



CONCHO

COG Operating L L C

Eddy County, NM (NAD 27 NME)

Sec. 31, T 26 S, R 28- E

Way South State Com 703H

NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 12 2018

RECEIVED

Wellbore #1

Plan #1

30-015-45543

Anticollision Report

12 December, 2018



INTEGRITY
DIRECTIONAL



Anticollision Report



Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 31, T 26 S, R 28- E
Site Error: 0.00 usft
Reference Well: Way South State Com 703H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 703H
TVD Reference: KB=29' @ 3111.00usft (Noram 23)
MD Reference: KB=29' @ 3111.00usft (Noram 23)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Reference	Plan #1
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 19,999.96 u
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	12/12/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	21,529.46	Plan #1 (Wellbore #1)	MWD	MWD - Standard	

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. 31, T 26 S, R 28- E						
Way South State Com 701H - Wellbore #1 - Plan #1	4,406.46	4,405.46	59.90	40.38	3.069	CC, ES
Way South State Com 701H - Wellbore #1 - Plan #1	21,529.48	21,546.51	660.15	206.22	1.454	Level 3, SF
Way South State Com 702H - Wellbore #1 - Plan #1	4,406.46	4,405.46	30.00	10.48	1.537	CC
Way South State Com 702H - Wellbore #1 - Plan #1	21,529.48	21,730.25	384.82	-68.96	0.848	Level 1, ES, SF

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 701H - Wellbore #1 - Plan #1											
Survey Program: 0-MWD											
Reference											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	59.90	59.91		
100.00	100.00	99.00	99.00	0.08	0.08	90.00	0.00	59.90	59.90	59.74	0.16
200.00	200.00	199.00	199.00	0.30	0.30	90.00	0.00	59.90	59.90	59.29	0.61
300.00	300.00	299.00	299.00	0.53	0.53	90.00	0.00	59.90	59.90	58.84	1.06
400.00	400.00	399.00	399.00	0.75	0.75	90.00	0.00	59.90	59.90	58.39	1.51
500.00	500.00	499.00	499.00	0.98	0.98	90.00	0.00	59.90	59.90	57.94	1.96
600.00	600.00	599.00	599.00	1.20	1.20	90.00	0.00	59.90	59.90	57.50	2.40
700.00	700.00	699.00	699.00	1.43	1.43	90.00	0.00	59.90	59.90	57.05	2.85
800.00	800.00	799.00	799.00	1.65	1.65	90.00	0.00	59.90	59.90	56.60	3.30
900.00	900.00	899.00	899.00	1.88	1.88	90.00	0.00	59.90	59.90	56.15	3.75
1,000.00	1,000.00	999.00	999.00	2.10	2.10	90.00	0.00	59.90	59.90	55.70	4.20
1,100.00	1,100.00	1,099.00	1,099.00	2.33	2.33	90.00	0.00	59.90	59.90	55.25	4.65
1,200.00	1,200.00	1,199.00	1,199.00	2.55	2.55	90.00	0.00	59.90	59.90	54.80	5.10
1,300.00	1,300.00	1,299.00	1,299.00	2.78	2.77	90.00	0.00	59.90	59.90	54.35	5.55
1,400.00	1,400.00	1,399.00	1,399.00	3.00	3.00	90.00	0.00	59.90	59.90	53.90	6.00
1,500.00	1,500.00	1,499.00	1,499.00	3.23	3.22	90.00	0.00	59.90	59.90	53.45	6.45
1,600.00	1,600.00	1,599.00	1,599.00	3.45	3.45	90.00	0.00	59.90	59.90	53.00	6.90
1,700.00	1,700.00	1,699.00	1,699.00	3.68	3.67	90.00	0.00	59.90	59.90	52.55	7.35
1,800.00	1,800.00	1,799.00	1,799.00	3.90	3.90	90.00	0.00	59.90	59.90	52.10	7.80
1,900.00	1,900.00	1,899.00	1,899.00	4.13	4.12	90.00	0.00	59.90	59.90	51.65	8.25
2,000.00	2,000.00	1,999.00	1,999.00	4.35	4.35	90.00	0.00	59.90	59.90	51.20	8.70
2,100.00	2,100.00	2,099.00	2,099.00	4.58	4.57	90.00	0.00	59.90	59.90	50.75	9.15
2,200.00	2,200.00	2,199.00	2,199.00	4.80	4.80	90.00	0.00	59.90	59.90	50.30	9.60

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

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Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 701H - Wellbore #1 - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Semi Major Axis 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	
2,300.00	2,300.00	2,299.00	2,299.00	5.02	5.02	90.00	0.00	59.90	59.90	49.85	10.05	5.962		
2,400.00	2,400.00	2,399.00	2,399.00	5.25	5.25	90.00	0.00	59.90	59.90	49.40	10.50	5.707		
2,500.00	2,500.00	2,499.00	2,499.00	5.47	5.47	90.00	0.00	59.90	59.90	48.95	10.95	5.472		
2,600.00	2,600.00	2,599.00	2,599.00	5.70	5.70	90.00	0.00	59.90	59.90	48.50	11.40	5.256		
2,700.00	2,700.00	2,699.00	2,699.00	5.92	5.92	90.00	0.00	59.90	59.90	48.05	11.85	5.057		
2,800.00	2,800.00	2,799.00	2,799.00	6.15	6.15	90.00	0.00	59.90	59.90	47.61	12.29	4.872		
2,900.00	2,900.00	2,899.00	2,899.00	6.37	6.37	90.00	0.00	59.90	59.90	47.16	12.74	4.700		
3,000.00	3,000.00	2,999.00	2,999.00	6.60	6.60	90.00	0.00	59.90	59.90	46.71	13.19	4.540		
3,100.00	3,100.00	3,099.00	3,099.00	6.82	6.82	90.00	0.00	59.90	59.90	46.26	13.64	4.390		
3,200.00	3,200.00	3,199.00	3,199.00	7.05	7.05	90.00	0.00	59.90	59.90	45.81	14.09	4.250		
3,300.00	3,300.00	3,299.00	3,299.00	7.27	7.27	90.00	0.00	59.90	59.90	45.36	14.54	4.119		
3,400.00	3,400.00	3,399.00	3,399.00	7.50	7.49	90.00	0.00	59.90	59.90	44.91	14.99	3.995		
3,500.00	3,500.00	3,499.00	3,499.00	7.72	7.72	90.00	0.00	59.90	59.90	44.46	15.44	3.879		
3,600.00	3,600.00	3,599.00	3,599.00	7.95	7.94	90.00	0.00	59.90	59.90	44.01	15.89	3.769		
3,700.00	3,700.00	3,699.00	3,699.00	8.17	8.17	90.00	0.00	59.90	59.90	43.56	16.34	3.666		
3,800.00	3,800.00	3,799.00	3,799.00	8.40	8.39	90.00	0.00	59.90	59.90	43.11	16.79	3.568		
3,900.00	3,900.00	3,899.00	3,899.00	8.62	8.62	90.00	0.00	59.90	59.90	42.66	17.24	3.475		
4,000.00	4,000.00	3,999.00	3,999.00	8.85	8.84	90.00	0.00	59.90	59.90	42.21	17.69	3.386		
4,100.00	4,100.00	4,099.00	4,099.00	9.07	9.07	90.00	0.00	59.90	59.90	41.76	18.14	3.302		
4,200.00	4,200.00	4,199.00	4,199.00	9.30	9.29	90.00	0.00	59.90	59.90	41.31	18.59	3.222		
4,300.00	4,300.00	4,299.00	4,299.00	9.52	9.52	90.00	0.00	59.90	59.90	40.86	19.04	3.146		
4,406.46	4,406.46	4,405.46	4,405.46	9.76	9.76	90.00	0.00	59.90	59.90	40.38	19.52	3.069 CC, ES		
4,500.00	4,499.98	4,497.20	4,497.19	9.95	9.94	-153.99	-0.64	61.21	62.61	42.71	19.89	3.147		
4,600.00	4,599.85	4,594.76	4,594.62	10.14	10.13	-153.96	-2.73	65.50	71.50	51.23	20.26	3.528		
4,656.46	4,656.15	4,649.40	4,649.10	10.24	10.23	-153.92	-4.54	69.20	79.23	58.76	20.47	3.870		
4,700.00	4,699.52	4,692.24	4,691.78	10.33	10.31	-153.92	-6.17	72.55	86.02	65.38	20.64	4.168		
4,800.00	4,799.14	4,791.01	4,790.18	10.52	10.50	-153.92	-9.94	80.29	101.64	80.62	21.03	4.834		
4,900.00	4,898.76	4,889.79	4,888.58	10.72	10.70	-153.92	-13.72	88.02	117.26	95.84	21.42	5.475		
5,000.00	4,998.38	4,988.56	4,986.97	10.92	10.90	-153.92	-17.49	95.76	132.88	111.06	21.82	6.091		
5,100.00	5,098.00	5,087.33	5,085.37	11.12	11.10	-153.92	-21.26	103.50	148.50	126.28	22.22	6.682		
5,200.00	5,197.61	5,186.10	5,183.77	11.33	11.30	-153.92	-25.04	111.24	164.12	141.48	22.63	7.251		
5,300.00	5,297.23	5,284.88	5,282.17	11.54	11.51	-153.92	-28.81	118.97	179.74	156.68	23.05	7.797		
5,400.00	5,396.85	5,383.65	5,380.56	11.75	11.72	-153.92	-32.59	126.71	195.35	171.88	23.48	8.322		
5,500.00	5,496.47	5,482.42	5,478.96	11.97	11.93	-153.92	-36.36	134.45	210.97	187.07	23.90	8.826		
5,600.00	5,596.09	5,581.19	5,577.36	12.19	12.15	-153.92	-40.13	142.19	226.59	202.26	24.34	9.311		
5,700.00	5,695.71	5,679.97	5,675.75	12.41	12.37	-153.92	-43.91	149.92	242.21	217.44	24.77	9.777		
5,800.00	5,795.33	5,778.74	5,774.15	12.63	12.59	-153.92	-47.68	157.66	257.83	232.61	25.22	10.225		
5,900.00	5,894.95	5,877.51	5,872.55	12.85	12.81	-153.92	-51.45	165.40	273.45	247.79	25.66	10.656		
6,000.00	5,994.57	5,976.29	5,970.94	13.08	13.03	-153.92	-55.23	173.14	289.07	262.96	26.11	11.071		
6,100.00	6,094.19	6,075.06	6,069.34	13.31	13.26	-153.92	-59.00	180.87	304.69	278.12	26.56	11.470		
6,200.00	6,193.81	6,173.83	6,167.74	13.54	13.48	-153.92	-62.78	188.61	320.31	293.28	27.02	11.854		
6,300.00	6,293.43	6,272.60	6,266.13	13.77	13.71	-153.92	-66.55	196.35	335.92	308.44	27.48	12.223		
6,400.00	6,393.05	6,371.38	6,364.53	14.00	13.94	-153.92	-70.32	204.08	351.54	323.60	27.95	12.579		
6,500.00	6,492.67	6,470.15	6,462.93	14.24	14.17	-153.92	-74.10	211.82	367.16	338.75	28.41	12.922		
6,600.00	6,592.29	6,568.92	6,561.32	14.48	14.41	-153.92	-77.87	219.56	382.78	353.90	28.88	13.253		
6,700.00	6,691.91	6,667.69	6,659.72	14.71	14.64	-153.92	-81.65	227.30	398.40	369.04	29.36	13.572		
6,800.00	6,791.53	6,766.47	6,758.12	14.95	14.88	-153.92	-85.42	235.03	414.02	384.19	29.83	13.879		
6,900.00	6,891.15	6,865.24	6,856.52	15.19	15.11	-153.92	-89.19	242.77	429.64	399.33	30.31	14.176		
7,000.00	6,990.77	6,964.01	6,954.91	15.44	15.35	-153.92	-92.97	250.51	445.26	414.47	30.79	14.462		
7,100.00	7,090.38	7,062.79	7,053.31	15.68	15.59	-153.92	-96.74	258.25	460.88	429.61	31.27	14.739		
7,200.00	7,190.00	7,161.56	7,151.71	15.92	15.83	-153.92	-100.51	265.98	476.49	444.74	31.75	15.006		
7,300.00	7,289.62	7,260.33	7,250.10	16.17	16.07	-153.92	-104.29	273.72	492.11	459.87	32.24	15.264		

