29	12.481		
6,600.0	6,576.5	6,680.0	6,678.8	16.0	15.8	-177.79	9.0	117.2	406.2	374.4	31.82	12.768		
6,700.0	6,675.0	6,775.7	6,774.5	16.3	16.0	-177.95	9.4	116.5	422.5	390.2	32.33	13.070		
6,800.0	6,773.6	6,876.1	6,874.9	16.6	16.2	-178.12	10.0	116.1	439.1	406.3	32.85	13.368		
6,900.0	6,872.1	6,975.2	6,974.0	16.9	16.5	-178.21	10.0	115.2	455.3	421.9	33.38	13.640		
7,000.0	6,970.7	7,072.6	7,071.4	17.2	16.7	-178.26	9.8	114.6	471.6	437.7	33.90	13.913		
7,100.0	7,069.2	7,173.2	7,172.1	17.5	16.9	-178.29	9.4	114.0	487.9	453.5	34.41	14.180		
7,200.0	7,167.8	7,275.1	7,274.0	17.8	17.1	-178.24	8.3	112.9	503.6	468.7	34.91	14.427		
7,300.0	7,266.3	7,372.2	7,371.0	18.2	17.2	-178.13	6.6	111.8	519.1	483.7	35.38	14.671		
7,400.0	7,364.9	7,468.0	7,466.8	18.5	17.4	-178.03	5.0	111.1	535.1	499.3	35.83	14.933		
7,500.0	7,463.4	7,564.1	7,562.8	18.8	17.5	-177.97	3.8	110.9	551.6	515.4	36.26	15.212		
7,600.0	7,562.0	7,660.7	7,659.5	19.1	17.6	-177.92	2.8	111.1	568.6	531.9	36.67	15.505		
7,700.0	7,660.5	7,757.7	7,756.5	19.4	17.6	-177.84	1.4	111.6	585.8	548.8	37.05	15.810		
7,800.0	7,759.1	7,859.0	7,857.7	19.8	17.7	-177.73	-0.3	112.1	603.0	565.5	37.41	16.119		
7,900.0	7,857.6	7,937.3	7,936.0	20.1	17.7	-177.89	0.8	112.3	620.6	582.9	37.74	16.445		
8,000.0	7,956.2	8,003.9	8,001.8	20.4	17.7	-178.75	10.3	114.7	643.4	605.3	38.08	16.898		
8,100.0	8,054.7	8,073.0	8,067.0	20.7	17.7	-179.29	32.9	117.2	670.8	632.4	38.43	17.455		
8,200.0	8,153.3	8,125.5	8,113.8	21.1	17.7	-177.33	56.6	119.6	703.7	664.9	38.78	18.145		
8,300.0	8,251.9	8,179.8	8,159.6	21.4	17.7	-175.05	85.4	122.6	742.5	703.4	39.14	18.971		
8,400.0	8,350.4	8,230.0	8,199.6	21.8	17.8	-172.78	115.6	125.5	786.9	747.4	39.53	19.907		
8,500.0	8,449.0	8,279.5	8,236.2	22.1	17.9	-170.39	148.7	127.8	836.5	796.5	39.95	20.936		
8,600.0	8,547.5	8,325.0	8,267.0	22.4	18.0	-168.05	182.3	129.0	891.3	850.9	40.40	22.064		
8,700.0	8,646.1	8,345.7	8,279.7	22.8	18.0	-166.94	198.6	129.2	951.3	910.5	40.80	23.317		
8,800.0	8,744.6	8,370.9	8,294.3	23.1	18.1	-121.77	219.1	129.7	1,015.0	973.8	41.20	24.637		
8,900.0	8,841.2	8,404.0	8,312.1	23.4	18.2	-80.30	247.1	130.3	1,075.2	1,033.6	41.60	25.846		
9,000.0	8,931.9	8,448.0	8,333.2	23.6	18.4	-62.94	285.6	130.6	1,128.2	1,086.1	42.02	26.846		
9,100.0	9,012.6	8,511.0	8,360.5	23.8	18.7	-53.46	342.4	130.0	1,170.9	1,128.4	42.55	27.521		
9,200.0	9,079.8	8,542.0	8,372.0	24.0	18.9	-48.24	371.2	128.9	1,202.0	1,159.1	42.91	28.010		
9,300.0	9,130.6	8,595.8	8,388.8	24.2	19.3	-45.19	422.2	126.9	1,221.1	1,177.6	43.46	28.094		
9,400.0	9,162.8	8,660.3	8,405.9	24.4	19.7	-44.01	484.4	124.7	1,226.7	1,182.6	44.18	27.764		
9,500.0	9,174.9	8,713.9	8,418.2	24.8	20.2	-44.51	536.5	122.9	1,218.0	1,173.1	44.95	27.098		
9,600.0	9,175.0	8,763.0	8,426.7	25.2	20.6	-44.85	584.8	121.7	1,203.7	1,157.9	45.82	26.269		
9,700.0	9,175.0	8,808.9	8,432.5	25.8	21.1	-45.03	630.3	121.0	1,193.5	1,146.6	46.84	25.480		
9,800.0	9,175.0	8,858.0	8,436.9	26.5	21.5	-45.18	679.3	121.0	1,187.4	1,139.3	48.04	24.717		
9,900.0	9,175.0	8,921.0	8,440.8	27.3	22.2	-45.37	742.1	122.6	1,184.9	1,135.4	49.51	23.931		
9,963.8	9,175.0	8,976.1	8,442.8	27.9	22.8	-45.49	797.1	124.2	1,184.6	1,133.9	50.69	23.368		

