



CONCHO

NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 12 2018

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COG Operating L L C

Eddy County, NM (NAD 27 NME)

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

Way South State Com 701H

Wellbore #1

Plan #1

30-015-45541

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 701H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 701H
TVD Reference: KB=29 @ 3110.00usft (Noram 23)
MD Reference: KB=29 @ 3110.00usft (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	21,559.45	Plan #1 (Wellbore #1)	MWD	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. 31, T 26 S, R 28- E						
Way South State Com 702H - Wellbore #1 - Plan #1	4,405.84	4,405.84	29.90	10.38	1.532	CC
Way South State Com 702H - Wellbore #1 - Plan #1	21,559.45	21,737.97	377.89	-76.27	0.832	Level 1, ES, SF
Way South State Com 703H - Wellbore #1 - Plan #1	4,370.43	4,371.43	59.90	40.54	3.094	CC
Way South State Com 703H - Wellbore #1 - Plan #1	4,405.84	4,406.46	59.90	40.38	3.069	ES
Way South State Com 703H - Wellbore #1 - Plan #1	21,559.45	21,529.48	660.28	206.12	1.454	Level 3, SF

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 Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-29.90	29.90				
100.00	100.00	100.00	100.00	0.08	0.08	-90.00	0.00	-29.90	29.90	29.74	0.16	187.362	
200.00	200.00	200.00	200.00	0.30	0.30	-90.00	0.00	-29.90	29.90	29.29	0.61	49.088	
300.00	300.00	300.00	300.00	0.53	0.53	-90.00	0.00	-29.90	29.90	28.84	1.06	28.244	
400.00	400.00	400.00	400.00	0.75	0.75	-90.00	0.00	-29.90	29.90	28.39	1.51	19.825	
500.00	500.00	500.00	500.00	0.98	0.98	-90.00	0.00	-29.90	29.90	27.94	1.96	15.273	
600.00	600.00	600.00	600.00	1.20	1.20	-90.00	0.00	-29.90	29.90	27.49	2.41	12.421	
700.00	700.00	700.00	700.00	1.43	1.43	-90.00	0.00	-29.90	29.90	27.04	2.86	10.466	
800.00	800.00	800.00	800.00	1.65	1.65	-90.00	0.00	-29.90	29.90	26.59	3.31	9.043	
900.00	900.00	900.00	900.00	1.88	1.88	-90.00	0.00	-29.90	29.90	26.14	3.76	7.961	
1,000.00	1,000.00	1,000.00	1,000.00	2.10	2.10	-90.00	0.00	-29.90	29.90	25.69	4.21	7.110	
1,100.00	1,100.00	1,100.00	1,100.00	2.33	2.33	-90.00	0.00	-29.90	29.90	25.25	4.65	6.423	
1,200.00	1,200.00	1,200.00	1,200.00	2.55	2.55	-90.00	0.00	-29.90	29.90	24.80	5.10	5.858	
1,300.00	1,300.00	1,300.00	1,300.00	2.78	2.78	-90.00	0.00	-29.90	29.90	24.35	5.55	5.384	
1,400.00	1,400.00	1,400.00	1,400.00	3.00	3.00	-90.00	0.00	-29.90	29.90	23.90	6.00	4.980	
1,500.00	1,500.00	1,500.00	1,500.00	3.23	3.23	-90.00	0.00	-29.90	29.90	23.45	6.45	4.633	
1,600.00	1,600.00	1,600.00	1,600.00	3.45	3.45	-90.00	0.00	-29.90	29.90	23.00	6.90	4.332	
1,700.00	1,700.00	1,700.00	1,700.00	3.68	3.68	-90.00	0.00	-29.90	29.90	22.55	7.35	4.067	
1,800.00	1,800.00	1,800.00	1,800.00	3.90	3.90	-90.00	0.00	-29.90	29.90	22.10	7.80	3.833	
1,900.00	1,900.00	1,900.00	1,900.00	4.13	4.13	-90.00	0.00	-29.90	29.90	21.65	8.25	3.624	
2,000.00	2,000.00	2,000.00	2,000.00	4.35	4.35	-90.00	0.00	-29.90	29.90	21.20	8.70	3.437	
2,100.00	2,100.00	2,100.00	2,100.00	4.58	4.58	-90.00	0.00	-29.90	29.90	20.75	9.15	3.268	

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



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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		
2,200.00	2,200.00	2,200.00	2,200.00	4.80	4.80	-90.00	0.00	-29.90	29.90	20.30	9.60	3.115		
2,300.00	2,300.00	2,300.00	2,300.00	5.02	5.02	-90.00	0.00	-29.90	29.90	19.85	10.05	2.975		
2,400.00	2,400.00	2,400.00	2,400.00	5.25	5.25	-90.00	0.00	-29.90	29.90	19.40	10.50	2.848		
2,500.00	2,500.00	2,500.00	2,500.00	5.47	5.47	-90.00	0.00	-29.90	29.90	18.95	10.95	2.731		
2,600.00	2,600.00	2,600.00	2,600.00	5.70	5.70	-90.00	0.00	-29.90	29.90	18.50	11.40	2.623		
2,700.00	2,700.00	2,700.00	2,700.00	5.92	5.92	-90.00	0.00	-29.90	29.90	18.05	11.85	2.524		
2,800.00	2,800.00	2,800.00	2,800.00	6.15	6.15	-90.00	0.00	-29.90	29.90	17.60	12.30	2.431		
2,900.00	2,900.00	2,900.00	2,900.00	6.37	6.37	-90.00	0.00	-29.90	29.90	17.15	12.75	2.346		
3,000.00	3,000.00	3,000.00	3,000.00	6.60	6.60	-90.00	0.00	-29.90	29.90	16.70	13.20	2.266		
3,100.00	3,100.00	3,100.00	3,100.00	6.82	6.82	-90.00	0.00	-29.90	29.90	16.25	13.65	2.191		
3,200.00	3,200.00	3,200.00	3,200.00	7.05	7.05	-90.00	0.00	-29.90	29.90	15.80	14.10	2.121		
3,300.00	3,300.00	3,300.00	3,300.00	7.27	7.27	-90.00	0.00	-29.90	29.90	15.36	14.54	2.056		
3,400.00	3,400.00	3,400.00	3,400.00	7.50	7.50	-90.00	0.00	-29.90	29.90	14.91	14.99	1.994		
3,500.00	3,500.00	3,500.00	3,500.00	7.72	7.72	-90.00	0.00	-29.90	29.90	14.46	15.44	1.936		
3,600.00	3,600.00	3,600.00	3,600.00	7.95	7.95	-90.00	0.00	-29.90	29.90	14.01	15.89	1.881		
3,700.00	3,700.00	3,700.00	3,700.00	8.17	8.17	-90.00	0.00	-29.90	29.90	13.56	16.34	1.830		
3,800.00	3,800.00	3,800.00	3,800.00	8.40	8.40	-90.00	0.00	-29.90	29.90	13.11	16.79	1.781		
3,900.00	3,900.00	3,900.00	3,900.00	8.62	8.62	-90.00	0.00	-29.90	29.90	12.66	17.24	1.734		
4,000.00	4,000.00	4,000.00	4,000.00	8.85	8.85	-90.00	0.00	-29.90	29.90	12.21	17.69	1.690		
4,100.00	4,100.00	4,100.00	4,100.00	9.07	9.07	-90.00	0.00	-29.90	29.90	11.76	18.14	1.648		
4,200.00	4,200.00	4,200.00	4,200.00	9.30	9.30	-90.00	0.00	-29.90	29.90	11.31	18.59	1.608		
4,300.00	4,300.00	4,300.00	4,300.00	9.52	9.52	-90.00	0.00	-29.90	29.90	10.86	19.04	1.570		
4,405.84	4,405.84	4,405.84	4,405.84	9.76	9.76	-90.00	0.00	-29.90	29.90	10.38	19.52	1.532 CC		
4,500.00	4,499.98	4,499.98	4,499.98	9.95	9.97	155.23	0.00	-29.90	31.30	11.38	19.92	1.571		
4,600.00	4,599.85	4,599.85	4,599.85	10.14	10.19	158.56	0.00	-29.90	35.93	15.60	20.33	1.767		
4,655.84	4,655.52	4,655.52	4,655.52	10.24	10.32	160.80	0.00	-29.90	39.98	19.42	20.56	1.945		
4,700.00	4,699.51	4,699.51	4,699.51	10.33	10.42	162.46	0.00	-29.90	43.64	22.89	20.75	2.104		
4,800.00	4,799.13	4,799.13	4,799.13	10.52	10.64	165.35	0.00	-29.90	52.02	30.85	21.16	2.458		
4,900.00	4,898.75	4,898.75	4,898.75	10.72	10.87	167.44	0.00	-29.90	60.49	38.91	21.59	2.802		
5,000.00	4,998.37	4,998.37	4,998.37	10.92	11.09	169.01	0.00	-29.90	69.03	47.02	22.01	3.136		
5,100.00	5,097.99	5,097.99	5,097.99	11.13	11.31	170.24	0.00	-29.90	77.60	55.16	22.44	3.458		
5,200.00	5,197.61	5,197.61	5,197.61	11.33	11.54	171.22	0.00	-29.90	86.20	63.33	22.87	3.769		
5,300.00	5,297.23	5,297.23	5,297.23	11.54	11.76	172.03	0.00	-29.90	94.83	71.52	23.31	4.069		
5,400.00	5,396.85	5,396.85	5,396.85	11.76	11.99	172.69	0.00	-29.90	103.47	79.72	23.74	4.358		
5,500.00	5,496.47	5,496.47	5,496.47	11.97	12.21	173.26	0.00	-29.90	112.12	87.94	24.18	4.636		
5,600.00	5,596.09	5,596.09	5,596.09	12.19	12.43	173.75	0.00	-29.90	120.78	96.15	24.62	4.905		
5,700.00	5,695.71	5,695.71	5,695.71	12.41	12.66	174.17	0.00	-29.90	129.45	104.38	25.07	5.164		
5,800.00	5,795.33	5,795.33	5,795.33	12.63	12.88	174.53	0.00	-29.90	138.12	112.60	25.51	5.413		
5,900.00	5,894.95	5,894.95	5,894.95	12.86	13.10	174.86	0.00	-29.90	146.80	120.83	25.96	5.654		
6,000.00	5,994.57	5,994.57	5,994.57	13.08	13.33	175.15	0.00	-29.90	155.48	129.07	26.41	5.886		
6,100.00	6,094.19	6,094.19	6,094.19	13.31	13.55	175.40	0.00	-29.90	164.17	137.30	26.87	6.111		
6,200.00	6,193.81	6,193.81	6,193.81	13.54	13.78	175.63	0.00	-29.90	172.86	145.54	27.32	6.327		
6,300.00	6,293.43	6,293.43	6,293.43	13.77	14.00	175.84	0.00	-29.90	181.55	153.77	27.78	6.536		
6,400.00	6,393.05	6,393.05	6,393.05	14.01	14.22	176.03	0.00	-29.90	190.24	162.01	28.23	6.738		
6,500.00	6,492.67	6,492.67	6,492.67	14.24	14.45	176.21	0.00	-29.90	198.94	170.25	28.69	6.934		
6,600.00	6,592.28	6,592.28	6,592.28	14.48	14.67	176.37	0.00	-29.90	207.63	178.48	29.15	7.123		
6,700.00	6,691.90	6,691.90	6,691.90	14.72	14.90	176.51	0.00	-29.90	216.33	186.72	29.61	7.305		
6,800.00	6,791.52	6,793.46	6,793.46	14.96	15.11	176.48	-0.72	-29.90	224.76	194.70	30.06	7.477		
6,900.00	6,891.14	6,896.24	6,896.15	15.20	15.28	175.67	-4.87	-29.90	231.94	201.47	30.48	7.611		
7,000.00	6,990.76	6,998.31	6,997.92	15.44	15.45	174.10	-12.58	-29.90	237.93	207.04	30.89	7.703		
7,100.00	7,090.38	7,097.88	7,097.11	15.68	15.62	172.39	-21.25	-29.90	243.71	212.41	31.30	7.786		
7,200.00	7,190.00	7,197.45	7,196.31	15.92	15.79	170.76	-29.93	-29.90	249.70	217.99	31.71	7.874		