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Survey Program: 0-MWD														Offset Well Error:	0.00 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			
7,400.00	7,389.24	7,359.10	7,348.50	16.41	16.31	-153.92	-108.06	281.46	507.73	475.00	32.73	15.513			
7,500.00	7,488.86	7,457.88	7,446.90	16.66	16.56	-153.92	-111.84	289.20	523.35	490.13	33.22	15.754			
7,600.00	7,588.48	7,556.65	7,545.29	16.91	16.80	-153.92	-115.61	296.93	538.97	505.26	33.71	15.988			
7,700.00	7,688.10	7,655.42	7,643.69	17.16	17.05	-153.92	-119.38	304.67	554.59	520.38	34.21	16.213			
7,800.00	7,787.72	7,754.19	7,742.09	17.41	17.29	-153.92	-123.16	312.41	570.21	535.51	34.70	16.432			
7,900.00	7,887.34	7,852.97	7,840.48	17.66	17.54	-153.92	-126.93	320.15	585.83	550.63	35.20	16.643			
8,000.00	7,986.96	7,951.74	7,938.88	17.91	17.79	-153.92	-130.70	327.88	601.45	565.75	35.70	16.848			
8,100.00	8,086.58	8,050.51	8,037.28	18.16	18.03	-153.92	-134.48	335.62	617.06	580.87	36.20	17.047			
8,200.00	8,186.20	8,149.29	8,135.67	18.42	18.28	-153.92	-138.25	343.36	632.68	595.98	36.70	17.240			
8,250.00	8,236.01	8,198.67	8,184.87	18.54	18.41	-153.92	-140.14	347.23	640.49	603.54	36.95	17.334			
8,300.00	8,285.85	8,248.12	8,234.13	18.66	18.53	-153.96	-142.03	351.10	647.91	610.72	37.19	17.421			
8,400.00	8,385.71	8,372.85	8,358.59	18.87	18.81	-153.99	-145.63	358.49	658.53	620.86	37.67	17.479			
8,500.00	8,485.69	8,498.90	8,484.59	19.06	19.05	90.00	-146.85	361.00	662.09	623.98	38.11	17.371			
8,600.00	8,585.69	8,599.00	8,584.69	19.25	19.25	90.00	-146.85	361.00	662.09	623.59	38.50	17.196			
8,677.37	8,663.06	8,676.37	8,662.06	19.41	19.41	90.00	-146.85	361.00	662.09	623.27	38.82	17.056			
8,700.00	8,685.69	8,699.00	8,684.69	19.46	19.45	90.04	-146.84	361.00	662.09	623.18	38.91	17.016			
8,750.00	8,735.50	8,749.09	8,734.70	19.55	19.55	90.18	-144.24	361.00	662.09	622.99	39.10	16.932			
8,800.00	8,784.76	8,799.33	8,784.43	19.64	19.64	90.31	-137.27	360.99	662.10	622.82	39.28	16.855			
8,850.00	8,833.09	8,849.70	8,833.49	19.72	19.72	90.44	-125.93	360.99	662.11	622.67	39.44	16.787			
8,900.00	8,880.13	8,900.20	8,881.49	19.79	19.80	90.57	-110.28	360.99	662.12	622.53	39.59	16.725			
8,950.00	8,925.52	8,950.84	8,928.05	19.86	19.87	90.70	-90.41	360.98	662.13	622.41	39.72	16.669			
9,000.00	8,968.91	9,001.60	8,972.78	19.92	19.93	90.82	-66.44	360.98	662.15	622.30	39.84	16.619			
9,050.00	9,009.97	9,052.49	9,015.32	19.97	19.98	90.93	-38.53	360.97	662.16	622.21	39.96	16.572			
9,100.00	9,048.40	9,103.50	9,055.30	20.02	20.04	91.04	-6.89	360.96	662.18	622.11	40.06	16.529			
9,150.00	9,083.89	9,154.61	9,092.38	20.08	20.09	91.13	28.27	360.96	662.19	622.03	40.17	16.486			
9,200.00	9,116.17	9,205.83	9,126.25	20.13	20.14	91.22	66.66	360.95	662.21	621.93	40.28	16.441			
9,250.00	9,145.01	9,257.13	9,156.60	20.20	20.21	91.30	108.01	360.94	662.22	621.81	40.41	16.388			
9,300.00	9,170.18	9,308.52	9,183.18	20.29	20.29	91.37	151.97	360.93	662.23	621.65	40.59	16.317			
9,350.00	9,191.49	9,359.98	9,205.74	20.42	20.42	91.43	198.20	360.92	662.24	621.40	40.85	16.213			
9,400.00	9,208.78	9,411.50	9,224.08	20.61	20.61	91.48	246.32	360.90	662.25	621.04	41.21	16.070			
9,450.00	9,221.92	9,463.06	9,238.04	20.84	20.85	91.52	295.94	360.89	662.25	620.57	41.68	15.889			
9,500.00	9,230.80	9,514.66	9,247.48	21.11	21.13	91.54	346.65	360.88	662.25	620.01	42.24	15.679			
9,550.00	9,235.36	9,566.27	9,252.33	21.42	21.45	91.56	398.02	360.87	662.25	619.38	42.87	15.449			
9,573.20	9,236.00	9,590.22	9,253.00	21.57	21.61	91.56	421.96	360.86	662.24	619.06	43.18	15.336			
9,600.00	9,236.20	9,617.03	9,253.19	21.76	21.80	91.56	448.76	360.86	662.24	618.68	43.56	15.203			
9,700.00	9,236.93	9,717.03	9,253.88	22.53	22.58	91.55	548.76	360.84	662.22	617.10	45.12	14.678			
9,800.00	9,237.65	9,817.03	9,254.58	23.43	23.48	91.55	648.76	360.81	662.20	615.30	46.90	14.119			
9,900.00	9,238.38	9,917.03	9,255.27	24.42	24.47	91.55	748.75	360.79	662.18	613.29	48.89	13.543			
10,000.00	9,239.11	10,017.03	9,255.96	25.51	25.56	91.55	848.75	360.77	662.17	611.10	51.07	12.967			
10,100.00	9,239.84	10,117.03	9,256.66	26.67	26.72	91.54	948.75	360.74	662.15	608.75	53.40	12.400			
10,200.00	9,240.56	10,217.03	9,257.35	27.91	27.96	91.54	1,048.75	360.72	662.13	606.26	55.87	11.852			
10,300.00	9,241.29	10,317.03	9,258.04	29.21	29.26	91.54	1,148.75	360.70	662.11	603.65	58.46	11.326			
10,400.00	9,242.02	10,417.03	9,258.74	30.56	30.61	91.53	1,248.74	360.67	662.10	600.93	61.16	10.825			
10,500.00	9,242.75	10,517.03	9,259.43	31.96	32.00	91.53	1,348.74	360.65	662.08	598.12	63.96	10.352			
10,600.00	9,243.47	10,617.03	9,260.12	33.39	33.44	91.53	1,448.74	360.63	662.06	595.23	66.83	9.906			
10,700.00	9,244.20	10,717.03	9,260.82	34.87	34.91	91.52	1,548.74	360.60	662.04	592.26	69.78	9.487			
10,800.00	9,244.93	10,817.03	9,261.51	36.37	36.42	91.52	1,648.73	360.58	662.03	589.23	72.79	9.095			
10,900.00	9,245.66	10,917.03	9,262.20	37.91	37.95	91.52	1,748.73	360.56	662.01	586.15	75.86	8.727			
11,000.00	9,246.38	11,017.03	9,262.90	39.47	39.51	91.52	1,848.73	360.53	661.99	583.02	78.98	8.382			
11,100.00	9,247.11	11,117.03	9,263.59	41.05	41.09	91.51	1,948.73	360.51	661.97	579.84	82.14	8.060			
11,200.00	9,247.84	11,217.03	9,264.28	42.65	42.69	91.51	2,048.72	360.49	661.96	576.62	85.33	7.757			
11,300.00	9,248.57	11,317.03	9,264.98	44.26	44.30	91.51	2,148.72	360.47	661.94	573.37	88.57	7.474			