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

IDS Anticollision Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Azores Federal #12H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3522.1usft (Scandrell Freedom)
Reference Site:	Sec. 29, T 24 S., R 32E	MD Reference:	KB=26' @ 3522.1usft (Scandrell Freedom)
Site Error:	5.0 usft	North Reference:	Grid
Reference Well:	Azores Federal #12H	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 Single User Db
Reference Design:	Plan#1	Offset TVD Reference:	Offset Datum

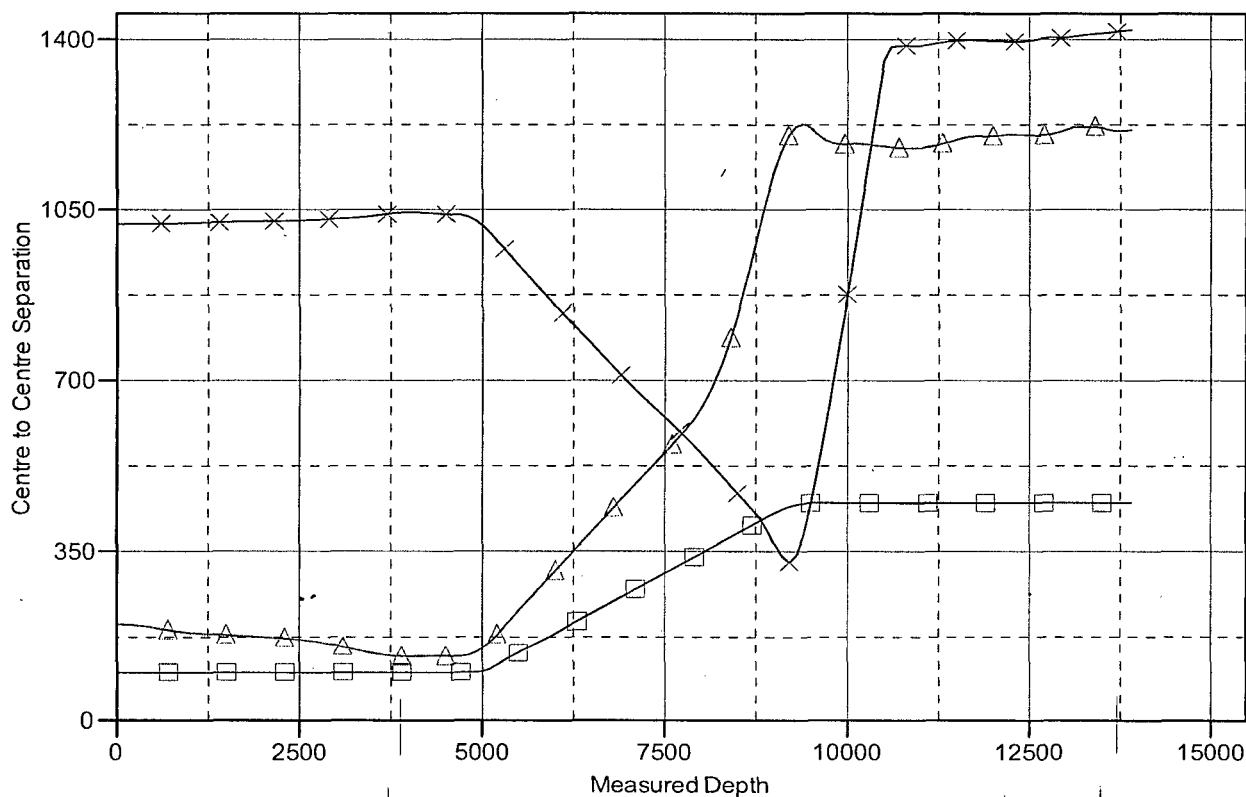
Offset Design													Offset Site Error:	0.0 usft
Survey Program: 100-NS-GYRO-MS, 7852-MWD													Offset Wall Error:	5.0 usft
Sec. 29, T 24 S., R 32E - Corvo Federal #3H - Wellbore #1 - Actual Wellbore														
Reference	Offset	Semi Major Axis		Distance										Warning
Measured Depth (usft)	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)	Minimum Separation (usft)	Separation Factor		
10,000.0	9,175.0	9,002.2	8,443.2	28.2	23.1	45.52	823.3	124.8	1,184.8	1,133.4	51.34	23.075		
10,100.0	9,175.0	9,078.0	8,442.5	29.3	24.0	45.55	899.0	126.3	1,186.8	1,133.5	53.27	22.279		
10,200.0	9,175.0	9,227.1	8,442.7	30.4	25.8	45.52	1,048.1	125.3	1,185.5	1,129.4	56.13	21.120		
10,300.0	9,175.0	9,350.0	8,442.0	31.5	27.3	45.39	1,170.9	122.2	1,184.4	1,125.5	58.85	20.126		
10,400.0	9,175.0	9,425.6	8,442.6	32.8	28.3	45.35	1,246.6	120.2	1,182.0	1,120.9	61.06	19.358		
10,500.0	9,175.0	9,541.7	8,442.5	34.1	29.8	45.28	1,362.6	118.4	1,181.0	1,117.1	63.91	18.478		
10,600.0	9,175.0	9,634.1	8,443.1	35.4	31.1	45.22	1,455.0	116.0	1,178.7	1,112.2	66.54	17.714		
10,700.0	9,175.0	9,721.0	8,443.2	36.8	32.4	45.17	1,541.9	114.4	1,177.4	1,108.2	69.19	17.016		
10,790.0	9,175.0	9,802.5	8,442.9	38.1	33.6	45.13	1,623.3	113.7	1,177.1	1,105.4	71.69	16.419		