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Offset Design													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD													Offset Well Error: 0.00 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	
7,300.00	7,289.62	7,297.03	7,295.50	16.17	15.96	169.21	-38.61	-29.90	255.88	223.75	32.13	7.964		
7,400.00	7,389.24	7,396.60	7,394.69	16.41	16.13	167.73	-47.29	-29.90	262.24	229.69	32.55	8.057		
7,500.00	7,488.86	7,496.17	7,493.89	16.66	16.31	166.32	-55.97	-29.90	268.76	235.79	32.97	8.151		
7,600.00	7,588.48	7,595.75	7,593.08	16.91	16.49	164.98	-64.65	-29.90	275.44	242.04	33.40	8.246		
7,700.00	7,688.10	7,695.32	7,692.28	17.16	16.68	163.71	-73.32	-29.90	282.26	248.43	33.84	8.342		
7,800.00	7,787.72	7,794.89	7,791.47	17.41	16.87	162.49	-82.00	-29.90	289.22	254.95	34.27	8.439		
7,900.00	7,887.34	7,894.47	7,890.67	17.66	17.06	161.33	-90.68	-29.90	296.30	261.59	34.71	8.536		
8,000.00	7,986.96	7,994.04	7,989.86	17.91	17.25	160.23	-99.36	-29.90	303.50	268.34	35.15	8.633		
8,100.00	8,086.58	8,093.61	8,089.06	18.16	17.44	159.17	-108.04	-29.90	310.80	275.20	35.60	8.730		
8,200.00	8,186.20	8,193.19	8,188.25	18.41	17.64	158.17	-116.72	-29.90	318.20	282.16	36.05	8.827		
8,249.37	8,235.38	8,242.35	8,237.22	18.54	17.74	157.69	-121.00	-29.90	321.89	285.62	36.27	8.875		
8,300.00	8,285.85	8,292.78	8,287.46	18.65	17.84	157.20	-125.40	-29.90	325.29	288.80	36.49	8.914		
8,400.00	8,385.71	8,392.46	8,386.76	18.86	18.04	156.08	-134.08	-29.90	329.67	292.77	36.90	8.934		
8,499.37	8,485.06	8,491.43	8,485.38	19.05	18.24	-89.23	-142.41	-29.90	331.03	293.73	37.30	8.875		
8,573.86	8,559.55	8,565.74	8,559.55	19.20	18.41	-90.00	-146.85	-29.90	331.00	293.38	37.61	8.800		
8,600.00	8,585.69	8,591.86	8,585.65	19.25	18.48	-90.19	-147.96	-29.90	331.00	293.27	37.73	8.774		
8,694.37	8,680.06	8,686.28	8,680.05	19.44	18.67	-90.54	-149.97	-29.90	331.01	292.89	38.12	8.684		
8,700.00	8,685.69	8,691.91	8,685.68	19.45	18.68	-90.53	-149.99	-29.90	331.01	292.87	38.14	8.679		
8,750.00	8,735.60	8,741.84	8,735.60	19.55	18.79	-90.99	-150.00	-29.90	331.05	292.71	38.34	8.635		
8,800.00	8,785.09	8,791.33	8,785.09	19.64	18.89	-92.17	-150.00	-29.90	331.24	292.72	38.53	8.597		
8,850.00	8,833.78	8,840.02	8,833.78	19.72	18.99	-94.01	-150.00	-29.90	331.87	293.16	38.72	8.572		
8,900.00	8,881.31	8,888.37	8,882.14	19.80	19.10	-96.42	-149.87	-29.90	333.34	294.44	38.90	8.570		
8,950.00	8,927.29	8,939.86	8,933.50	19.87	19.20	-99.07	-146.48	-29.90	335.70	296.63	39.07	8.593		
9,000.00	8,971.40	8,993.08	8,986.05	19.93	19.30	-101.68	-138.14	-29.90	338.80	299.58	39.23	8.637		
9,050.00	9,013.29	9,048.19	9,039.39	19.98	19.39	-104.21	-124.40	-29.90	342.57	303.20	39.37	8.701		
9,100.00	9,052.65	9,105.32	9,093.04	20.04	19.47	-106.63	-104.83	-29.91	346.88	307.37	39.51	8.780		
9,150.00	9,089.16	9,164.60	9,146.35	20.09	19.56	-108.94	-78.98	-29.91	351.59	311.94	39.64	8.868		
9,200.00	9,122.57	9,226.11	9,198.55	20.14	19.65	-111.09	-46.48	-29.92	356.52	316.73	39.79	8.960		
9,250.00	9,152.61	9,289.92	9,248.68	20.20	19.75	-113.06	-7.07	-29.92	361.50	321.55	39.95	9.049		
9,300.00	9,179.05	9,356.01	9,295.66	20.28	19.87	-114.84	39.37	-29.93	366.31	326.16	40.15	9.123		
9,350.00	9,201.69	9,424.30	9,338.25	20.39	20.04	-116.38	92.70	-29.94	370.77	330.34	40.43	9.170		
9,400.00	9,220.38	9,494.63	9,375.16	20.56	20.25	-117.67	152.51	-29.95	374.66	333.85	40.81	9.181		
9,450.00	9,234.93	9,566.71	9,405.11	20.78	20.53	-118.68	218.03	-29.96	377.82	336.51	41.31	9.147		
9,500.00	9,245.26	9,640.18	9,426.92	21.04	20.87	-119.39	288.13	-29.97	380.09	338.17	41.91	9.068		
9,550.00	9,251.30	9,714.56	9,439.69	21.34	21.29	-119.78	361.36	-29.98	381.36	338.73	42.63	8.946		
9,590.40	9,253.00	9,774.18	9,443.01	21.61	21.66	-119.86	420.86	-29.99	381.62	338.34	43.27	8.819		
9,600.00	9,253.07	9,783.79	9,443.07	21.68	21.73	-119.86	430.46	-29.99	381.61	338.21	43.40	8.792		
9,700.00	9,253.76	9,883.79	9,443.71	22.44	22.47	-119.85	530.46	-30.00	381.58	336.67	44.91	8.496		
9,800.00	9,254.46	9,983.79	9,444.36	23.31	23.33	-119.85	630.46	-30.02	381.55	334.90	46.65	8.180		
9,900.00	9,255.15	10,083.79	9,445.00	24.29	24.30	-119.84	730.46	-30.03	381.52	332.93	48.59	7.851		
10,000.00	9,255.84	10,183.79	9,445.64	25.36	25.36	-119.84	830.45	-30.05	381.49	330.76	50.73	7.521		
10,100.00	9,256.54	10,283.79	9,446.29	26.52	26.51	-119.83	930.45	-30.06	381.45	328.43	53.02	7.194		
10,200.00	9,257.23	10,383.79	9,446.93	27.74	27.73	-119.83	1,030.45	-30.08	381.42	325.96	55.47	6.877		
10,300.00	9,257.92	10,483.79	9,447.57	29.03	29.01	-119.82	1,130.45	-30.09	381.39	323.36	58.03	6.572		
10,400.00	9,258.62	10,583.79	9,448.22	30.37	30.34	-119.81	1,230.44	-30.11	381.36	320.65	60.71	6.281		
10,500.00	9,259.31	10,683.79	9,448.86	31.76	31.73	-119.81	1,330.44	-30.12	381.33	317.84	63.49	6.006		
10,600.00	9,260.01	10,783.79	9,449.50	33.19	33.16	-119.80	1,430.44	-30.14	381.30	314.95	66.35	5.747		
10,700.00	9,260.70	10,883.79	9,450.15	34.66	34.62	-119.80	1,530.44	-30.15	381.26	311.98	69.28	5.503		
10,800.00	9,261.39	10,983.79	9,450.79	36.16	36.12	-119.79	1,630.44	-30.17	381.23	308.95	72.28	5.275		
10,900.00	9,262.09	11,083.79	9,451.43	37.69	37.65	-119.78	1,730.43	-30.19	381.20	305.87	75.33	5.060		
11,000.00	9,262.78	11,183.79	9,452.08	39.24	39.20	-119.78	1,830.43	-30.20	381.17	302.73	78.44	4.859		
11,100.00	9,263.47	11,283.79	9,452.72	40.82	40.78	-119.77	1,930.43	-30.22	381.14	299.55	81.59	4.671		