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



Anticollision Report



Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 31, T 26 S, R 28- E
Site Error: 0.00 usft
Reference Well: Way South State Com 703H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 703H
TVD Reference: KB=29' @ 3111.00usft (Noram 23)
MD Reference: KB=29' @ 3111.00usft (Noram 23)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 701H - Wellbore #1 - Plan #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 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	
11,400.00	9,249.30	11,417.03	9,265.67	45.90	45.93	91.50	2,248.72	360.44	661.92	570.09	91.83	7.208	
11,500.00	9,250.02	11,517.03	9,266.36	47.54	47.58	91.50	2,348.72	360.42	661.90	566.78	95.12	6.958	
11,600.00	9,250.75	11,617.03	9,267.06	49.20	49.24	91.50	2,448.71	360.40	661.89	563.44	98.44	6.724	
11,700.00	9,251.48	11,717.03	9,267.75	50.87	50.91	91.50	2,548.71	360.37	661.87	560.09	101.78	6.503	
11,800.00	9,252.21	11,817.03	9,268.44	52.55	52.59	91.49	2,648.71	360.35	661.85	556.71	105.14	6.295	
11,900.00	9,252.93	11,917.03	9,269.14	54.24	54.28	91.49	2,748.71	360.33	661.83	553.31	108.52	6.099	
12,000.00	9,253.66	12,017.03	9,269.83	55.94	55.98	91.49	2,848.70	360.30	661.81	549.90	111.92	5.913	
12,100.00	9,254.39	12,117.03	9,270.52	57.65	57.68	91.48	2,948.70	360.28	661.80	546.47	115.33	5.738	
12,200.00	9,255.12	12,217.03	9,271.22	59.36	59.39	91.48	3,048.70	360.26	661.78	543.02	118.76	5.573	
12,300.00	9,255.84	12,317.03	9,271.91	61.08	61.11	91.48	3,148.70	360.23	661.76	539.57	122.19	5.416	
12,400.00	9,256.57	12,417.03	9,272.60	62.81	62.84	91.47	3,248.69	360.21	661.74	536.10	125.64	5.267	
12,500.00	9,257.30	12,517.03	9,273.30	64.54	64.57	91.47	3,348.69	360.19	661.73	532.62	129.11	5.125	
12,600.00	9,258.03	12,617.03	9,273.99	66.27	66.30	91.47	3,448.69	360.17	661.71	529.13	132.58	4.991	
12,700.00	9,258.75	12,717.03	9,274.68	68.01	68.04	91.47	3,548.69	360.14	661.69	525.63	136.06	4.863	
12,800.00	9,259.48	12,817.03	9,275.38	69.76	69.79	91.46	3,648.68	360.12	661.67	522.13	139.55	4.742	
12,900.00	9,260.21	12,917.03	9,276.07	71.51	71.54	91.46	3,748.68	360.10	661.66	518.61	143.04	4.626	
13,000.00	9,260.94	13,017.03	9,276.77	73.26	73.29	91.46	3,848.68	360.07	661.64	515.09	146.55	4.515	
13,100.00	9,261.66	13,117.03	9,277.46	75.02	75.04	91.45	3,948.68	360.05	661.62	511.56	150.06	4.409	
13,200.00	9,262.39	13,217.03	9,278.15	76.77	76.80	91.45	4,048.68	360.03	661.60	508.03	153.58	4.308	
13,300.00	9,263.12	13,317.03	9,278.85	78.54	78.56	91.45	4,148.67	360.00	661.59	504.49	157.10	4.211	
13,400.00	9,263.85	13,417.03	9,279.54	80.30	80.33	91.45	4,248.67	359.98	661.57	500.94	160.63	4.119	
13,500.00	9,264.58	13,517.03	9,280.23	82.07	82.10	91.44	4,348.67	359.96	661.55	497.39	164.17	4.030	
13,600.00	9,265.30	13,617.03	9,280.93	83.84	83.87	91.44	4,448.67	359.93	661.53	493.83	167.70	3.945	
13,700.00	9,266.03	13,717.03	9,281.62	85.61	85.64	91.44	4,548.66	359.91	661.52	490.27	171.25	3.863	
13,800.00	9,266.76	13,817.03	9,282.31	87.39	87.41	91.43	4,648.66	359.89	661.50	486.70	174.80	3.784	
13,900.00	9,267.49	13,917.03	9,283.01	89.16	89.19	91.43	4,748.66	359.87	661.48	483.13	178.35	3.709	
14,000.00	9,268.21	14,017.03	9,283.70	90.94	90.97	91.43	4,848.66	359.84	661.46	479.56	181.91	3.636	
14,100.00	9,268.94	14,117.03	9,284.39	92.72	92.75	91.43	4,948.65	359.82	661.45	475.98	185.47	3.566	
14,200.00	9,269.67	14,217.03	9,285.09	94.50	94.53	91.42	5,048.65	359.80	661.43	472.40	189.03	3.499	
14,300.00	9,270.40	14,317.03	9,285.78	96.29	96.31	91.42	5,148.65	359.77	661.41	468.82	192.60	3.434	
14,400.00	9,271.12	14,417.03	9,286.47	98.07	98.10	91.42	5,248.65	359.75	661.39	465.23	196.17	3.372	
14,500.00	9,271.85	14,517.03	9,287.17	99.86	99.88	91.41	5,348.64	359.73	661.38	461.64	199.74	3.311	
14,600.00	9,272.58	14,617.03	9,287.86	101.64	101.67	91.41	5,448.64	359.70	661.36	458.05	203.31	3.253	
14,700.00	9,273.31	14,717.03	9,288.55	103.43	103.46	91.41	5,548.64	359.68	661.34	454.45	206.89	3.197	
14,800.00	9,274.03	14,817.03	9,289.25	105.22	105.25	91.40	5,648.64	359.66	661.32	450.85	210.47	3.142	
14,900.00	9,274.76	14,917.03	9,289.94	107.01	107.04	91.40	5,748.63	359.63	661.31	447.25	214.05	3.089	
15,000.00	9,275.49	15,017.03	9,290.63	108.81	108.83	91.40	5,848.63	359.61	661.29	443.65	217.64	3.038	
15,100.00	9,276.22	15,117.03	9,291.33	110.60	110.62	91.40	5,948.63	359.59	661.27	440.05	221.22	2.989	
15,200.00	9,276.95	15,217.03	9,292.02	112.39	112.42	91.39	6,048.63	359.56	661.25	436.44	224.81	2.941	
15,300.00	9,277.67	15,317.03	9,292.71	114.19	114.21	91.39	6,148.62	359.54	661.24	432.83	228.40	2.895	
15,400.00	9,278.40	15,417.03	9,293.41	115.99	116.01	91.39	6,248.62	359.52	661.22	429.22	232.00	2.850	
15,500.00	9,279.13	15,517.03	9,294.10	117.78	117.81	91.38	6,348.62	359.50	661.20	425.61	235.59	2.807	
15,600.00	9,279.86	15,617.03	9,294.79	119.58	119.61	91.38	6,448.62	359.47	661.18	422.00	239.19	2.764	
15,700.00	9,280.58	15,717.03	9,295.49	121.38	121.40	91.38	6,548.61	359.45	661.17	418.38	242.78	2.723	
15,800.00	9,281.31	15,817.03	9,296.18	123.18	123.20	91.38	6,648.61	359.43	661.15	414.77	246.38	2.683	
15,900.00	9,282.04	15,917.03	9,296.87	124.98	125.00	91.37	6,748.61	359.40	661.13	411.15	249.98	2.645	
16,000.00	9,282.77	16,017.03	9,297.57	126.78	126.80	91.37	6,848.61	359.38	661.11	407.53	253.59	2.607	
16,100.00	9,283.49	16,117.03	9,298.26	128.58	128.61	91.37	6,948.61	359.36	661.10	403.91	257.19	2.570	
16,200.00	9,284.22	16,217.03	9,298.95	130.38	130.41	91.36	7,048.60	359.33	661.08	400.29	260.79	2.535	
16,300.00	9,284.95	16,317.03	9,299.65	132.19	132.21	91.36	7,148.60	359.31	661.06	396.66	264.40	2.500	
16,400.00	9,285.68	16,417.03	9,300.34	133.99	134.01	91.36	7,248.60	359.29	661.04	393.04	268.01	2.467	
16,500.00	9,286.40	16,517.03	9,301.03	135.80	135.82	91.35	7,348.60	359.26	661.03	389.41	271.61	2.434	