10,800.0	9,175.0	9,811.6	8,442.8	38.2	33.8	45.13	1,632.4	113.7	1,177.1	1,105.1	71.97	16.356		
10,900.0	9,175.0	9,917.0	8,443.6	39.6	35.3	45.18	1,737.9	114.4	1,177.1	1,102.1	74.96	15.704		
10,935.7	9,175.0	9,948.1	8,444.5	40.2	35.8	45.24	1,768.9	115.2	1,177.0	1,101.0	75.94	15.499		
11,000.0	9,175.0	9,997.9	8,445.5	41.1	36.5	45.32	1,818.7	116.6	1,177.4	1,099.8	77.63	15.167		
11,100.0	9,175.0	10,087.4	8,446.1	42.6	37.8	45.45	1,908.1	119.6	1,179.2	1,098.7	80.49	14.651		
11,200.0	9,175.0	10,169.6	8,446.8	44.2	39.1	45.60	1,990.3	123.3	1,181.9	1,098.7	83.26	14.195		
11,300.0	9,175.0	10,267.8	8,447.0	45.7	40.6	45.80	2,088.3	129.3	1,186.2	1,099.9	86.31	13.743		
11,400.0	9,175.0	10,365.4	8,445.6	47.3	42.1	45.87	2,185.8	132.7	1,189.7	1,100.3	89.40	13.308		
11,500.0	9,175.0	10,456.9	8,442.1	48.9	43.5	45.83	2,277.2	135.0	1,194.2	1,101.8	92.41	12.922		
11,600.0	9,175.0	10,590.0	8,439.1	50.5	45.5	45.87	2,410.2	139.1	1,198.1	1,102.0	96.04	12.474		
11,700.0	9,175.0	10,671.0	8,439.7	52.1	46.8	46.00	2,491.1	142.7	1,200.8	1,101.9	98.91	12.140		
11,800.0	9,175.0	10,824.4	8,445.0	53.8	49.2	46.42	2,644.3	149.8	1,201.5	1,098.6	102.93	11.673		
11,900.0	9,175.0	10,915.9	8,448.5	55.4	50.6	46.62	2,735.6	152.2	1,200.8	1,094.8	106.04	11.324		
11,914.6	9,175.0	10,928.2	8,448.8	55.6	50.8	46.64	2,747.9	152.4	1,200.8	1,094.3	106.48	11.277		
12,000.0	9,175.0	11,000.3	8,449.1	57.1	52.0	46.68	2,820.0	153.3	1,201.3	1,092.2	109.09	11.012		
12,100.0	9,175.0	11,089.2	8,446.9	58.7	53.5	46.60	2,908.8	153.3	1,203.0	1,090.7	112.22	10.720		
12,200.0	9,175.0	11,199.9	8,443.9	60.4	55.3	46.50	3,019.5	153.3	1,204.9	1,089.2	115.67	10.416		
12,300.0	9,175.0	11,319.4	8,443.8	62.1	57.2	46.50	3,139.0	153.4	1,204.9	1,085.7	119.24	10.105		