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 701H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 701H
TVD Reference: KB=29 @ 3110.00usft (Noram 23)
MD Reference: KB=29 @ 3110.00usft (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
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)	Separation Factor	Warning
11,200.00	9,264.17	11,383.79	9,453.37	42.41	42.37	-119.77	2,030.43	-30.23	381.11	296.32	84.78	4.495	
11,300.00	9,264.86	11,483.79	9,454.01	44.03	43.98	-119.76	2,130.43	-30.25	381.07	293.07	88.01	4.330	
11,400.00	9,265.55	11,583.79	9,454.65	45.66	45.61	-119.75	2,230.42	-30.26	381.04	289.78	91.27	4.175	
11,500.00	9,266.25	11,683.79	9,455.30	47.30	47.26	-119.75	2,330.42	-30.28	381.01	286.46	94.55	4.030	
11,600.00	9,266.94	11,783.79	9,455.94	48.96	48.91	-119.74	2,430.42	-30.29	380.98	283.11	97.87	3.893	
11,700.00	9,267.63	11,883.79	9,456.58	50.62	50.58	-119.74	2,530.42	-30.31	380.95	279.75	101.20	3.764	
11,800.00	9,268.33	11,983.79	9,457.23	52.30	52.26	-119.73	2,630.42	-30.32	380.92	276.36	104.56	3.643	
11,900.00	9,269.02	12,083.79	9,457.87	53.99	53.95	-119.72	2,730.41	-30.34	380.88	272.95	107.93	3.529	
12,000.00	9,269.71	12,183.79	9,458.51	55.69	55.64	-119.72	2,830.41	-30.35	380.85	269.53	111.33	3.421	
12,100.00	9,270.41	12,283.79	9,459.16	57.39	57.35	-119.71	2,930.41	-30.37	380.82	266.09	114.74	3.319	
12,200.00	9,271.10	12,383.79	9,459.80	59.10	59.06	-119.71	3,030.41	-30.38	380.79	262.63	118.16	3.223	
12,300.00	9,271.79	12,483.79	9,460.44	60.82	60.78	-119.70	3,130.41	-30.40	380.76	259.16	121.59	3.131	
12,400.00	9,272.49	12,583.79	9,461.09	62.54	62.50	-119.69	3,230.40	-30.41	380.73	255.68	125.04	3.045	
12,500.00	9,273.18	12,683.79	9,461.73	64.27	64.23	-119.69	3,330.40	-30.43	380.70	252.19	128.50	2.963	
12,600.00	9,273.87	12,783.79	9,462.37	66.01	65.96	-119.68	3,430.40	-30.44	380.66	248.69	131.97	2.884	
12,700.00	9,274.57	12,883.79	9,463.02	67.75	67.70	-119.68	3,530.40	-30.46	380.63	245.18	135.45	2.810	
12,800.00	9,275.26	12,983.79	9,463.66	69.49	69.45	-119.67	3,630.39	-30.47	380.60	241.66	138.94	2.739	
12,900.00	9,275.95	13,083.79	9,464.31	71.24	71.19	-119.67	3,730.39	-30.49	380.57	238.14	142.43	2.672	
13,000.00	9,276.65	13,183.79	9,464.95	72.99	72.95	-119.66	3,830.39	-30.50	380.54	234.60	145.94	2.608	
13,100.00	9,277.34	13,283.79	9,465.59	74.74	74.70	-119.65	3,930.39	-30.52	380.51	231.06	149.45	2.546	
13,200.00	9,278.03	13,383.79	9,466.24	76.50	76.46	-119.65	4,030.39	-30.53	380.47	227.51	152.96	2.487	
13,300.00	9,278.73	13,483.79	9,466.88	78.26	78.22	-119.64	4,130.38	-30.55	380.44	223.96	156.49	2.431	
13,400.00	9,279.42	13,583.79	9,467.52	80.03	79.99	-119.64	4,230.38	-30.56	380.41	220.40	160.01	2.377	
13,500.00	9,280.11	13,683.79	9,468.17	81.80	81.75	-119.63	4,330.38	-30.58	380.38	216.83	163.55	2.326	
13,600.00	9,280.81	13,783.79	9,468.81	83.56	83.52	-119.62	4,430.38	-30.59	380.35	213.26	167.09	2.276	
13,700.00	9,281.50	13,883.79	9,469.45	85.34	85.29	-119.62	4,530.38	-30.61	380.32	209.69	170.63	2.229	
13,800.00	9,282.19	13,983.79	9,470.10	87.11	87.07	-119.61	4,630.37	-30.62	380.28	206.11	174.18	2.183	
13,900.00	9,282.89	14,083.79	9,470.74	88.89	88.84	-119.61	4,730.37	-30.64	380.25	202.52	177.73	2.140	
14,000.00	9,283.58	14,183.79	9,471.38	90.66	90.62	-119.60	4,830.37	-30.65	380.22	198.94	181.28	2.097	
14,100.00	9,284.27	14,283.79	9,472.03	92.44	92.40	-119.59	4,930.37	-30.67	380.19	195.35	184.84	2.057	
14,200.00	9,284.97	14,383.79	9,472.67	94.22	94.18	-119.59	5,030.37	-30.69	380.16	191.75	188.41	2.018	
14,300.00	9,285.66	14,483.79	9,473.32	96.01	95.97	-119.58	5,130.36	-30.70	380.13	188.16	191.97	1.980	
14,400.00	9,286.36	14,583.79	9,473.96	97.79	97.75	-119.58	5,230.36	-30.72	380.10	184.55	195.54	1.944	
14,500.00	9,287.05	14,683.79	9,474.60	99.58	99.54	-119.57	5,330.36	-30.73	380.06	180.95	199.11	1.909	
14,600.00	9,287.74	14,783.79	9,475.25	101.36	101.32	-119.56	5,430.36	-30.75	380.03	177.34	202.69	1.875	
14,700.00	9,288.44	14,883.79	9,475.89	103.15	103.11	-119.56	5,530.36	-30.76	380.00	173.74	206.26	1.842	
14,800.00	9,289.13	14,983.79	9,476.53	104.94	104.90	-119.55	5,630.35	-30.78	379.97	170.13	209.84	1.811	
14,900.00	9,289.82	15,083.79	9,477.18	106.73	106.69	-119.55	5,730.35	-30.79	379.94	166.51	213.43	1.780	
15,000.00	9,290.52	15,183.79	9,477.82	108.53	108.48	-119.54	5,830.35	-30.81	379.91	162.90	217.01	1.751	
15,100.00	9,291.21	15,283.79	9,478.46	110.32	110.28	-119.53	5,930.35	-30.82	379.88	159.28	220.60	1.722	
15,200.00	9,291.90	15,383.79	9,479.11	112.11	112.07	-119.53	6,030.34	-30.84	379.84	155.66	224.19	1.694	
15,300.00	9,292.60	15,483.79	9,479.75	113.91	113.87	-119.52	6,130.34	-30.85	379.81	152.04	227.78	1.667	
15,400.00	9,293.29	15,583.79	9,480.39	115.70	115.66	-119.52	6,230.34	-30.87	379.78	148.41	231.37	1.641	
15,500.00	9,293.98	15,683.79	9,481.04	117.50	117.46	-119.51	6,330.34	-30.88	379.75	144.79	234.96	1.616	
15,600.00	9,294.68	15,783.79	9,481.68	119.30	119.26	-119.50	6,430.34	-30.90	379.72	141.16	238.56	1.592	
15,700.00	9,295.37	15,883.79	9,482.33	121.10	121.06	-119.50	6,530.33	-30.91	379.69	137.53	242.16	1.568	
15,800.00	9,296.06	15,983.79	9,482.97	122.90	122.86	-119.49	6,630.33	-30.93	379.65	133.90	245.75	1.545	
15,900.00	9,296.76	16,083.79	9,483.61	124.70	124.66	-119.49	6,730.33	-30.94	379.62	130.27	249.35	1.522	
16,000.00	9,297.45	16,183.79	9,484.26	126.50	126.46	-119.48	6,830.33	-30.96	379.59	126.64	252.96	1.501	
16,100.00	9,298.14	16,283.79	9,484.90	128.30	128.26	-119.47	6,930.33	-30.97	379.56	123.00	256.56	1.479 Level 3	
16,200.00	9,298.84	16,383.79	9,485.54	130.10	130.06	-119.47	7,030.32	-30.99	379.53	119.37	260.16	1.459 Level 3	
16,300.00	9,299.53	16,483.79	9,486.19	131.90	131.86	-119.46	7,130.32	-31.00	379.50	115.73	263.77	1.439 Level 3	