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



Anticollision Report



Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 31, T 26 S, R 28- E
Site Error: 0.00 usft
Reference Well: Way South State Com 703H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 703H
TVD Reference: KB=29' @ 3111.00usft (Noram 23)
MD Reference: KB=29' @ 3111.00usft (Noram 23)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 701H - Wellbore #1 - Plan #1												Offset Site Error: 0.00 usft	
Survey Program: 0-MWD												Offset Well Error: 0.00 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
16,600.00	9,287.13	16,617.03	9,301.73	137.60	137.62	91.35	7,448.59	359.24	661.01	385.79	275.22	2.402	
16,700.00	9,287.86	16,717.03	9,302.42	139.40	139.43	91.35	7,548.59	359.22	660.99	382.16	278.83	2.371	
16,800.00	9,288.59	16,817.03	9,303.12	141.21	141.23	91.35	7,648.59	359.20	660.97	378.53	282.44	2.340	
16,900.00	9,289.31	16,917.03	9,303.81	143.02	143.04	91.34	7,748.59	359.17	660.96	374.90	286.06	2.311	
17,000.00	9,290.04	17,017.03	9,304.50	144.82	144.85	91.34	7,848.58	359.15	660.94	371.27	289.67	2.282	
17,100.00	9,290.77	17,117.03	9,305.20	146.63	146.65	91.34	7,948.58	359.13	660.92	367.64	293.28	2.254	
17,200.00	9,291.50	17,217.03	9,305.89	148.44	148.46	91.33	8,048.58	359.10	660.90	364.01	296.90	2.226	
17,300.00	9,292.23	17,317.03	9,306.58	150.25	150.27	91.33	8,148.58	359.08	660.89	360.37	300.51	2.199	
17,400.00	9,292.95	17,417.03	9,307.28	152.05	152.08	91.33	8,248.57	359.06	660.87	356.74	304.13	2.173	
17,500.00	9,293.68	17,517.03	9,307.97	153.86	153.88	91.33	8,348.57	359.03	660.85	353.10	307.75	2.147	
17,600.00	9,294.41	17,617.03	9,308.66	155.67	155.69	91.32	8,448.57	359.01	660.83	349.47	311.36	2.122	
17,700.00	9,295.14	17,717.03	9,309.36	157.48	157.50	91.32	8,548.57	358.99	660.82	345.83	314.98	2.098	
17,800.00	9,295.86	17,817.03	9,310.05	159.29	159.31	91.32	8,648.56	358.96	660.80	342.20	318.60	2.074	
17,900.00	9,296.59	17,917.03	9,310.74	161.10	161.12	91.31	8,748.56	358.94	660.78	338.56	322.22	2.051	
18,000.00	9,297.32	18,017.03	9,311.44	162.91	162.93	91.31	8,848.56	358.92	660.76	334.92	325.84	2.028	
18,100.00	9,298.05	18,117.03	9,312.13	164.72	164.74	91.31	8,948.56	358.90	660.75	331.28	329.46	2.006	
18,200.00	9,298.77	18,217.03	9,312.82	166.53	166.55	91.31	9,048.55	358.87	660.73	327.64	333.09	1.984	
18,300.00	9,299.50	18,317.03	9,313.52	168.34	168.37	91.30	9,148.55	358.85	660.71	324.00	336.71	1.962	
18,400.00	9,300.23	18,417.03	9,314.21	170.15	170.18	91.30	9,248.55	358.83	660.69	320.36	340.33	1.941	
18,500.00	9,300.96	18,517.03	9,314.90	171.97	171.99	91.30	9,348.55	358.80	660.68	316.72	343.96	1.921	
18,600.00	9,301.68	18,617.03	9,315.60	173.78	173.80	91.29	9,448.55	358.78	660.66	313.08	347.58	1.901	
18,700.00	9,302.41	18,717.03	9,316.29	175.59	175.61	91.29	9,548.54	358.76	660.64	309.44	351.20	1.881	
18,800.00	9,303.14	18,817.03	9,316.98	177.40	177.43	91.29	9,648.54	358.73	660.62	305.80	354.83	1.862	
18,900.00	9,303.87	18,917.03	9,317.68	179.22	179.24	91.28	9,748.54	358.71	660.61	302.15	358.46	1.843	
19,000.00	9,304.59	19,017.03	9,318.37	181.03	181.05	91.28	9,848.54	358.69	660.59	298.51	362.08	1.824	
19,100.00	9,305.32	19,117.03	9,319.06	182.84	182.87	91.28	9,948.53	358.66	660.57	294.87	365.71	1.806	
19,200.00	9,306.05	19,217.03	9,319.76	184.66	184.68	91.28	10,048.53	358.64	660.56	291.22	369.33	1.789	
19,300.00	9,306.78	19,317.03	9,320.45	186.47	186.49	91.27	10,148.53	358.62	660.54	287.58	372.96	1.771	
19,400.00	9,307.51	19,417.03	9,321.14	188.28	188.31	91.27	10,248.53	358.59	660.52	283.93	376.59	1.754	
19,500.00	9,308.23	19,517.03	9,321.84	190.10	190.12	91.27	10,348.52	358.57	660.50	280.28	380.22	1.737	
19,600.00	9,308.96	19,617.03	9,322.53	191.91	191.93	91.26	10,448.52	358.55	660.49	276.64	383.85	1.721	
19,700.00	9,309.69	19,717.03	9,323.22	193.73	193.75	91.26	10,548.52	358.53	660.47	272.99	387.48	1.705	
19,800.00	9,310.42	19,817.03	9,323.92	195.54	195.56	91.26	10,648.52	358.50	660.45	269.35	391.11	1.689	
19,900.00	9,311.14	19,917.03	9,324.61	197.36	197.38	91.26	10,748.51	358.48	660.43	265.70	394.73	1.673	
20,000.00	9,311.87	20,017.03	9,325.30	199.17	199.19	91.25	10,848.51	358.46	660.42	262.05	398.37	1.658	
20,100.00	9,312.60	20,117.03	9,326.00	200.99	201.01	91.25	10,948.51	358.43	660.40	258.40	402.00	1.643	
20,200.00	9,313.33	20,217.03	9,326.69	202.80	202.82	91.25	11,048.51	358.41	660.38	254.75	405.63	1.628	
20,300.00	9,314.05	20,317.03	9,327.38	204.62	204.64	91.24	11,148.50	358.39	660.36	251.11	409.26	1.614	
20,400.00	9,314.78	20,417.03	9,328.08	206.43	206.46	91.24	11,248.50	358.36	660.35	247.46	412.89	1.599	
20,500.00	9,315.51	20,517.03	9,328.77	208.25	208.27	91.24	11,348.50	358.34	660.33	243.81	416.52	1.585	
20,600.00	9,316.24	20,617.03	9,329.47	210.07	210.09	91.23	11,448.50	358.32	660.31	240.16	420.15	1.572	
20,700.00	9,316.96	20,717.03	9,330.16	211.88	211.90	91.23	11,548.49	358.29	660.29	236.51	423.78	1.558	
20,800.00	9,317.69	20,817.03	9,330.85	213.70	213.72	91.23	11,648.49	358.27	660.28	232.86	427.42	1.545	
20,900.00	9,318.42	20,917.03	9,331.55	215.51	215.54	91.23	11,748.49	358.25	660.26	229.21	431.05	1.532	
21,000.00	9,319.15	21,017.03	9,332.24	217.33	217.35	91.22	11,848.49	358.23	660.24	225.56	434.68	1.519	
21,100.00	9,319.88	21,117.03	9,332.93	219.15	219.17	91.22	11,948.48	358.20	660.22	221.91	438.32	1.506	
21,200.00	9,320.60	21,217.03	9,333.63	220.96	220.99	91.22	12,048.48	358.18	660.21	218.26	441.95	1.494 Level 3	
21,300.00	9,321.33	21,317.03	9,334.32	222.78	222.80	91.21	12,148.48	358.16	660.19	214.60	445.58	1.482 Level 3	
21,400.00	9,322.06	21,417.03	9,335.01	224.60	224.62	91.21	12,248.48	358.13	660.17	210.95	449.22	1.470 Level 3	
21,500.00	9,322.79	21,517.03	9,335.71	226.42	226.44	91.21	12,348.48	358.11	660.15	207.30	452.85	1.458 Level 3	
21,529.48	9,323.00	21,546.51	9,335.91	226.95	226.97	91.21	12,377.96	358.10	660.15	206.22	453.92	1.454 Level 3, SF	