12,400.0	9,175.0	11,423.5	8,445.9	63.8	58.8	46.60	3,243.1	154.4	1,204.2	1,081.6	122.62	9.821		
12,500.0	9,175.0	11,525.1	8,445.7	65.5	60.5	46.55	3,344.7	153.0	1,203.3	1,077.3	126.01	9.549		
12,600.0	9,175.0	11,615.8	8,444.3	67.2	62.0	46.43	3,435.4	150.9	1,202.7	1,073.5	129.23	9.307		
12,616.3	9,175.0	11,630.0	8,444.2	67.5	62.3	46.42	3,449.5	150.7	1,202.7	1,073.0	129.75	9.270		
12,700.0	9,175.0	11,696.7	8,443.6	68.9	63.4	46.41	3,516.2	150.8	1,203.3	1,071.0	132.28	9.096		
12,800.0	9,175.0	11,772.8	8,443.5	70.6	64.6	46.48	3,592.3	153.1	1,205.7	1,070.4	135.26	8.914		
12,900.0	9,175.0	11,859.3	8,444.0	72.3	66.1	46.68	3,678.6	158.8	1,209.9	1,071.5	138.40	8.742		
13,000.0	9,175.0	11,954.3	8,444.5	74.1	67.6	46.90	3,773.4	165.0	1,214.4	1,072.7	141.67	8.572		
13,100.0	9,175.0	12,057.1	8,442.6	75.8	69.3	47.02	3,876.0	170.8	1,219.8	1,074.7	145.10	8.407		
13,200.0	9,175.0	12,232.2	8,445.9	77.5	72.1	47.33	4,050.9	176.8	1,220.7	1,071.1	149.68	8.156		
13,300.0	9,175.0	12,316.5	8,448.3	79.3	73.5	47.45	4,135.2	178.0	1,219.9	1,067.0	152.83	7.982		
13,309.4	9,175.0	12,324.1	8,448.3	79.5	73.7	47.45	4,142.8	178.1	1,219.9	1,066.7	153.13	7.966		
13,400.0	9,175.0	12,412.1	8,447.6	81.0	75.2	47.43	4,230.8	178.2	1,220.5	1,064.3	156.20	7.813		
13,500.0	9,175.0	12,559.6	8,450.6	82.8	77.6	47.47	4,378.2	176.2	1,217.8	1,057.4	160.39	7.592		
13,600.0	9,175.0	12,652.1	8,453.7	84.5	79.2	47.52	4,470.6	174.6	1,214.3	1,050.6	163.69	7.418		
13,700.0	9,175.0	12,723.9	8,453.9	86.3	80.4	47.47	4,542.4	172.7	1,212.2	1,045.5	166.68	7.273		
13,727.9	9,175.0	12,742.7	8,453.5	86.8	80.7	47.44	4,561.2	172.2	1,212.1	1,044.6	167.49	7.237		
13,800.0	9,175.0	12,800.5	8,451.4	88.1	81.7	47.33	4,618.9	171.0	1,212.6	1,042.9	169.76	7.143		
13,899.0	9,175.0	12,894.3	8,446.4	89.8	83.3	47.07	4,712.5	168.2	1,214.1	1,041.0	173.12	7.013		