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 701H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 701H
TVD Reference: KB=29 @ 3110.00usft (Noram 23)
MD Reference: KB=29 @ 3110.00usft (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)						
16,400.00	9,300.22	16,583.79	9,486.83	133.71	133.67	-119.46	7,230.32	-31.02	379.47	112.09	267.38	1.419	Level 3	
16,500.00	9,300.92	16,683.79	9,487.47	135.51	135.47	-119.45	7,330.32	-31.03	379.43	108.45	270.98	1.400	Level 3	
16,600.00	9,301.61	16,783.79	9,488.12	137.32	137.28	-119.45	7,430.32	-31.05	379.40	104.81	274.59	1.382	Level 3	
16,700.00	9,302.30	16,883.79	9,488.76	139.12	139.08	-119.44	7,530.31	-31.06	379.37	101.17	278.20	1.364	Level 3	
16,800.00	9,303.00	16,983.79	9,489.40	140.93	140.89	-119.43	7,630.31	-31.08	379.34	97.53	281.81	1.346	Level 3	
16,900.00	9,303.69	17,083.79	9,490.05	142.73	142.69	-119.43	7,730.31	-31.09	379.31	93.88	285.42	1.329	Level 3	
17,000.00	9,304.38	17,183.79	9,490.69	144.54	144.50	-119.42	7,830.31	-31.11	379.28	90.24	289.04	1.312	Level 3	
17,100.00	9,305.08	17,283.79	9,491.33	146.35	146.31	-119.42	7,930.31	-31.12	379.25	86.59	292.65	1.296	Level 3	
17,200.00	9,305.77	17,383.79	9,491.98	148.15	148.11	-119.41	8,030.30	-31.14	379.21	82.95	296.27	1.280	Level 3	
17,300.00	9,306.46	17,483.78	9,492.62	149.96	149.92	-119.40	8,130.30	-31.16	379.18	79.30	299.88	1.264	Level 3	
17,400.00	9,307.16	17,583.78	9,493.27	151.77	151.73	-119.40	8,230.30	-31.17	379.15	75.65	303.50	1.249	Level 2	
17,500.00	9,307.85	17,683.78	9,493.91	153.58	153.54	-119.39	8,330.30	-31.19	379.12	72.01	307.11	1.234	Level 2	
17,600.00	9,308.54	17,783.78	9,494.55	155.39	155.35	-119.39	8,430.29	-31.20	379.09	68.36	310.73	1.220	Level 2	
17,700.00	9,309.24	17,883.78	9,495.20	157.20	157.16	-119.38	8,530.29	-31.22	379.06	64.71	314.35	1.206	Level 2	
17,800.00	9,309.93	17,983.78	9,495.84	159.00	158.97	-119.37	8,630.29	-31.23	379.03	61.06	317.97	1.192	Level 2	
17,900.00	9,310.62	18,083.78	9,496.48	160.81	160.78	-119.37	8,730.29	-31.25	379.00	57.40	321.59	1.179	Level 2	
18,000.00	9,311.32	18,183.78	9,497.13	162.62	162.59	-119.36	8,830.29	-31.26	378.96	53.75	325.21	1.165	Level 2	
18,100.00	9,312.01	18,283.78	9,497.77	164.44	164.40	-119.36	8,930.28	-31.28	378.93	50.10	328.83	1.152	Level 2	
18,200.00	9,312.71	18,383.78	9,498.41	166.25	166.21	-119.35	9,030.28	-31.29	378.90	46.45	332.45	1.140	Level 2	
18,300.00	9,313.40	18,483.78	9,499.06	168.06	168.02	-119.34	9,130.28	-31.31	378.87	42.79	336.08	1.127	Level 2	
18,400.00	9,314.09	18,583.78	9,499.70	169.87	169.83	-119.34	9,230.28	-31.32	378.84	39.14	339.70	1.115	Level 2	
18,500.00	9,314.79	18,683.78	9,500.34	171.68	171.64	-119.33	9,330.28	-31.34	378.81	35.48	343.32	1.103	Level 2	
18,600.00	9,315.48	18,783.78	9,500.99	173.49	173.45	-119.33	9,430.27	-31.35	378.78	31.83	346.95	1.092	Level 2	
18,700.00	9,316.17	18,883.78	9,501.63	175.30	175.27	-119.32	9,530.27	-31.37	378.74	28.17	350.57	1.080	Level 2	
18,800.00	9,316.87	18,983.78	9,502.28	177.12	177.08	-119.31	9,630.27	-31.38	378.71	24.52	354.20	1.069	Level 2	
18,900.00	9,317.56	19,083.78	9,502.92	178.93	178.89	-119.31	9,730.27	-31.40	378.68	20.86	357.82	1.058	Level 2	
19,000.00	9,318.25	19,183.78	9,503.56	180.74	180.70	-119.30	9,830.27	-31.41	378.65	17.20	361.45	1.048	Level 2	
19,100.00	9,318.95	19,283.78	9,504.21	182.56	182.52	-119.30	9,930.26	-31.43	378.62	13.54	365.07	1.037	Level 2	
19,200.00	9,319.64	19,383.78	9,504.85	184.37	184.33	-119.29	10,030.26	-31.44	378.59	9.89	368.70	1.027	Level 2	
19,300.00	9,320.33	19,483.78	9,505.49	186.18	186.15	-119.28	10,130.26	-31.46	378.56	6.23	372.33	1.017	Level 2	
19,400.00	9,321.03	19,583.78	9,506.14	188.00	187.96	-119.28	10,230.26	-31.47	378.53	2.57	375.96	1.007	Level 2	
19,500.00	9,321.72	19,683.78	9,506.78	189.81	189.77	-119.27	10,330.26	-31.49	378.49	-1.09	379.58	0.997	Level 1	
19,600.00	9,322.41	19,783.78	9,507.42	191.63	191.59	-119.27	10,430.25	-31.50	378.46	-4.75	383.21	0.988	Level 1	
19,700.00	9,323.11	19,883.78	9,508.07	193.44	193.40	-119.26	10,530.25	-31.52	378.43	-8.41	386.84	0.978	Level 1	
19,800.00	9,323.80	19,983.78	9,508.71	195.25	195.22	-119.25	10,630.25	-31.53	378.40	-12.07	390.47	0.969	Level 1	
19,900.00	9,324.49	20,083.78	9,509.35	197.07	197.03	-119.25	10,730.25	-31.55	378.37	-15.73	394.10	0.960	Level 1	
20,000.00	9,325.19	20,183.78	9,510.00	198.88	198.85	-119.24	10,830.25	-31.56	378.34	-19.39	397.73	0.951	Level 1	
20,100.00	9,325.88	20,283.78	9,510.64	200.70	200.66	-119.24	10,930.24	-31.58	378.31	-23.06	401.36	0.943	Level 1	
20,200.00	9,326.57	20,383.78	9,511.29	202.52	202.48	-119.23	11,030.24	-31.59	378.27	-26.72	404.99	0.934	Level 1	
20,300.00	9,327.27	20,483.78	9,511.93	204.33	204.29	-119.22	11,130.24	-31.61	378.24	-30.38	408.62	0.926	Level 1	
20,400.00	9,327.96	20,583.78	9,512.57	206.15	206.11	-119.22	11,230.24	-31.63	378.21	-34.04	412.26	0.917	Level 1	
20,500.00	9,328.65	20,683.78	9,513.22	207.96	207.92	-119.21	11,330.23	-31.64	378.18	-37.71	415.89	0.909	Level 1	
20,600.00	9,329.35	20,783.78	9,513.86	209.78	209.74	-119.21	11,430.23	-31.66	378.15	-41.37	419.52	0.901	Level 1	
20,700.00	9,330.04	20,883.78	9,514.50	211.59	211.56	-119.20	11,530.23	-31.67	378.12	-45.03	423.15	0.894	Level 1	
20,800.00	9,330.73	20,983.78	9,515.15	213.41	213.37	-119.19	11,630.23	-31.69	378.09	-48.70	426.78	0.886	Level 1	
20,900.00	9,331.43	21,083.78	9,515.79	215.23	215.19	-119.19	11,730.23	-31.70	378.06	-52.36	430.42	0.878	Level 1	
21,000.00	9,332.12	21,183.78	9,516.43	217.04	217.01	-119.18	11,830.22	-31.72	378.02	-56.03	434.05	0.871	Level 1	
21,100.00	9,332.81	21,283.78	9,517.08	218.86	218.82	-119.18	11,930.22	-31.73	377.99	-59.69	437.68	0.864	Level 1	
21,200.00	9,333.51	21,383.78	9,517.72	220.68	220.64	-119.17	12,030.22	-31.75	377.96	-63.36	441.32	0.856	Level 1	
21,300.00	9,334.20	21,483.78	9,518.36	222.49	222.46	-119.16	12,130.22	-31.76	377.93	-67.02	444.95	0.849	Level 1	
21,400.00	9,334.89	21,583.78	9,519.01	224.31	224.27	-119.16	12,230.22	-31.78	377.90	-70.69	448.59	0.842	Level 1	
21,500.00	9,335.59	21,683.78	9,519.65	226.13	226.09	-119.15	12,330.21	-31.79	377.87	-74.35	452.22	0.836	Level 1	