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



Anticollision Report



Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 31, T 26 S, R 28- E
Site Error: 0.00 usft
Reference Well: Way South State Com 703H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 703H
TVD Reference: KB=29' @ 3111.00usft (Noram 23)
MD Reference: KB=29' @ 3111.00usft (Noram 23)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 702H - Wellbore #1 - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)	Between Ellipses (usft)	
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	30.00	30.02					
100.00	100.00	99.00	99.00	0.08	0.08	90.00	0.00	30.00	30.00	29.84	0.16	188.933		
200.00	200.00	199.00	199.00	0.30	0.30	90.00	0.00	30.00	30.00	29.39	0.61	49.434		
300.00	300.00	299.00	299.00	0.53	0.53	90.00	0.00	30.00	30.00	28.94	1.06	28.398		
400.00	400.00	399.00	399.00	0.75	0.75	90.00	0.00	30.00	30.00	28.49	1.51	19.921		
500.00	500.00	499.00	499.00	0.98	0.98	90.00	0.00	30.00	30.00	28.04	1.96	15.342		
600.00	600.00	599.00	599.00	1.20	1.20	90.00	0.00	30.00	30.00	27.60	2.40	12.474		
700.00	700.00	699.00	699.00	1.43	1.43	90.00	0.00	30.00	30.00	27.15	2.85	10.510		
800.00	800.00	799.00	799.00	1.65	1.65	90.00	0.00	30.00	30.00	26.70	3.30	9.080		
900.00	900.00	899.00	899.00	1.88	1.88	90.00	0.00	30.00	30.00	26.25	3.75	7.992		
1,000.00	1,000.00	999.00	999.00	2.10	2.10	90.00	0.00	30.00	30.00	25.80	4.20	7.138		
1,100.00	1,100.00	1,099.00	1,099.00	2.33	2.33	90.00	0.00	30.00	30.00	25.35	4.65	6.448		
1,200.00	1,200.00	1,199.00	1,199.00	2.55	2.55	90.00	0.00	30.00	30.00	24.90	5.10	5.880		
1,300.00	1,300.00	1,299.00	1,299.00	2.78	2.77	90.00	0.00	30.00	30.00	24.45	5.55	5.404		
1,400.00	1,400.00	1,399.00	1,399.00	3.00	3.00	90.00	0.00	30.00	30.00	24.00	6.00	4.999		
1,500.00	1,500.00	1,499.00	1,499.00	3.23	3.22	90.00	0.00	30.00	30.00	23.55	6.45	4.651		
1,600.00	1,600.00	1,599.00	1,599.00	3.45	3.45	90.00	0.00	30.00	30.00	23.10	6.90	4.348		
1,700.00	1,700.00	1,699.00	1,699.00	3.68	3.67	90.00	0.00	30.00	30.00	22.65	7.35	4.082		
1,800.00	1,800.00	1,799.00	1,799.00	3.90	3.90	90.00	0.00	30.00	30.00	22.20	7.80	3.846		
1,900.00	1,900.00	1,899.00	1,899.00	4.13	4.12	90.00	0.00	30.00	30.00	21.75	8.25	3.637		
2,000.00	2,000.00	1,999.00	1,999.00	4.35	4.35	90.00	0.00	30.00	30.00	21.30	8.70	3.449		
2,100.00	2,100.00	2,099.00	2,099.00	4.58	4.57	90.00	0.00	30.00	30.00	20.85	9.15	3.279		
2,200.00	2,200.00	2,199.00	2,199.00	4.80	4.80	90.00	0.00	30.00	30.00	20.40	9.60	3.126		
2,300.00	2,300.00	2,299.00	2,299.00	5.02	5.02	90.00	0.00	30.00	30.00	19.95	10.05	2.986		
2,400.00	2,400.00	2,399.00	2,399.00	5.25	5.25	90.00	0.00	30.00	30.00	19.50	10.50	2.858		
2,500.00	2,500.00	2,499.00	2,499.00	5.47	5.47	90.00	0.00	30.00	30.00	19.05	10.95	2.741		
2,600.00	2,600.00	2,599.00	2,599.00	5.70	5.70	90.00	0.00	30.00	30.00	18.60	11.40	2.633		
2,700.00	2,700.00	2,699.00	2,699.00	5.92	5.92	90.00	0.00	30.00	30.00	18.15	11.85	2.533		
2,800.00	2,800.00	2,799.00	2,799.00	6.15	6.15	90.00	0.00	30.00	30.00	17.71	12.29	2.440		
2,900.00	2,900.00	2,899.00	2,899.00	6.37	6.37	90.00	0.00	30.00	30.00	17.26	12.74	2.354		
3,000.00	3,000.00	2,999.00	2,999.00	6.60	6.60	90.00	0.00	30.00	30.00	16.81	13.19	2.274		
3,100.00	3,100.00	3,099.00	3,099.00	6.82	6.82	90.00	0.00	30.00	30.00	16.36	13.64	2.199		
3,200.00	3,200.00	3,199.00	3,199.00	7.05	7.05	90.00	0.00	30.00	30.00	15.91	14.09	2.129		
3,300.00	3,300.00	3,299.00	3,299.00	7.27	7.27	90.00	0.00	30.00	30.00	15.46	14.54	2.063		
3,400.00	3,400.00	3,399.00	3,399.00	7.50	7.49	90.00	0.00	30.00	30.00	15.01	14.99	2.001		
3,500.00	3,500.00	3,499.00	3,499.00	7.72	7.72	90.00	0.00	30.00	30.00	14.56	15.44	1.943		
3,600.00	3,600.00	3,599.00	3,599.00	7.95	7.94	90.00	0.00	30.00	30.00	14.11	15.89	1.888		
3,700.00	3,700.00	3,699.00	3,699.00	8.17	8.17	90.00	0.00	30.00	30.00	13.66	16.34	1.836		
3,800.00	3,800.00	3,799.00	3,799.00	8.40	8.39	90.00	0.00	30.00	30.00	13.21	16.79	1.787		
3,900.00	3,900.00	3,899.00	3,899.00	8.62	8.62	90.00	0.00	30.00	30.00	12.76	17.24	1.740		
4,000.00	4,000.00	3,999.00	3,999.00	8.85	8.84	90.00	0.00	30.00	30.00	12.31	17.69	1.696		
4,100.00	4,100.00	4,099.00	4,099.00	9.07	9.07	90.00	0.00	30.00	30.00	11.86	18.14	1.654		
4,200.00	4,200.00	4,199.00	4,199.00	9.30	9.29	90.00	0.00	30.00	30.00	11.41	18.59	1.614		
4,300.00	4,300.00	4,299.00	4,299.00	9.52	9.52	90.00	0.00	30.00	30.00	10.96	19.04	1.576		
4,406.46	4,406.46	4,405.46	4,405.46	9.76	9.76	90.00	0.00	30.00	30.00	10.48	19.52	1.537 CC		
4,500.00	4,499.98	4,498.98	4,498.98	9.95	9.97	-155.21	0.00	30.00	31.38	11.46	19.92	1.575		
4,600.00	4,599.85	4,598.85	4,598.85	10.14	10.19	-158.52	0.00	30.00	35.99	15.66	20.33	1.770		
4,656.46	4,656.15	4,655.15	4,655.15	10.24	10.32	-160.78	0.00	30.00	40.08	19.52	20.56	1.949		
4,700.00	4,699.52	4,698.52	4,698.52	10.33	10.42	-162.42	0.00	30.00	43.69	22.94	20.74	2.106		
4,800.00	4,799.14	4,798.14	4,798.14	10.52	10.64	-165.32	0.00	30.00	52.06	30.90	21.16	2.460		
4,900.00	4,898.76	4,897.76	4,897.76	10.72	10.86	-167.41	0.00	30.00	60.54	38.95	21.58	2.805		
5,000.00	4,998.38	4,997.38	4,997.38	10.92	11.09	-168.98	0.00	30.00	69.07	47.06	22.01	3.139		

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

Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 31, T 26 S, R 28- E
Site Error: 0.00 usft
Reference Well: Way South State Com 703H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 703H
TVD Reference: KB=29' @ 3111.00usft (Noram 23)
MD Reference: KB=29' @ 3111.00usft (Noram 23)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 702H - Wellbore #1 - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWID													Offset Well Error:	0.00 usft
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	
5,100.00	5,098.00	5,097.00	5,097.00	11.12	11.31	-170.21	0.00	30.00	77.64	55.21	22.43	3.461		
5,200.00	5,197.61	5,196.61	5,196.61	11.33	11.54	-171.20	0.00	30.00	86.25	63.38	22.87	3.772		
5,300.00	5,297.23	5,296.23	5,296.23	11.54	11.76	-172.00	0.00	30.00	94.87	71.57	23.30	4.072		
5,400.00	5,396.85	5,395.85	5,395.85	11.75	11.98	-172.67	0.00	30.00	103.51	79.77	23.74	4.361		
5,500.00	5,496.47	5,495.47	5,495.47	11.97	12.21	-173.24	0.00	30.00	112.16	87.98	24.18	4.639		
5,600.00	5,596.09	5,595.09	5,595.09	12.19	12.43	-173.73	0.00	30.00	120.82	96.20	24.62	4.908		
5,700.00	5,695.71	5,694.71	5,694.71	12.41	12.65	-174.15	0.00	30.00	129.48	104.42	25.06	5.167		
5,800.00	5,795.33	5,794.33	5,794.33	12.63	12.88	-174.52	0.00	30.00	138.16	112.65	25.51	5.416		
5,900.00	5,894.95	5,893.95	5,893.95	12.85	13.10	-174.84	0.00	30.00	146.84	120.88	25.96	5.657		
6,000.00	5,994.57	5,993.57	5,993.57	13.08	13.33	-175.13	0.00	30.00	155.52	129.11	26.41	5.889		
6,100.00	6,094.19	6,093.19	6,093.19	13.31	13.55	-175.39	0.00	30.00	164.21	137.35	26.86	6.114		
6,200.00	6,193.81	6,192.81	6,192.81	13.54	13.77	-175.62	0.00	30.00	172.89	145.58	27.31	6.330		
6,300.00	6,293.43	6,292.43	6,292.43	13.77	14.00	-175.83	0.00	30.00	181.59	153.82	27.77	6.539		
6,400.00	6,393.05	6,392.05	6,392.05	14.00	14.22	-176.02	0.00	30.00	190.28	162.05	28.23	6.741		
6,500.00	6,492.67	6,491.67	6,491.67	14.24	14.45	-176.20	0.00	30.00	198.98	170.29	28.69	6.936		
6,600.00	6,592.29	6,591.29	6,591.29	14.48	14.67	-176.36	0.00	30.00	207.67	178.53	29.15	7.125		
6,700.00	6,691.91	6,690.91	6,690.91	14.71	14.89	-176.50	0.00	30.00	216.37	186.76	29.61	7.308		
6,800.00	6,791.53	6,790.53	6,790.53	14.95	15.10	-176.67	-0.70	30.00	224.81	194.75	30.06	7.479		
6,900.00	6,891.15	6,890.15	6,890.15	15.19	15.28	-175.67	-4.81	30.00	232.00	201.53	30.47	7.614		
7,000.00	6,990.77	6,989.77	6,989.77	15.44	15.45	-174.11	-12.49	30.00	238.00	207.12	30.89	7.706		
7,100.00	7,090.38	7,089.38	7,089.38	15.68	15.62	-172.40	-21.17	30.00	243.78	212.48	31.30	7.789		
7,200.00	7,190.00	7,189.00	7,189.00	15.92	15.79	-170.77	-29.85	30.00	249.77	218.06	31.71	7.876		
7,300.00	7,289.62	7,288.62	7,288.62	16.17	15.96	-169.22	-38.52	30.00	255.94	223.82	32.13	7.966		
7,400.00	7,389.24	7,388.24	7,388.24	16.41	16.13	-167.74	-47.20	30.00	262.30	229.75	32.55	8.059		
7,500.00	7,488.86	7,487.86	7,487.86	16.66	16.31	-166.33	-55.88	30.00	268.83	235.85	32.97	8.153		
7,600.00	7,588.48	7,587.48	7,587.48	16.91	16.49	-164.99	-64.56	30.00	275.50	242.10	33.40	8.248		
7,700.00	7,688.10	7,687.10	7,687.10	17.16	16.68	-163.72	-73.24	30.00	282.33	248.49	33.84	8.344		
7,800.00	7,787.72	7,786.72	7,786.72	17.41	16.86	-162.50	-81.92	30.00	289.28	255.01	34.27	8.440		
7,900.00	7,887.34	7,886.34	7,886.34	17.66	17.05	-161.34	-90.59	30.00	296.36	261.65	34.71	8.537		
8,000.00	7,986.96	7,985.96	7,985.96	17.91	17.25	-160.24	-99.27	30.00	303.55	268.40	35.16	8.634		
8,100.00	8,086.58	8,085.58	8,085.58	18.16	17.44	-159.18	-107.95	30.00	310.86	275.26	35.60	8.731		
8,200.00	8,186.20	8,185.20	8,185.20	18.42	17.64	-158.18	-116.63	30.00	318.26	282.21	36.05	8.828		
8,300.00	8,285.82	8,284.82	8,284.82	18.68	17.83	-157.22	-125.31	30.00	325.75	289.26	36.49	8.915		
8,400.00	8,385.44	8,384.44	8,384.44	18.94	18.03	-156.09	-134.00	30.00	333.33	296.41	36.90	9.002		
8,500.00	8,485.06	8,484.06	8,484.06	19.20	18.24	-155.00	-142.68	30.00	341.00	303.66	37.30	9.089		
8,574.86	8,560.56	8,559.56	8,559.56	19.21	18.42	90.00	-146.85	30.00	331.10	293.48	37.62	8.801		
8,600.00	8,585.69	8,584.69	8,584.69	19.25	18.47	90.18	-147.92	30.00	331.10	293.37	37.73	8.776		
8,677.37	8,663.06	8,662.06	8,662.06	19.41	18.64	90.51	-149.82	30.00	331.11	293.06	38.05	8.702		
8,700.00	8,685.69	8,684.69	8,684.69	19.46	18.68	90.62	-149.99	30.00	331.12	292.97	38.14	8.681		
8,750.00	8,735.50	8,734.50	8,734.50	19.55	18.78	91.33	-150.00	30.00	331.19	292.85	38.34	8.639		
8,800.00	8,784.76	8,783.76	8,783.76	19.64	18.88	92.74	-150.00	30.00	331.49	292.97	38.52	8.605		
8,850.00	8,833.09	8,832.09	8,832.09	19.72	18.99	94.78	-150.00	30.00	332.36	293.65	38.71	8.587		
8,900.00	8,880.13	8,879.13	8,879.13	19.79	19.09	97.35	-149.91	30.00	334.25	295.37	38.88	8.596		
8,950.00	8,925.52	8,924.52	8,924.52	19.86	19.20	100.20	-146.71	30.00	337.20	298.15	39.05	8.635		
9,000.00	8,968.91	8,967.91	8,967.91	19.92	19.30	103.00	-138.51	30.00	341.05	301.83	39.21	8.698		
9,050.00	9,009.97	9,008.97	9,008.97	19.97	19.39	105.72	-124.80	30.00	345.66	306.30	39.36	8.782		
9,100.00	9,048.40	9,047.40	9,047.40	20.02	19.47	108.32	-105.03	29.99	350.91	311.41	39.50	8.884		
9,150.00	9,083.89	9,082.89	9,082.89	20.08	19.56	110.79	-78.67	29.99	356.61	316.97	39.64	8.997		
9,200.00	9,116.17	9,115.17	9,115.17	20.13	19.66	113.10	-45.23	29.98	362.54	322.75	39.79	9.111		
9,250.00	9,145.01	9,144.01	9,144.01	20.20	19.76	115.21	-4.32	29.98	368.47	328.51	39.96	9.221		
9,300.00	9,170.18	9,169.18	9,169.18	20.29	19.89	117.10	44.26	29.97	374.17	333.99	40.18	9.312		