IDS Anticollision Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Azores Federal #12H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Reference Site:	Sec. 29, T 24 S., R 32E	MD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Site Error:	5.0 usft	North Reference:	Grid
Reference Well:	Azores Federal #12H	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 Single User Db
Reference Design:	Plan#1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=26' @ 3522.1usft (Scandril Freedom) Coordinates are relative to: Azores Federal #12H
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W Grid Convergence at Surface is: 0.34°

Ladder Plot



LEGEND

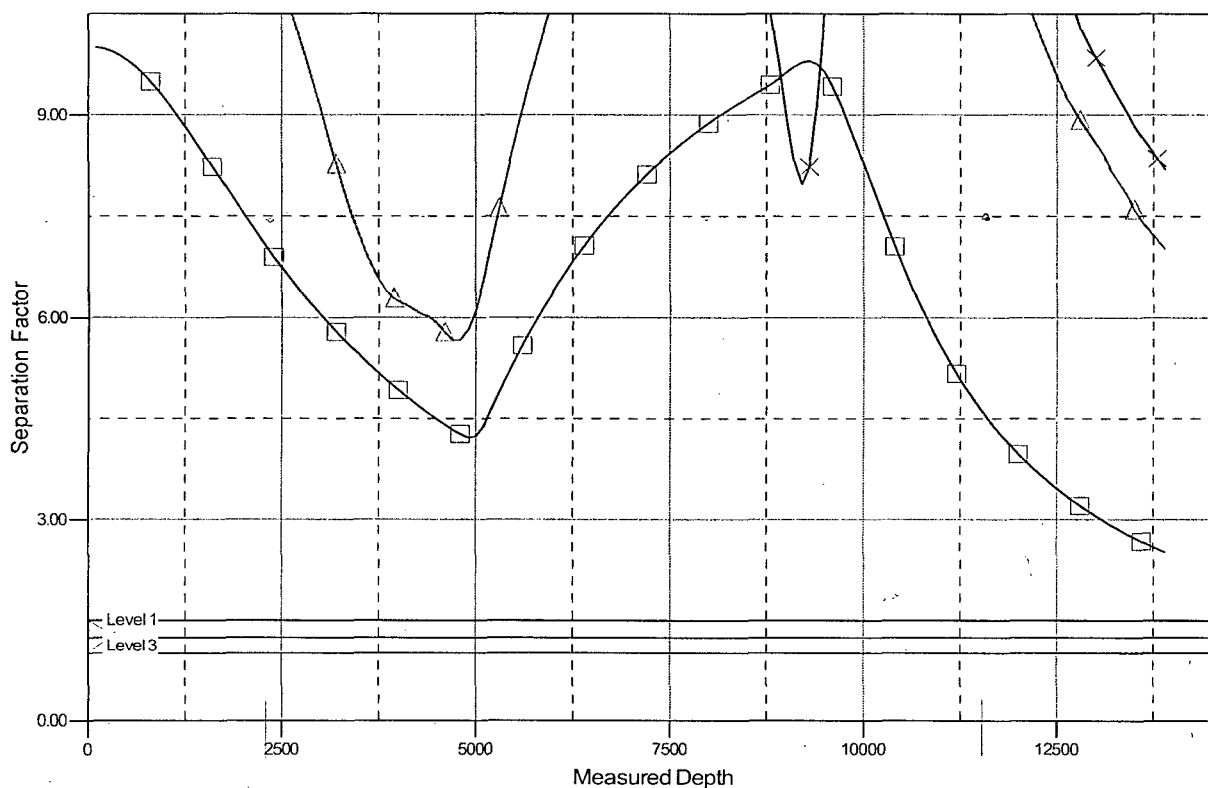
Federal #4H, Wellbore #1, Actual Wellbore V0
▲ Corvo Federal #3H, Wellbore #1, Actual Wellbore V0
■ Azores Federal #8H, Wellbore #1, Plan#1

IDS Anticollision Report

Company:	COG Production LLC	Local Co-ordinate Reference:	Well Azores Federal #12H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Reference Site:	Sec. 29, T 24 S., R 32E	MD Reference:	KB=26' @ 3522.1usft (Scandril Freedom)
Site Error:	5.0 usft	North Reference:	Grid
Reference Well:	Azores Federal #12H	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 Single User Db
Reference Design:	Plan#1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=26' @ 3522.1usft (Scandril FreedCoordinates are relative to: Azores Federal #12H
Offset Depths are relative to Offset Datum
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W
Grid Convergence at Surface is: 0.34°

Separation Factor Plot



LEGEND

Federal #4H, Wellbore #1, Actual Wellbore V0
 Corvo Federal #3H, Wellbore #1, Actual Wellbore V0
 Azores Federal #8H, Wellbore #1, Plan#1