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 701H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 701H
TVD Reference: KB=29 @ 3110.00usft (Noram 23)
MD Reference: KB=29 @ 3110.00usft (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						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)	Minimum Separation (usft)	Separation Factor						
21,543.51	9,335.89	21,727.30	9,519.93	226.92	226.79	-119.15	12,373.73	-31.80	377.85	-75.85	453.71	0.833	Level 1					
21,559.45	9,336.00	21,737.97	9,520.00	227.21	226.95	-119.15	12,384.40	-31.80	377.89	-76.27	454.16	0.832	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 701H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 701H
TVD Reference: KB=29 @ 3110.00usft (Noram 23)
MD Reference: KB=29 @ 3110.00usft (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 703H - 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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
0.00	0.00	1.00	1.00	0.00	0.00	-90.00	0.00	-59.90	59.90							
100.00	100.00	101.00	101.00	0.08	0.08	-90.00	0.00	-59.90	59.90	59.74	0.16	370.137				
200.00	200.00	201.00	201.00	0.30	0.31	-90.00	0.00	-59.90	59.90	59.29	0.61	97.978				
300.00	300.00	301.00	301.00	0.53	0.53	-90.00	0.00	-59.90	59.90	58.84	1.06	56.462				
400.00	400.00	401.00	401.00	0.75	0.76	-90.00	0.00	-59.90	59.90	58.39	1.51	39.658				
500.00	500.00	501.00	501.00	0.98	0.98	-90.00	0.00	-59.90	59.90	57.94	1.96	30.562				
600.00	600.00	601.00	601.00	1.20	1.21	-90.00	0.00	-59.90	59.90	57.49	2.41	24.860				
700.00	700.00	701.00	701.00	1.43	1.43	-90.00	0.00	-59.90	59.90	57.04	2.86	20.951				
800.00	800.00	801.00	801.00	1.65	1.66	-90.00	0.00	-59.90	59.90	56.59	3.31	18.105				
900.00	900.00	901.00	901.00	1.88	1.88	-90.00	0.00	-59.90	59.90	56.14	3.76	15.939				
1,000.00	1,000.00	1,001.00	1,001.00	2.10	2.10	-90.00	0.00	-59.90	59.90	55.69	4.21	14.236				
1,100.00	1,100.00	1,101.00	1,101.00	2.33	2.33	-90.00	0.00	-59.90	59.90	55.24	4.66	12.862				
1,200.00	1,200.00	1,201.00	1,201.00	2.55	2.55	-90.00	0.00	-59.90	59.90	54.79	5.11	11.730				
1,300.00	1,300.00	1,301.00	1,301.00	2.78	2.78	-90.00	0.00	-59.90	59.90	54.34	5.56	10.781				
1,400.00	1,400.00	1,401.00	1,401.00	3.00	3.00	-90.00	0.00	-59.90	59.90	53.89	6.01	9.974				
1,500.00	1,500.00	1,501.00	1,501.00	3.23	3.23	-90.00	0.00	-59.90	59.90	53.44	6.46	9.279				
1,600.00	1,600.00	1,601.00	1,601.00	3.45	3.45	-90.00	0.00	-59.90	59.90	53.00	6.90	8.675				
1,700.00	1,700.00	1,701.00	1,701.00	3.68	3.68	-90.00	0.00	-59.90	59.90	52.55	7.35	8.145				
1,800.00	1,800.00	1,801.00	1,801.00	3.90	3.90	-90.00	0.00	-59.90	59.90	52.10	7.80	7.676				
1,900.00	1,900.00	1,901.00	1,901.00	4.13	4.13	-90.00	0.00	-59.90	59.90	51.65	8.25	7.258				
2,000.00	2,000.00	2,001.00	2,001.00	4.35	4.35	-90.00	0.00	-59.90	59.90	51.20	8.70	6.883				
2,100.00	2,100.00	2,101.00	2,101.00	4.58	4.58	-90.00	0.00	-59.90	59.90	50.75	9.15	6.545				
2,200.00	2,200.00	2,201.00	2,201.00	4.80	4.80	-90.00	0.00	-59.90	59.90	50.30	9.60	6.238				
2,300.00	2,300.00	2,301.00	2,301.00	5.02	5.03	-90.00	0.00	-59.90	59.90	49.85	10.05	5.959				
2,400.00	2,400.00	2,401.00	2,401.00	5.25	5.25	-90.00	0.00	-59.90	59.90	49.40	10.50	5.704				
2,500.00	2,500.00	2,501.00	2,501.00	5.47	5.48	-90.00	0.00	-59.90	59.90	48.95	10.95	5.470				
2,600.00	2,600.00	2,601.00	2,601.00	5.70	5.70	-90.00	0.00	-59.90	59.90	48.50	11.40	5.254				
2,700.00	2,700.00	2,701.00	2,701.00	5.92	5.93	-90.00	0.00	-59.90	59.90	48.05	11.85	5.055				
2,800.00	2,800.00	2,801.00	2,801.00	6.15	6.15	-90.00	0.00	-59.90	59.90	47.60	12.30	4.870				
2,900.00	2,900.00	2,901.00	2,901.00	6.37	6.38	-90.00	0.00	-59.90	59.90	47.15	12.75	4.699				
3,000.00	3,000.00	3,001.00	3,001.00	6.60	6.60	-90.00	0.00	-59.90	59.90	46.70	13.20	4.538				
3,100.00	3,100.00	3,101.00	3,101.00	6.82	6.83	-90.00	0.00	-59.90	59.90	46.25	13.65	4.389				
3,200.00	3,200.00	3,201.00	3,201.00	7.05	7.05	-90.00	0.00	-59.90	59.90	45.80	14.10	4.249				
3,300.00	3,300.00	3,301.00	3,301.00	7.27	7.27	-90.00	0.00	-59.90	59.90	45.35	14.55	4.118				
3,400.00	3,400.00	3,401.00	3,401.00	7.50	7.50	-90.00	0.00	-59.90	59.90	44.90	15.00	3.994				
3,500.00	3,500.00	3,501.00	3,501.00	7.72	7.72	-90.00	0.00	-59.90	59.90	44.45	15.45	3.878				
3,600.00	3,600.00	3,601.00	3,601.00	7.95	7.95	-90.00	0.00	-59.90	59.90	44.00	15.90	3.768				
3,700.00	3,700.00	3,701.00	3,701.00	8.17	8.17	-90.00	0.00	-59.90	59.90	43.56	16.34	3.665				
3,800.00	3,800.00	3,801.00	3,801.00	8.40	8.40	-90.00	0.00	-59.90	59.90	43.11	16.79	3.567				
3,900.00	3,900.00	3,901.00	3,901.00	8.62	8.62	-90.00	0.00	-59.90	59.90	42.66	17.24	3.474				
4,000.00	4,000.00	4,001.00	4,001.00	8.85	8.85	-90.00	0.00	-59.90	59.90	42.21	17.69	3.385				
4,100.00	4,100.00	4,101.00	4,101.00	9.07	9.07	-90.00	0.00	-59.90	59.90	41.76	18.14	3.302				
4,200.00	4,200.00	4,201.00	4,201.00	9.30	9.30	-90.00	0.00	-59.90	59.90	41.31	18.59	3.222				
4,300.00	4,300.00	4,301.00	4,301.00	9.52	9.52	-90.00	0.00	-59.90	59.90	40.86	19.04	3.146				
4,370.43	4,370.43	4,371.43	4,371.43	9.68	9.68	-90.00	0.00	-59.90	59.90	40.54	19.36	3.094 CC				
4,405.84	4,405.84	4,406.46	4,406.46	9.76	9.76	-90.00	0.00	-59.90	59.90	40.38	19.52	3.069 ES				
4,500.00	4,499.98	4,500.00	4,499.98	9.95	9.95	153.98	-0.67	-61.27	62.67	42.77	19.90	3.149				
4,600.00	4,599.85	4,596.72	4,596.58	10.14	10.13	153.94	-2.77	-65.58	71.62	51.35	20.27	3.534				
4,655.84	4,655.52	4,650.75	4,650.45	10.24	10.23	153.90	-4.56	-69.26	79.29	58.81	20.48	3.872				
4,700.00	4,699.51	4,694.23	4,693.77	10.33	10.32	153.90	-6.22	-72.66	86.18	65.54	20.64	4.175				
4,800.00	4,799.13	4,793.00	4,792.17	10.52	10.51	153.91	-10.00	-80.39	101.80	80.77	21.03	4.841				
4,900.00	4,898.75	4,891.77	4,890.56	10.72	10.70	153.91	-13.77	-88.13	117.42	95.99	21.42	5.481				