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



Anticollision Report

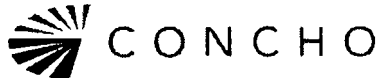


Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 31, T 26 S, R 28- E
Site Error: 0.00 usft
Reference Well: Way South State Com 703H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 703H
TVD Reference: KB=29' @ 3111.00usft (Noram 23)
MD Reference: KB=29' @ 3111.00usft (Noram 23)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 702H - Wellbore #1 - Plan #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 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	
9,350.00	9,191.49	9,433.70	9,343.60	20.42	20.06	118.73	100.42	29.96	379.37	338.88	40.49	9.370	
9,400.00	9,208.78	9,507.27	9,381.01	20.61	20.29	120.08	163.72	29.95	383.84	342.94	40.90	9.385	
9,450.00	9,221.92	9,582.91	9,410.69	20.84	20.60	121.11	233.24	29.94	387.36	345.92	41.43	9.349	
9,500.00	9,230.80	9,660.14	9,431.28	21.11	20.98	121.79	307.61	29.93	389.75	347.66	42.08	9.261	
9,550.00	9,235.36	9,738.34	9,441.75	21.42	21.43	122.12	385.04	29.92	390.89	348.04	42.85	9.123	
9,573.20	9,236.00	9,773.97	9,443.00	21.57	21.66	122.14	420.65	29.91	390.97	347.74	43.23	9.044	
9,600.00	9,236.20	9,800.77	9,443.18	21.76	21.84	122.14	447.45	29.91	390.96	347.36	43.60	8.967	
9,700.00	9,236.93	9,900.77	9,443.82	22.53	22.60	122.13	547.44	29.89	390.90	345.77	45.14	8.660	
9,800.00	9,237.65	10,000.77	9,444.46	23.43	23.48	122.12	647.44	29.88	390.85	343.94	46.91	8.332	
9,900.00	9,238.38	10,100.77	9,445.11	24.42	24.47	122.11	747.44	29.86	390.80	341.91	48.89	7.993	
10,000.00	9,239.11	10,200.77	9,445.75	25.51	25.55	122.10	847.44	29.85	390.75	339.70	51.05	7.654	
10,100.00	9,239.84	10,300.77	9,446.40	26.67	26.70	122.09	947.44	29.83	390.70	337.32	53.38	7.319	
10,200.00	9,240.56	10,400.77	9,447.04	27.91	27.93	122.08	1,047.43	29.82	390.64	334.80	55.84	6.995	
10,300.00	9,241.29	10,500.77	9,447.68	29.21	29.23	122.07	1,147.43	29.80	390.59	332.16	58.43	6.684	
10,400.00	9,242.02	10,600.77	9,448.33	30.56	30.57	122.06	1,247.43	29.79	390.54	329.41	61.13	6.389	
10,500.00	9,242.75	10,700.77	9,448.97	31.96	31.97	122.05	1,347.43	29.77	390.49	326.57	63.92	6.109	
10,600.00	9,243.47	10,800.77	9,449.61	33.39	33.40	122.04	1,447.42	29.76	390.44	323.64	66.80	5.845	
10,700.00	9,244.20	10,900.77	9,450.26	34.87	34.87	122.03	1,547.42	29.74	390.38	320.64	69.74	5.598	
10,800.00	9,244.93	11,000.77	9,450.90	36.37	36.38	122.02	1,647.42	29.73	390.33	317.58	72.75	5.365	
10,900.00	9,245.66	11,100.77	9,451.54	37.91	37.91	122.01	1,747.42	29.71	390.28	314.46	75.82	5.148	
11,000.00	9,246.38	11,200.77	9,452.19	39.47	39.47	122.00	1,847.42	29.70	390.23	311.30	78.93	4.944	
11,100.00	9,247.11	11,300.77	9,452.83	41.05	41.04	121.99	1,947.41	29.68	390.18	308.08	82.09	4.753	
11,200.00	9,247.84	11,400.77	9,453.47	42.65	42.64	121.98	2,047.41	29.67	390.12	304.83	85.29	4.574	
11,300.00	9,248.57	11,500.77	9,454.12	44.26	44.26	121.97	2,147.41	29.65	390.07	301.55	88.52	4.406	
11,400.00	9,249.30	11,600.77	9,454.76	45.90	45.89	121.96	2,247.41	29.64	390.02	298.23	91.79	4.249	
11,500.00	9,250.02	11,700.77	9,455.41	47.54	47.54	121.95	2,347.41	29.62	389.97	294.89	95.08	4.101	
11,600.00	9,250.75	11,800.77	9,456.05	49.20	49.19	121.94	2,447.40	29.61	389.92	291.52	98.40	3.963	
11,700.00	9,251.48	11,900.77	9,456.69	50.87	50.86	121.93	2,547.40	29.59	389.86	288.13	101.74	3.832	
11,800.00	9,252.21	12,000.77	9,457.34	52.55	52.54	121.92	2,647.40	29.58	389.81	284.71	105.10	3.709	
11,900.00	9,252.93	12,100.77	9,457.98	54.24	54.23	121.91	2,747.40	29.56	389.76	281.28	108.48	3.593	
12,000.00	9,253.66	12,200.77	9,458.62	55.94	55.93	121.90	2,847.40	29.55	389.71	277.84	111.87	3.483	
12,100.00	9,254.39	12,300.77	9,459.27	57.65	57.64	121.90	2,947.39	29.53	389.66	274.37	115.28	3.380	
12,200.00	9,255.12	12,400.77	9,459.91	59.36	59.35	121.89	3,047.39	29.52	389.61	270.90	118.71	3.282	
12,300.00	9,255.84	12,500.77	9,460.55	61.08	61.07	121.88	3,147.39	29.50	389.55	267.40	122.15	3.189	
12,400.00	9,256.57	12,600.77	9,461.20	62.81	62.79	121.87	3,247.39	29.49	389.50	263.90	125.60	3.101	
12,500.00	9,257.30	12,700.77	9,461.84	64.54	64.52	121.86	3,347.38	29.47	389.45	260.39	129.06	3.018	
12,600.00	9,258.03	12,800.77	9,462.48	66.27	66.26	121.85	3,447.38	29.45	389.40	256.87	132.53	2.938	
12,700.00	9,258.75	12,900.77	9,463.13	68.01	68.00	121.84	3,547.38	29.44	389.35	253.33	136.01	2.863	
12,800.00	9,259.48	13,000.77	9,463.77	69.76	69.74	121.83	3,647.38	29.42	389.29	249.79	139.50	2.791	
12,900.00	9,260.21	13,100.77	9,464.41	71.51	71.49	121.82	3,747.38	29.41	389.24	246.24	143.00	2.722	
13,000.00	9,260.94	13,200.77	9,465.06	73.26	73.24	121.81	3,847.37	29.39	389.19	242.69	146.50	2.657	
13,100.00	9,261.66	13,300.77	9,465.70	75.02	75.00	121.80	3,947.37	29.38	389.14	239.12	150.02	2.594	
13,200.00	9,262.39	13,400.77	9,466.35	76.77	76.76	121.79	4,047.37	29.36	389.09	235.55	153.53	2.534	
13,300.00	9,263.12	13,500.77	9,466.99	78.54	78.52	121.78	4,147.37	29.35	389.04	231.98	157.06	2.477	
13,400.00	9,263.85	13,600.77	9,467.63	80.30	80.29	121.77	4,247.37	29.33	388.98	228.40	160.59	2.422	
13,500.00	9,264.58	13,700.77	9,468.28	82.07	82.05	121.76	4,347.36	29.32	388.93	224.81	164.12	2.370	
13,600.00	9,265.30	13,800.77	9,468.92	83.84	83.82	121.75	4,447.36	29.30	388.88	221.22	167.66	2.319	
13,700.00	9,266.03	13,900.77	9,469.56	85.61	85.59	121.74	4,547.36	29.29	388.83	217.62	171.21	2.271	
13,800.00	9,266.76	14,000.77	9,470.21	87.39	87.37	121.73	4,647.36	29.27	388.78	214.02	174.75	2.225	
13,900.00	9,267.49	14,100.77	9,470.85	89.16	89.14	121.72	4,747.36	29.26	388.73	210.42	178.31	2.180	
14,000.00	9,268.21	14,200.77	9,471.49	90.94	90.92	121.71	4,847.35	29.24	388.67	206.81	181.86	2.137	
14,100.00	9,268.94	14,300.77	9,472.14	92.72	92.70	121.70	4,947.35	29.23	388.62	203.20	185.42	2.096	