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 701H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 701H
TVD Reference: KB=29 @ 3110.00usft (Noram 23)
MD Reference: KB=29 @ 3110.00usft (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 703H - 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)					
5,000.00	4,998.37	4,990.55	4,988.96	10.92	10.90	153.91	-17.54	-95.87	133.04	111.21	21.82	6.097	
5,100.00	5,097.99	5,089.32	5,087.36	11.13	11.10	153.91	-21.32	-103.61	148.65	126.43	22.23	6.688	
5,200.00	5,197.61	5,188.09	5,185.75	11.33	11.31	153.91	-25.09	-111.34	164.27	141.63	22.64	7.256	
5,300.00	5,297.23	5,286.87	5,284.15	11.54	11.51	153.91	-28.86	-119.08	179.89	156.84	23.06	7.802	
5,400.00	5,396.85	5,385.64	5,382.55	11.76	11.72	153.91	-32.64	-126.82	195.51	172.03	23.48	8.327	
5,500.00	5,496.47	5,484.41	5,480.94	11.97	11.94	153.91	-36.41	-134.56	211.13	187.22	23.91	8.831	
5,600.00	5,596.09	5,583.18	5,579.34	12.19	12.15	153.91	-40.19	-142.29	226.75	202.41	24.34	9.316	
5,700.00	5,695.71	5,681.96	5,677.74	12.41	12.37	153.91	-43.96	-150.03	242.37	217.59	24.78	9.782	
5,800.00	5,795.33	5,780.73	5,776.13	12.63	12.59	153.91	-47.73	-157.77	257.99	232.77	25.22	10.230	
5,900.00	5,894.95	5,879.50	5,874.53	12.86	12.81	153.91	-51.51	-165.50	273.61	247.94	25.67	10.660	
6,000.00	5,994.57	5,978.27	5,972.93	13.08	13.03	153.91	-55.28	-173.24	289.22	263.11	26.12	11.075	
6,100.00	6,094.19	6,077.05	6,071.32	13.31	13.26	153.91	-59.05	-180.98	304.84	278.27	26.57	11.473	
6,200.00	6,193.81	6,175.82	6,169.72	13.54	13.48	153.91	-62.83	-188.72	320.46	293.44	27.03	11.857	
6,300.00	6,293.43	6,274.59	6,268.12	13.77	13.71	153.91	-66.60	-196.45	336.08	308.59	27.49	12.227	
6,400.00	6,393.05	6,373.37	6,366.52	14.01	13.94	153.91	-70.38	-204.19	351.70	323.75	27.95	12.583	
6,500.00	6,492.67	6,472.14	6,464.91	14.24	14.17	153.91	-74.15	-211.93	367.32	338.90	28.42	12.926	
6,600.00	6,592.28	6,570.91	6,563.31	14.48	14.41	153.91	-77.92	-219.67	382.94	354.05	28.89	13.256	
6,700.00	6,691.90	6,669.68	6,661.71	14.72	14.64	153.91	-81.70	-227.40	398.56	369.20	29.36	13.575	
6,800.00	6,791.52	6,768.46	6,760.10	14.96	14.88	153.91	-85.47	-235.14	414.18	384.34	29.83	13.882	
6,900.00	6,891.14	6,867.23	6,858.50	15.20	15.12	153.91	-89.24	-242.88	429.79	399.48	30.31	14.179	
7,000.00	6,990.76	6,966.00	6,956.90	15.44	15.35	153.91	-93.02	-250.62	445.41	414.62	30.79	14.465	
7,100.00	7,090.38	7,064.77	7,055.29	15.68	15.59	153.91	-96.79	-258.35	461.03	429.76	31.27	14.741	
7,200.00	7,190.00	7,163.55	7,153.69	15.92	15.83	153.91	-100.57	-266.09	476.65	444.89	31.76	15.008	
7,300.00	7,289.62	7,262.32	7,252.09	16.17	16.08	153.91	-104.34	-273.83	492.27	460.02	32.25	15.266	
7,400.00	7,389.24	7,361.09	7,350.48	16.41	16.32	153.91	-108.11	-281.57	507.89	475.15	32.73	15.516	
7,500.00	7,488.86	7,459.87	7,448.88	16.66	16.56	153.91	-111.89	-289.30	523.51	490.28	33.22	15.757	
7,600.00	7,588.48	7,558.64	7,547.28	16.91	16.81	153.91	-115.66	-297.04	539.13	505.41	33.72	15.990	
7,700.00	7,688.10	7,657.41	7,645.67	17.16	17.05	153.91	-119.43	-304.78	554.75	520.53	34.21	16.216	
7,800.00	7,787.72	7,756.18	7,744.07	17.41	17.30	153.91	-123.21	-312.51	570.36	535.66	34.71	16.434	
7,900.00	7,887.34	7,854.96	7,842.47	17.66	17.55	153.91	-126.98	-320.25	585.98	550.78	35.20	16.646	
8,000.00	7,986.96	7,953.73	7,940.87	17.91	17.79	153.91	-130.76	-327.99	601.60	565.90	35.70	16.851	
8,100.00	8,086.58	8,052.50	8,039.26	18.16	18.04	153.91	-134.53	-335.73	617.22	581.02	36.20	17.049	
8,200.00	8,186.20	8,151.27	8,137.66	18.41	18.29	153.91	-138.30	-343.46	632.84	596.14	36.70	17.242	
8,249.37	8,235.38	8,200.04	8,186.24	18.54	18.42	153.91	-140.17	-347.28	640.55	603.60	36.95	17.335	
8,300.00	8,285.85	8,250.14	8,236.14	18.65	18.54	153.96	-142.08	-351.21	648.06	610.86	37.20	17.422	
8,400.00	8,385.71	8,375.21	8,360.94	18.86	18.82	153.99	-145.66	-358.55	658.61	620.93	37.68	17.479	
8,499.37	8,485.06	8,500.37	8,486.06	19.05	19.06	-90.00	-146.85	-361.00	662.09	623.98	38.12	17.371	
8,600.00	8,585.69	8,601.00	8,586.69	19.25	19.26	-90.00	-146.85	-361.00	662.09	623.59	38.51	17.195	
8,658.43	8,644.12	8,659.43	8,645.12	19.37	19.38	-90.00	-146.85	-361.00	662.09	623.35	38.75	17.088	
8,694.37	8,680.06	8,695.36	8,681.05	19.44	19.45	-89.98	-146.57	-361.00	662.09	623.20	38.89	17.024	
8,700.00	8,685.69	8,700.98	8,686.67	19.45	19.46	-89.95	-146.37	-361.00	662.09	623.18	38.91	17.014	
8,750.00	8,735.60	8,750.85	8,736.34	19.55	19.55	-89.81	-142.15	-361.00	662.09	622.99	39.11	16.930	
8,800.00	8,785.09	8,800.58	8,785.32	19.64	19.64	-89.68	-133.66	-361.00	662.10	622.82	39.28	16.855	
8,850.00	8,833.78	8,850.00	8,833.09	19.72	19.72	-89.55	-121.04	-361.00	662.11	622.66	39.44	16.786	
8,900.00	8,881.31	8,899.65	8,879.81	19.80	19.79	-89.42	-104.27	-361.00	662.12	622.53	39.59	16.725	
8,950.00	8,927.29	8,949.00	8,924.63	19.87	19.85	-89.30	-83.66	-361.00	662.13	622.41	39.72	16.670	
9,000.00	8,971.40	8,998.23	8,967.41	19.93	19.91	-89.18	-59.33	-361.00	662.15	622.31	39.84	16.620	
9,050.00	9,013.29	9,047.35	9,007.86	19.98	19.97	-89.07	-31.49	-361.00	662.16	622.21	39.95	16.575	
9,100.00	9,052.65	9,096.37	9,045.70	20.04	20.02	-88.96	-0.35	-361.01	662.18	622.12	40.06	16.532	
9,150.00	9,089.16	9,145.30	9,080.68	20.09	20.07	-88.87	33.83	-361.01	662.19	622.03	40.16	16.490	
9,200.00	9,122.57	9,194.13	9,112.56	20.14	20.13	-88.78	70.81	-361.01	662.21	621.94	40.27	16.446	
9,250.00	9,152.61	9,242.89	9,141.13	20.20	20.19	-88.70	110.30	-361.01	662.22	621.83	40.39	16.396	

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 701H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 701H
TVD Reference: KB=29 @ 3110.00usft (Noram 23)
MD Reference: KB=29 @ 3110.00usft (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 703H - Wellbore #1 - Plan #1													Offset Site Error:	0.00 usft
Survey Program: O-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Hightide Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
9,300.00	9,179.05	9,291.57	9,166.21	20.28	20.27	-88.63	152.01	-361.02	662.23	621.68	40.55	16.331		
9,350.00	9,201.69	9,340.20	9,187.63	20.39	20.39	-88.57	195.65	-361.02	662.24	621.45	40.79	16.237		
9,400.00	9,220.36	9,368.78	9,205.26	20.56	20.56	-88.52	240.90	-361.02	662.25	621.13	41.12	16.105		
9,450.00	9,234.93	9,437.32	9,218.99	20.78	20.77	-88.49	287.44	-361.02	662.25	620.70	41.55	15.938		
9,500.00	9,245.26	9,485.82	9,228.72	21.04	21.03	-88.46	334.95	-361.03	662.25	620.18	42.07	15.741		
9,550.00	9,251.30	9,534.31	9,234.40	21.34	21.32	-88.45	383.08	-361.03	662.25	619.58	42.66	15.523		
9,590.40	9,253.00	9,573.48	9,236.00	21.61	21.57	-88.44	422.22	-361.03	662.24	619.06	43.18	15.335		
9,600.00	9,253.07	9,583.09	9,236.07	21.68	21.64	-88.44	431.82	-361.03	662.24	618.92	43.32	15.288		
9,700.00	9,253.76	9,683.09	9,236.80	22.44	22.40	-88.45	531.82	-361.04	662.22	617.39	44.84	14.770		
9,800.00	9,254.46	9,783.09	9,237.53	23.31	23.27	-88.45	631.82	-361.05	662.20	615.62	46.58	14.215		
9,900.00	9,255.15	9,883.09	9,238.26	24.29	24.25	-88.45	731.82	-361.05	662.19	613.64	48.54	13.641		
10,000.00	9,255.84	9,983.09	9,238.99	25.36	25.32	-88.45	831.81	-361.06	662.17	611.48	50.69	13.064		
10,100.00	9,256.54	10,083.09	9,239.71	26.52	26.48	-88.46	931.81	-361.07	662.15	609.16	52.99	12.495		
10,200.00	9,257.23	10,183.09	9,240.44	27.74	27.70	-88.46	1,031.81	-361.07	662.13	606.69	55.44	11.943		
10,300.00	9,257.92	10,283.09	9,241.17	29.03	28.99	-88.46	1,131.80	-361.08	662.12	604.10	58.01	11.413		
10,400.00	9,258.62	10,383.09	9,241.90	30.37	30.33	-88.47	1,231.80	-361.08	662.10	601.40	60.70	10.908		
10,500.00	9,259.31	10,483.09	9,242.62	31.76	31.72	-88.47	1,331.80	-361.09	662.08	598.60	63.48	10.430		
10,600.00	9,260.01	10,583.09	9,243.35	33.19	33.15	-88.47	1,431.80	-361.10	662.06	595.72	66.34	9.980		
10,700.00	9,260.70	10,683.09	9,244.08	34.66	34.62	-88.47	1,531.79	-361.10	662.05	592.77	69.28	9.557		
10,800.00	9,261.39	10,783.09	9,244.81	36.16	36.12	-88.48	1,631.79	-361.11	662.03	589.75	72.28	9.160		
10,900.00	9,262.09	10,883.09	9,245.53	37.69	37.65	-88.48	1,731.79	-361.12	662.01	586.68	75.34	8.788		
11,000.00	9,262.78	10,983.09	9,246.26	39.24	39.20	-88.48	1,831.79	-361.12	661.99	583.55	78.44	8.439		
11,100.00	9,263.47	11,083.09	9,246.99	40.82	40.78	-88.49	1,931.78	-361.13	661.98	580.38	81.60	8.113		
11,200.00	9,264.17	11,183.09	9,247.72	42.41	42.38	-88.49	2,031.78	-361.14	661.96	577.17	84.79	7.807		
11,300.00	9,264.86	11,283.09	9,248.44	44.03	43.99	-88.49	2,131.78	-361.14	661.94	573.92	88.02	7.521		
11,400.00	9,265.55	11,383.09	9,249.17	45.66	45.62	-88.50	2,231.78	-361.15	661.92	570.65	91.28	7.252		
11,500.00	9,266.25	11,483.09	9,249.90	47.30	47.27	-88.50	2,331.77	-361.16	661.91	567.34	94.56	7.000		
11,600.00	9,266.94	11,583.09	9,250.63	48.96	48.92	-88.50	2,431.77	-361.16	661.89	564.01	97.88	6.762		
11,700.00	9,267.63	11,683.09	9,251.35	50.62	50.59	-88.50	2,531.77	-361.17	661.87	560.66	101.21	6.539		
11,800.00	9,268.33	11,783.09	9,252.08	52.30	52.27	-88.51	2,631.76	-361.17	661.85	557.28	104.57	6.329		
11,900.00	9,269.02	11,883.09	9,252.81	53.99	53.96	-88.51	2,731.76	-361.18	661.84	553.89	107.95	6.131		
12,000.00	9,269.71	11,983.09	9,253.54	55.69	55.66	-88.51	2,831.76	-361.19	661.82	550.48	111.34	5.944		
12,100.00	9,270.41	12,083.09	9,254.27	57.39	57.36	-88.52	2,931.76	-361.19	661.80	547.05	114.75	5.767		
12,200.00	9,271.10	12,183.09	9,254.99	59.10	59.07	-88.52	3,031.75	-361.20	661.78	543.61	118.17	5.600		
12,300.00	9,271.79	12,283.09	9,255.72	60.82	60.79	-88.52	3,131.75	-361.21	661.77	540.16	121.61	5.442		
12,400.00	9,272.49	12,383.09	9,256.45	62.54	62.51	-88.52	3,231.75	-361.21	661.75	536.69	125.06	5.292		
12,500.00	9,273.18	12,483.09	9,257.18	64.27	64.24	-88.53	3,331.75	-361.22	661.73	533.21	128.52	5.149		
12,600.00	9,273.87	12,583.09	9,257.90	66.01	65.98	-88.53	3,431.74	-361.23	661.71	529.73	131.99	5.013		
12,700.00	9,274.57	12,683.09	9,258.63	67.75	67.72	-88.53	3,531.74	-361.23	661.70	526.23	135.47	4.885		
12,800.00	9,275.26	12,783.09	9,259.36	69.49	69.46	-88.54	3,631.74	-361.24	661.68	522.72	138.95	4.762		
12,900.00	9,275.95	12,883.09	9,260.09	71.24	71.21	-88.54	3,731.74	-361.24	661.66	519.21	142.45	4.645		
13,000.00	9,276.65	12,983.09	9,260.81	72.99	72.96	-88.54	3,831.73	-361.25	661.64	515.69	145.95	4.533		
13,100.00	9,277.34	13,083.09	9,261.54	74.74	74.72	-88.54	3,931.73	-361.26	661.62	512.16	149.46	4.427		
13,200.00	9,278.03	13,183.09	9,262.27	76.50	76.48	-88.55	4,031.73	-361.26	661.61	508.63	152.98	4.325		
13,300.00	9,278.73	13,283.09	9,263.00	78.26	78.24	-88.55	4,131.72	-361.27	661.59	505.09	156.50	4.227		
13,400.00	9,279.42	13,383.09	9,263.72	80.03	80.00	-88.55	4,231.72	-361.28	661.57	501.54	160.03	4.134		
13,500.00	9,280.11	13,483.09	9,264.45	81.80	81.77	-88.56	4,331.72	-361.28	661.55	497.99	163.57	4.045		
13,600.00	9,280.81	13,583.09	9,265.18	83.56	83.54	-88.56	4,431.72	-361.29	661.54	494.43	167.10	3.959		
13,700.00	9,281.50	13,683.09	9,265.91	85.34	85.31	-88.56	4,531.71	-361.30	661.52	490.87	170.65	3.877		
13,800.00	9,282.19	13,783.09	9,266.64	87.11	87.09	-88.57	4,631.71	-361.30	661.50	487.31	174.20	3.797		
13,900.00	9,282.89	13,883.09	9,267.36	88.89	88.86	-88.57	4,731.71	-361.31	661.48	483.74	177.75	3.721		
14,000.00	9,283.58	13,983.09	9,268.09	90.66	90.64	-88.57	4,831.71	-361.32	661.47	480.16	181.30	3.648		