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



Anticollision Report



Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 31, T 26 S, R 28- E
Site Error: 0.00 usft
Reference Well: Way South State Com 703H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 703H
TVD Reference: KB=29' @ 3111.00usft (Noram 23)
MD Reference: KB=29' @ 3111.00usft (Noram 23)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 702H - Wellbore #1 - Plan #1														Offset Site Error:	0.00 usft
Survey Program: 0-MWDD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)										
14,200.00	9,269.67	14,400.77	9,472.78	94.50	94.48	121.69	5,047.35	29.21	388.57	199.58	188.99	2.056			
14,300.00	9,270.40	14,500.77	9,473.42	96.29	96.27	121.68	5,147.35	29.20	388.52	195.97	192.55	2.018			
14,400.00	9,271.12	14,600.77	9,474.07	98.07	98.05	121.67	5,247.34	29.18	388.47	192.35	196.12	1.981			
14,500.00	9,271.85	14,700.77	9,474.71	99.86	99.84	121.66	5,347.34	29.17	388.42	188.72	199.70	1.945			
14,600.00	9,272.58	14,800.77	9,475.36	101.64	101.63	121.65	5,447.34	29.15	388.36	185.09	203.27	1.911			
14,700.00	9,273.31	14,900.77	9,476.00	103.43	103.42	121.64	5,547.34	29.14	388.31	181.46	206.85	1.877			
14,800.00	9,274.03	15,000.77	9,476.64	105.22	105.21	121.63	5,647.34	29.12	388.26	177.83	210.43	1.845			
14,900.00	9,274.76	15,100.77	9,477.29	107.01	107.00	121.62	5,747.33	29.11	388.21	174.20	214.01	1.814			
15,000.00	9,275.49	15,200.77	9,477.93	108.81	108.79	121.61	5,847.33	29.09	388.16	170.56	217.60	1.784			
15,100.00	9,276.22	15,300.77	9,478.57	110.60	110.58	121.60	5,947.33	29.08	388.11	166.92	221.18	1.755			
15,200.00	9,276.95	15,400.77	9,479.22	112.39	112.38	121.59	6,047.33	29.06	388.06	163.28	224.77	1.726			
15,300.00	9,277.67	15,500.77	9,479.86	114.19	114.17	121.58	6,147.33	29.05	388.00	159.64	228.36	1.699			
15,400.00	9,278.40	15,600.77	9,480.50	115.99	115.97	121.57	6,247.32	29.03	387.95	156.00	231.96	1.673			
15,500.00	9,279.13	15,700.77	9,481.15	117.78	117.77	121.56	6,347.32	29.02	387.90	152.35	235.55	1.647			
15,600.00	9,279.86	15,800.77	9,481.79	119.58	119.56	121.55	6,447.32	29.00	387.85	148.70	239.15	1.622			
15,700.00	9,280.58	15,900.77	9,482.43	121.38	121.36	121.54	6,547.32	28.98	387.80	145.06	242.74	1.598			
15,800.00	9,281.31	16,000.77	9,483.08	123.18	123.16	121.53	6,647.32	28.97	387.75	141.40	246.34	1.574			
15,900.00	9,282.04	16,100.77	9,483.72	124.98	124.96	121.52	6,747.31	28.95	387.70	137.75	249.94	1.551			
16,000.00	9,282.77	16,200.77	9,484.37	126.78	126.76	121.51	6,847.31	28.94	387.64	134.10	253.54	1.529			
16,100.00	9,283.49	16,300.77	9,485.01	128.58	128.57	121.50	6,947.31	28.92	387.59	130.44	257.15	1.507			
16,200.00	9,284.22	16,400.77	9,485.65	130.38	130.37	121.49	7,047.31	28.91	387.54	126.79	260.75	1.486 Level 3			
16,300.00	9,284.95	16,500.77	9,486.30	132.19	132.17	121.48	7,147.30	28.89	387.49	123.13	264.36	1.466 Level 3			
16,400.00	9,285.68	16,600.77	9,486.94	133.99	133.97	121.47	7,247.30	28.88	387.44	119.47	267.97	1.446 Level 3			
16,500.00	9,286.40	16,700.77	9,487.58	135.80	135.78	121.46	7,347.30	28.86	387.39	115.81	271.57	1.426 Level 3			
16,600.00	9,287.13	16,800.77	9,488.23	137.60	137.58	121.45	7,447.30	28.85	387.34	112.15	275.18	1.408 Level 3			
16,700.00	9,287.86	16,900.77	9,488.87	139.40	139.39	121.44	7,547.30	28.83	387.28	108.49	278.79	1.389 Level 3			
16,800.00	9,288.59	17,000.77	9,489.51	141.21	141.19	121.43	7,647.29	28.82	387.23	104.83	282.40	1.371 Level 3			
16,900.00	9,289.31	17,100.77	9,490.16	143.02	143.00	121.42	7,747.29	28.80	387.18	101.17	286.02	1.354 Level 3			
17,000.00	9,290.04	17,200.77	9,490.80	144.82	144.81	121.41	7,847.29	28.79	387.13	97.50	289.63	1.337 Level 3			
17,100.00	9,290.77	17,300.77	9,491.44	146.63	146.61	121.40	7,947.29	28.77	387.08	93.84	293.24	1.320 Level 3			
17,200.00	9,291.50	17,400.77	9,492.09	148.44	148.42	121.39	8,047.29	28.76	387.03	90.17	296.86	1.304 Level 3			
17,300.00	9,292.23	17,500.77	9,492.73	150.25	150.23	121.38	8,147.28	28.74	386.98	86.50	300.47	1.288 Level 3			
17,400.00	9,292.95	17,600.77	9,493.37	152.05	152.04	121.37	8,247.28	28.73	386.93	82.84	304.09	1.272 Level 3			
17,500.00	9,293.68	17,700.77	9,494.02	153.86	153.85	121.36	8,347.28	28.71	386.87	79.17	307.71	1.257 Level 3			
17,600.00	9,294.41	17,800.77	9,494.66	155.67	155.65	121.35	8,447.28	28.70	386.82	75.50	311.33	1.243 Level 2			
17,700.00	9,295.14	17,900.77	9,495.31	157.48	157.46	121.34	8,547.28	28.68	386.77	71.83	314.94	1.228 Level 2			
17,800.00	9,295.86	18,000.77	9,495.95	159.29	159.27	121.33	8,647.27	28.67	386.72	68.16	318.56	1.214 Level 2			
17,900.00	9,296.59	18,100.77	9,496.59	161.10	161.08	121.32	8,747.27	28.65	386.67	64.49	322.18	1.200 Level 2			
18,000.00	9,297.32	18,200.77	9,497.24	162.91	162.89	121.31	8,847.27	28.64	386.62	60.81	325.80	1.187 Level 2			
18,100.00	9,298.05	18,300.77	9,497.88	164.72	164.70	121.30	8,947.27	28.62	386.57	57.14	329.43	1.173 Level 2			
18,200.00	9,298.77	18,400.77	9,498.52	166.53	166.52	121.29	9,047.26	28.61	386.52	53.47	333.05	1.161 Level 2			
18,300.00	9,299.50	18,500.77	9,499.17	168.34	168.33	121.28	9,147.26	28.59	386.47	49.80	336.67	1.148 Level 2			
18,400.00	9,300.23	18,600.77	9,499.81	170.15	170.14	121.27	9,247.26	28.58	386.41	46.12	340.29	1.136 Level 2			
18,500.00	9,300.96	18,700.77	9,500.45	171.97	171.95	121.26	9,347.26	28.56	386.36	42.45	343.92	1.123 Level 2			
18,600.00	9,301.68	18,800.77	9,501.10	173.78	173.76	121.25	9,447.26	28.55	386.31	38.77	347.54	1.112 Level 2			
18,700.00	9,302.41	18,900.77	9,501.74	175.59	175.57	121.24	9,547.25	28.53	386.26	35.10	351.17	1.100 Level 2			
18,800.00	9,303.14	19,000.77	9,502.38	177.40	177.39	121.23	9,647.25	28.51	386.21	31.42	354.79	1.089 Level 2			
18,900.00	9,303.87	19,100.77	9,503.03	179.22	179.20	121.22	9,747.25	28.50	386.16	27.74	358.42	1.077 Level 2			
19,000.00	9,304.59	19,200.77	9,503.67	181.03	181.01	121.21	9,847.25	28.48	386.11	24.07	362.04	1.066 Level 2			
19,100.00	9,305.32	19,300.77	9,504.32	182.84	182.83	121.20	9,947.25	28.47	386.06	20.39	365.67	1.056 Level 2			
19,200.00	9,306.05	19,400.77	9,504.96	184.66	184.64	121.19	10,047.24	28.45	386.01	16.71	369.30	1.045 Level 2			
19,300.00	9,306.78	19,500.77	9,505.60	186.47	186.45	121.18	10,147.24	28.44	385.95	13.03	372.92	1.035 Level 2			

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

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Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

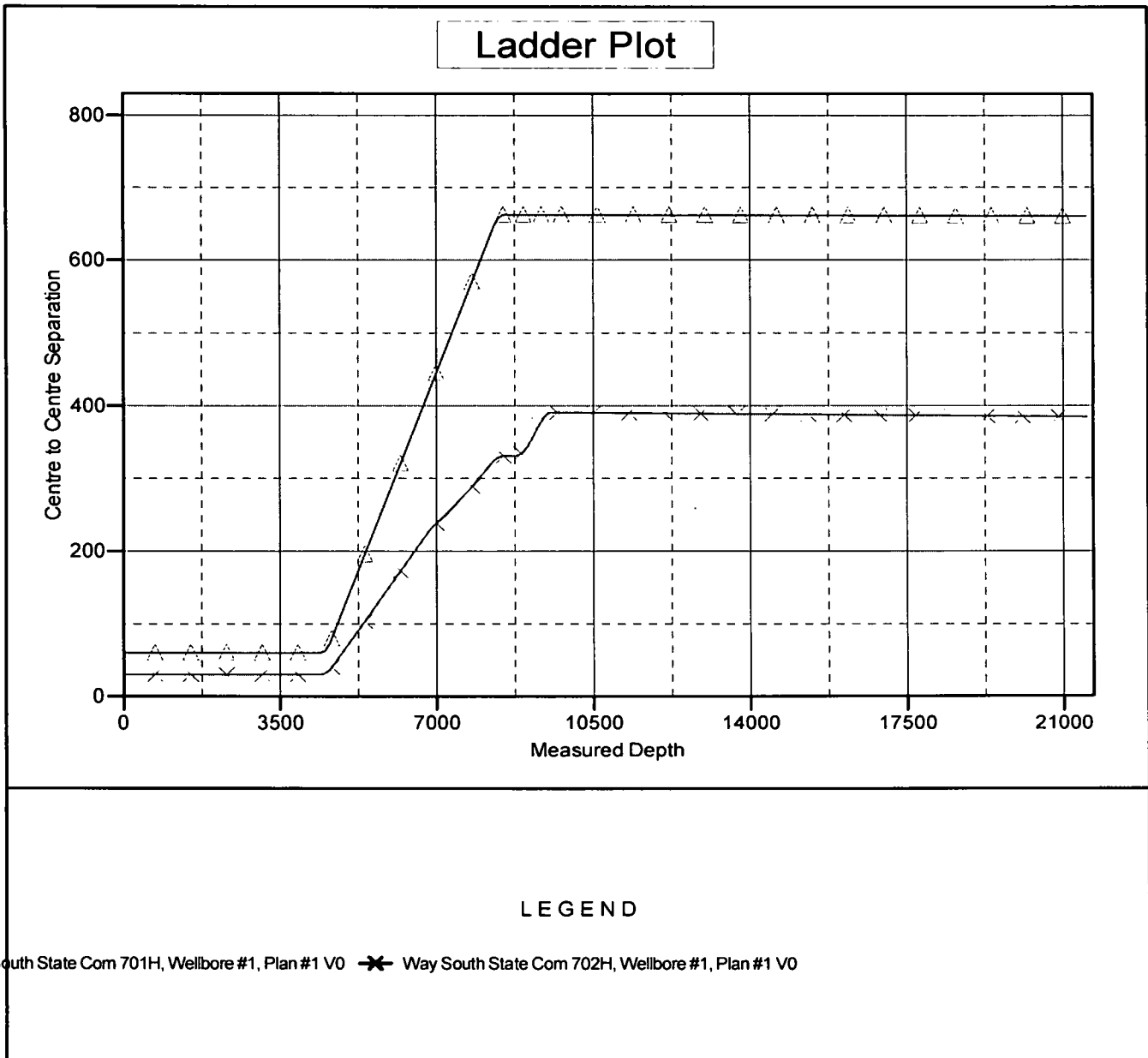
Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 702H - Wellbore #1 - Plan #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured 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	
19,400.00	9,307.51	19,600.77	9,506.25	188.28	188.27	121.17	10,247.24	28.42	385.90	9.35	376.55	1.025 Level 2	
19,500.00	9,308.23	19,700.77	9,506.89	190.10	190.08	121.16	10,347.24	28.41	385.85	5.67	380.18	1.015 Level 2	
19,600.00	9,308.96	19,800.77	9,507.53	191.91	191.90	121.15	10,447.24	28.39	385.80	1.99	383.81	1.005 Level 2	
19,700.00	9,309.69	19,900.77	9,508.18	193.73	193.71	121.14	10,547.23	28.38	385.75	-1.69	387.44	0.996 Level 1	
19,800.00	9,310.42	20,000.77	9,508.82	195.54	195.53	121.13	10,647.23	28.36	385.70	-5.37	391.07	0.986 Level 1	
19,900.00	9,311.14	20,100.77	9,509.46	197.36	197.34	121.12	10,747.23	28.35	385.65	-9.05	394.70	0.977 Level 1	
20,000.00	9,311.87	20,200.77	9,510.11	199.17	199.16	121.11	10,847.23	28.33	385.60	-12.73	398.33	0.968 Level 1	
20,100.00	9,312.60	20,300.77	9,510.75	200.99	200.97	121.10	10,947.22	28.32	385.55	-16.41	401.96	0.959 Level 1	
20,200.00	9,313.33	20,400.77	9,511.39	202.80	202.79	121.09	11,047.22	28.30	385.50	-20.09	405.59	0.950 Level 1	
20,300.00	9,314.05	20,500.77	9,512.04	204.62	204.60	121.08	11,147.22	28.29	385.44	-23.77	409.22	0.942 Level 1	
20,400.00	9,314.78	20,600.77	9,512.68	206.43	206.42	121.07	11,247.22	28.27	385.39	-27.46	412.85	0.933 Level 1	
20,500.00	9,315.51	20,700.77	9,513.33	208.25	208.23	121.06	11,347.22	28.26	385.34	-31.14	416.48	0.925 Level 1	
20,600.00	9,316.24	20,800.77	9,513.97	210.07	210.05	121.05	11,447.21	28.24	385.29	-34.82	420.11	0.917 Level 1	
20,700.00	9,316.96	20,900.77	9,514.61	211.88	211.87	121.04	11,547.21	28.23	385.24	-38.51	423.75	0.909 Level 1	
20,800.00	9,317.69	21,000.77	9,515.26	213.70	213.68	121.03	11,647.21	28.21	385.19	-42.19	427.38	0.901 Level 1	
20,900.00	9,318.42	21,100.77	9,515.90	215.51	215.50	121.02	11,747.21	28.20	385.14	-45.87	431.01	0.894 Level 1	
21,000.00	9,319.15	21,200.77	9,516.54	217.33	217.31	121.01	11,847.21	28.18	385.09	-49.56	434.65	0.886 Level 1	
21,100.00	9,319.88	21,300.77	9,517.19	219.15	219.13	121.00	11,947.20	28.17	385.04	-53.24	438.28	0.879 Level 1	
21,200.00	9,320.60	21,400.77	9,517.83	220.96	220.95	120.99	12,047.20	28.15	384.99	-56.93	441.91	0.871 Level 1	
21,300.00	9,321.33	21,500.77	9,518.47	222.78	222.77	120.98	12,147.20	28.14	384.94	-60.61	445.55	0.864 Level 1	
21,400.00	9,322.06	21,600.77	9,519.12	224.60	224.58	120.97	12,247.20	28.12	384.89	-64.29	449.18	0.857 Level 1	
21,500.00	9,322.79	21,700.77	9,519.76	226.42	226.40	120.96	12,347.20	28.11	384.84	-67.98	452.81	0.850 Level 1	
21,529.48	9,323.00	21,730.25	9,519.95	226.95	226.83	120.96	12,376.68	28.10	384.82	-68.96	453.79	0.848 Level 1, ES, SF	

Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 31, T 26 S, R 28- E
Site Error: 0.00 usft
Reference Well: Way South State Com 703H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 703H
TVD Reference: KB=29' @ 3111.00usft (Noram 23)
MD Reference: KB=29' @ 3111.00usft (Noram 23)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB=29' @ 3111.00usft (Noram 23)
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.33334

Coordinates are relative to: Way South State Com 703H
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Grid Convergence at Surface is: 0.11°



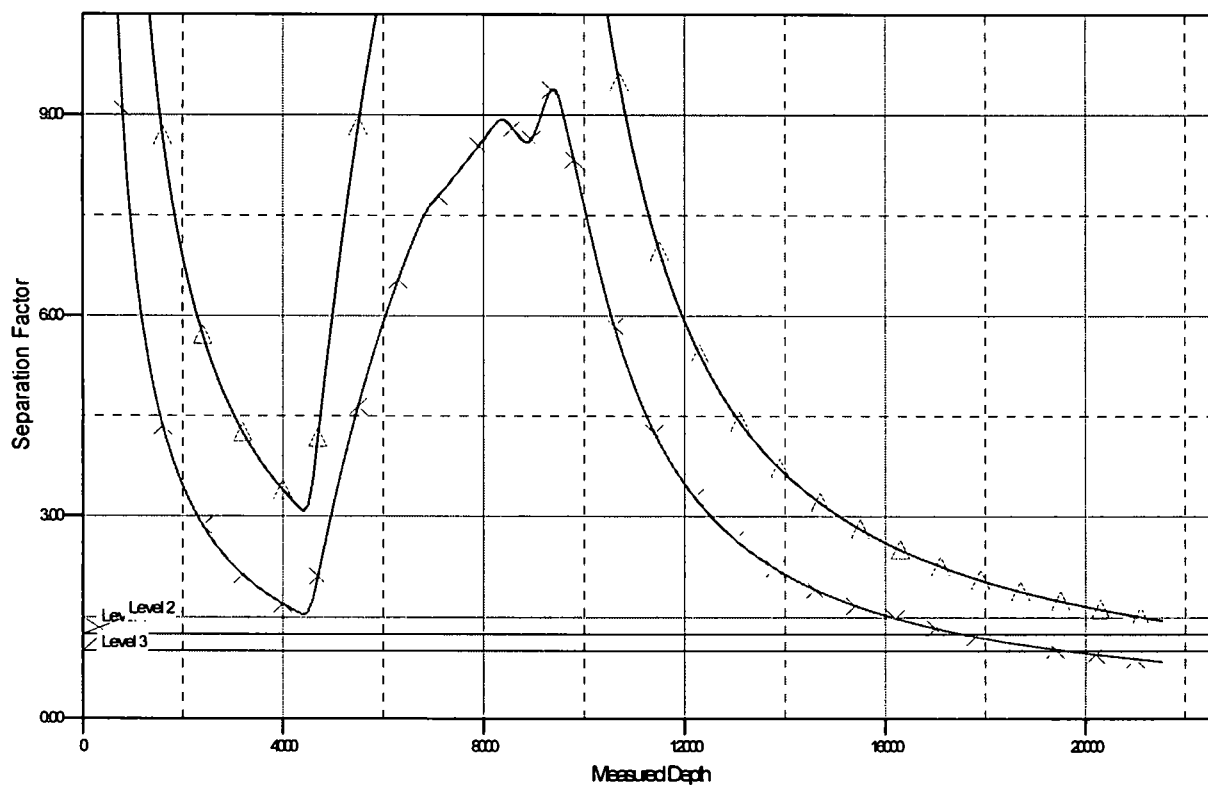
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Separation Factor Plot



LEGEND

South State Com 701H, Wellbore #1, Plan #1 V0  Way South State Com 702H, Wellbore #1, Plan #1 V0