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

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 701H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=29 @ 3110.00usft (Noram 23)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=29 @ 3110.00usft (Noram 23)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 701H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 703H - Wellbore #1 - Plan #1													Offset Site Error:	0.00 usft
Survey Program: O-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		
14,100.00	9,284.27	14,083.09	9,268.82	92.44	92.42	-88.57	4,931.70	-361.32	661.45	476.59	184.86	3.578		
14,200.00	9,284.97	14,183.09	9,269.55	94.22	94.20	-88.58	5,031.70	-361.33	661.43	473.01	188.42	3.510		
14,300.00	9,285.66	14,283.09	9,270.27	96.01	95.98	-88.58	5,131.70	-361.33	661.41	469.42	191.99	3.445		
14,400.00	9,286.36	14,383.09	9,271.00	97.79	97.77	-88.58	5,231.70	-361.34	661.40	465.84	195.56	3.382		
14,500.00	9,287.05	14,483.09	9,271.73	99.58	99.55	-88.59	5,331.69	-361.35	661.38	462.25	199.13	3.321		
14,600.00	9,287.74	14,583.09	9,272.46	101.36	101.34	-88.59	5,431.69	-361.35	661.36	458.66	202.71	3.263		
14,700.00	9,288.44	14,683.09	9,273.18	103.15	103.13	-88.59	5,531.69	-361.36	661.34	455.06	206.28	3.206		
14,800.00	9,289.13	14,783.09	9,273.91	104.94	104.92	-88.59	5,631.69	-361.37	661.33	451.46	209.86	3.151		
14,900.00	9,289.82	14,883.09	9,274.64	106.73	106.71	-88.60	5,731.68	-361.37	661.31	447.86	213.45	3.098		
15,000.00	9,290.52	14,983.09	9,275.37	108.53	108.50	-88.60	5,831.68	-361.38	661.29	444.26	217.03	3.047		
15,100.00	9,291.21	15,083.09	9,276.09	110.32	110.30	-88.60	5,931.68	-361.39	661.27	440.66	220.62	2.997		
15,200.00	9,291.90	15,183.09	9,276.82	112.11	112.09	-88.61	6,031.67	-361.39	661.26	437.05	224.20	2.949		
15,300.00	9,292.60	15,283.09	9,277.55	113.91	113.89	-88.61	6,131.67	-361.40	661.24	433.44	227.79	2.903		
15,400.00	9,293.29	15,383.09	9,278.28	115.70	115.68	-88.61	6,231.67	-361.41	661.22	429.84	231.39	2.858		
15,500.00	9,293.98	15,483.09	9,279.00	117.50	117.48	-88.62	6,331.67	-361.41	661.20	426.22	234.98	2.814		
15,600.00	9,294.68	15,583.09	9,279.73	119.30	119.28	-88.62	6,431.66	-361.42	661.19	422.61	238.58	2.771		
15,700.00	9,295.37	15,683.09	9,280.46	121.10	121.08	-88.62	6,531.66	-361.42	661.17	419.00	242.17	2.730		
15,800.00	9,296.06	15,783.09	9,281.19	122.90	122.88	-88.62	6,631.66	-361.43	661.15	415.38	245.77	2.690		
15,900.00	9,296.76	15,883.09	9,281.92	124.70	124.68	-88.63	6,731.66	-361.44	661.13	411.76	249.37	2.651		
16,000.00	9,297.45	15,983.09	9,282.64	126.50	126.48	-88.63	6,831.65	-361.44	661.12	408.14	252.97	2.613		
16,100.00	9,298.14	16,083.09	9,283.37	128.30	128.28	-88.63	6,931.65	-361.45	661.10	404.52	256.58	2.577		
16,200.00	9,298.84	16,183.09	9,284.10	130.10	130.08	-88.64	7,031.65	-361.46	661.08	400.90	260.18	2.541		
16,300.00	9,299.53	16,283.09	9,284.83	131.90	131.88	-88.64	7,131.65	-361.46	661.06	397.28	263.79	2.506		
16,400.00	9,300.22	16,383.09	9,285.55	133.71	133.69	-88.64	7,231.64	-361.47	661.05	393.65	267.39	2.472		
16,500.00	9,300.92	16,483.09	9,286.28	135.51	135.49	-88.64	7,331.64	-361.48	661.03	390.03	271.00	2.439		
16,600.00	9,301.61	16,583.09	9,287.01	137.32	137.29	-88.65	7,431.64	-361.48	661.01	386.40	274.61	2.407		
16,700.00	9,302.30	16,683.09	9,287.74	139.12	139.10	-88.65	7,531.63	-361.49	660.99	382.77	278.22	2.376		
16,800.00	9,303.00	16,783.09	9,288.46	140.93	140.91	-88.65	7,631.63	-361.50	660.98	379.15	281.83	2.345		
16,900.00	9,303.69	16,883.09	9,289.19	142.73	142.71	-88.66	7,731.63	-361.50	660.96	375.52	285.44	2.316		
17,000.00	9,304.38	16,983.09	9,289.92	144.54	144.52	-88.66	7,831.63	-361.51	660.94	371.89	289.06	2.287		
17,100.00	9,305.08	17,083.09	9,290.65	146.35	146.32	-88.66	7,931.62	-361.51	660.92	368.25	292.67	2.258		
17,200.00	9,305.77	17,183.09	9,291.37	148.15	148.13	-88.67	8,031.62	-361.52	660.91	364.62	296.28	2.231		
17,300.00	9,306.46	17,283.09	9,292.10	149.96	149.94	-88.67	8,131.62	-361.53	660.89	360.99	299.90	2.204		
17,400.00	9,307.16	17,383.09	9,292.83	151.77	151.75	-88.67	8,231.62	-361.53	660.87	357.36	303.52	2.177		
17,500.00	9,307.85	17,483.09	9,293.56	153.58	153.56	-88.67	8,331.61	-361.54	660.85	353.72	307.13	2.152		
17,600.00	9,308.54	17,583.09	9,294.29	155.39	155.37	-88.68	8,431.61	-361.55	660.84	350.09	310.75	2.127		
17,700.00	9,309.24	17,683.09	9,295.01	157.20	157.17	-88.68	8,531.61	-361.55	660.82	346.45	314.37	2.102		
17,800.00	9,309.93	17,783.09	9,295.74	159.00	158.98	-88.68	8,631.61	-361.56	660.80	342.81	317.99	2.078		
17,900.00	9,310.62	17,883.09	9,296.47	160.81	160.79	-88.69	8,731.60	-361.57	660.78	339.18	321.61	2.055		
18,000.00	9,311.32	17,983.09	9,297.20	162.62	162.60	-88.69	8,831.60	-361.57	660.77	335.54	325.23	2.032		
18,100.00	9,312.01	18,083.09	9,297.92	164.44	164.41	-88.69	8,931.60	-361.58	660.75	331.90	328.85	2.009		
18,200.00	9,312.71	18,183.09	9,298.65	166.25	166.23	-88.69	9,031.59	-361.59	660.73	328.26	332.47	1.987		
18,300.00	9,313.40	18,283.09	9,299.38	168.06	168.04	-88.70	9,131.59	-361.59	660.72	324.62	336.09	1.966		
18,400.00	9,314.09	18,383.09	9,300.11	169.87	169.85	-88.70	9,231.59	-361.60	660.70	320.98	339.72	1.945		
18,500.00	9,314.79	18,483.09	9,300.83	171.68	171.66	-88.70	9,331.59	-361.60	660.68	317.34	343.34	1.924		
18,600.00	9,315.48	18,583.09	9,301.56	173.49	173.47	-88.71	9,431.58	-361.61	660.66	313.70	346.96	1.904		
18,700.00	9,316.17	18,683.09	9,302.29	175.30	175.28	-88.71	9,531.58	-361.62	660.65	310.06	350.59	1.884		
18,800.00	9,316.87	18,783.09	9,303.02	177.12	177.10	-88.71	9,631.58	-361.62	660.63	306.41	354.21	1.865		
18,900.00	9,317.56	18,883.09	9,303.74	178.93	178.91	-88.71	9,731.58	-361.63	660.61	302.77	357.84	1.846		
19,000.00	9,318.25	18,983.09	9,304.47	180.74	180.72	-88.72	9,831.57	-361.64	660.59	299.13	361.47	1.828		
19,100.00	9,318.95	19,083.09	9,305.20	182.56	182.54	-88.72	9,931.57	-361.64	660.58	295.48	365.09	1.809		
19,200.00	9,319.64	19,183.09	9,305.93	184.37	184.35	-88.72	10,031.57	-361.65	660.56	291.84	368.72	1.791		

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 701H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 701H
TVD Reference: KB=29 @ 3110.00usft (Noram 23)
MD Reference: KB=29 @ 3110.00usft (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

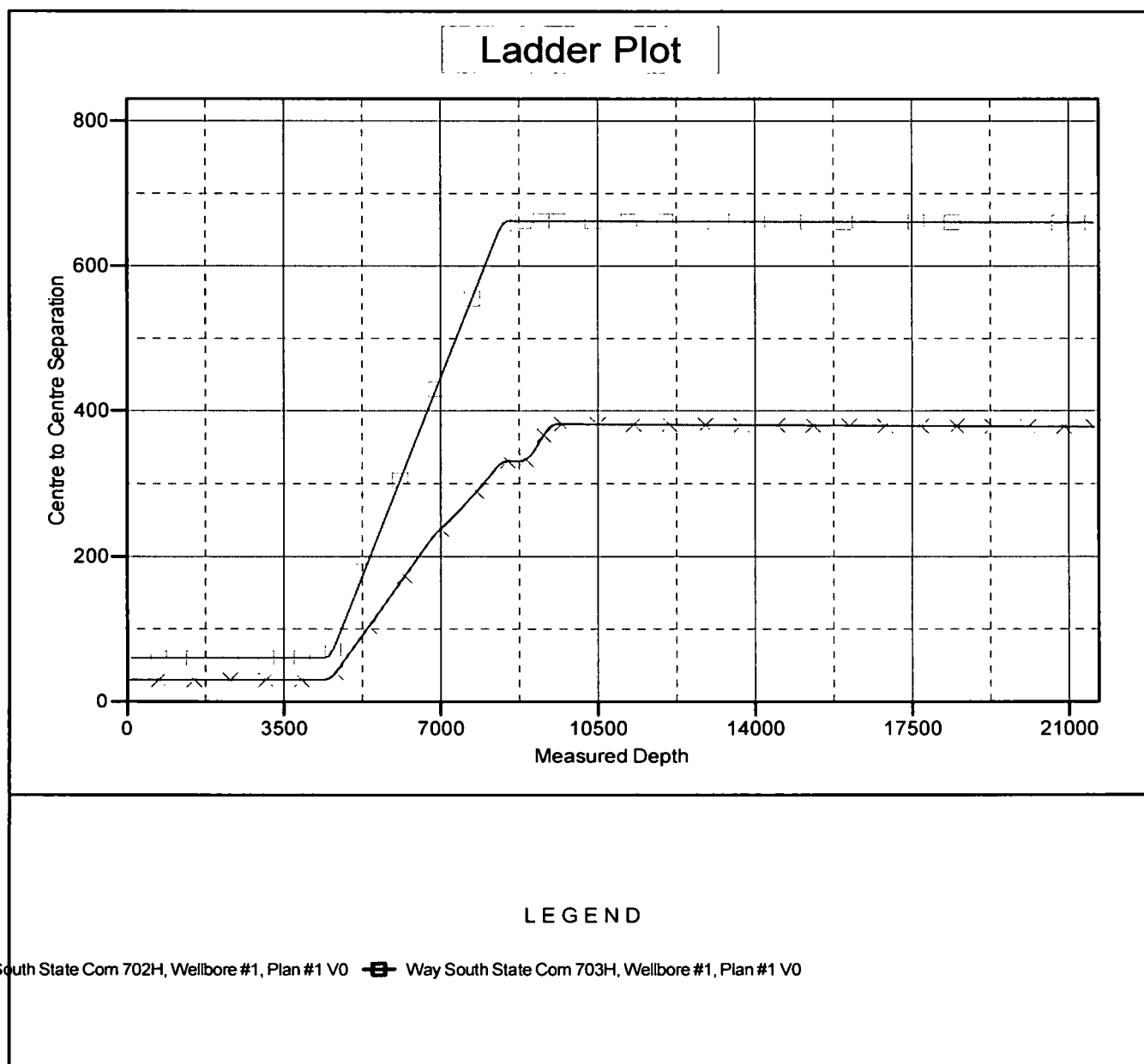
Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 703H - Wellbore #1 - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured 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		
19,300.00	9,320.33	19,283.09	9,306.65	186.18	186.16	-88.73	10,131.57	-361.66	660.54	288.19	372.35	1.774		
19,400.00	9,321.03	19,383.09	9,307.38	188.00	187.98	-88.73	10,231.56	-361.66	660.52	284.55	375.97	1.757		
19,500.00	9,321.72	19,483.09	9,308.11	189.81	189.79	-88.73	10,331.56	-361.67	660.51	280.90	379.60	1.740		
19,600.00	9,322.41	19,583.09	9,308.84	191.63	191.61	-88.74	10,431.56	-361.68	660.49	277.26	383.23	1.723		
19,700.00	9,323.11	19,683.09	9,309.57	193.44	193.42	-88.74	10,531.56	-361.68	660.47	273.61	386.86	1.707		
19,800.00	9,323.80	19,783.09	9,310.29	195.25	195.23	-88.74	10,631.55	-361.69	660.45	269.96	390.49	1.691		
19,900.00	9,324.49	19,883.09	9,311.02	197.07	197.05	-88.74	10,731.55	-361.69	660.44	266.32	394.12	1.676		
20,000.00	9,325.19	19,983.09	9,311.75	198.88	198.86	-88.75	10,831.55	-361.70	660.42	262.67	397.75	1.660		
20,100.00	9,325.88	20,083.09	9,312.48	200.70	200.68	-88.75	10,931.54	-361.71	660.40	259.02	401.38	1.645		
20,200.00	9,326.57	20,183.09	9,313.20	202.52	202.49	-88.75	11,031.54	-361.71	660.38	255.37	405.01	1.631		
20,300.00	9,327.27	20,283.09	9,313.93	204.33	204.31	-88.76	11,131.54	-361.72	660.37	251.73	408.64	1.616		
20,400.00	9,327.96	20,383.09	9,314.66	206.15	206.13	-88.76	11,231.54	-361.73	660.35	248.08	412.27	1.602		
20,500.00	9,328.65	20,483.09	9,315.39	207.96	207.94	-88.76	11,331.53	-361.73	660.33	244.43	415.90	1.588		
20,600.00	9,329.35	20,583.09	9,316.11	209.78	209.76	-88.76	11,431.53	-361.74	660.31	240.78	419.54	1.574		
20,700.00	9,330.04	20,683.09	9,316.84	211.59	211.57	-88.77	11,531.53	-361.75	660.30	237.13	423.17	1.560		
20,800.00	9,330.73	20,783.09	9,317.57	213.41	213.39	-88.77	11,631.53	-361.75	660.28	233.48	426.80	1.547		
20,900.00	9,331.43	20,883.09	9,318.30	215.23	215.21	-88.77	11,731.52	-361.76	660.26	229.83	430.43	1.534		
21,000.00	9,332.12	20,983.09	9,319.02	217.04	217.02	-88.78	11,831.52	-361.76	660.24	226.18	434.07	1.521		
21,100.00	9,332.81	21,083.09	9,319.75	218.86	218.84	-88.78	11,931.52	-361.77	660.23	222.53	437.70	1.508		
21,200.00	9,333.51	21,183.09	9,320.48	220.68	220.66	-88.78	12,031.52	-361.78	660.21	218.88	441.33	1.496 Level 3		
21,300.00	9,334.20	21,283.09	9,321.21	222.49	222.47	-88.79	12,131.51	-361.78	660.19	215.22	444.97	1.484 Level 3		
21,400.00	9,334.89	21,383.09	9,321.94	224.31	224.29	-88.79	12,231.51	-361.79	660.18	211.57	448.60	1.472 Level 3		
21,500.00	9,335.59	21,483.09	9,322.66	226.13	226.11	-88.79	12,331.51	-361.80	660.16	207.92	452.24	1.460 Level 3		
21,539.49	9,335.86	21,522.58	9,322.95	226.85	226.83	-88.79	12,371.00	-361.80	660.15	206.48	453.67	1.455 Level 3		
21,559.45	9,336.00	21,529.48	9,323.00	227.21	226.95	-88.79	12,377.90	-361.80	660.28	206.12	454.16	1.454 Level 3, 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 701H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Plan #1

Local Co-ordinate Reference: Well Way South State Com 701H
TVD Reference: KB=29 @ 3110.00usft (Noram 23)
MD Reference: KB=29 @ 3110.00usft (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 @ 3110.00usft (Noram 23)
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.33334

Coordinates are relative to: Way South State Com 701H
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Grid Convergence at Surface is: 0.11°



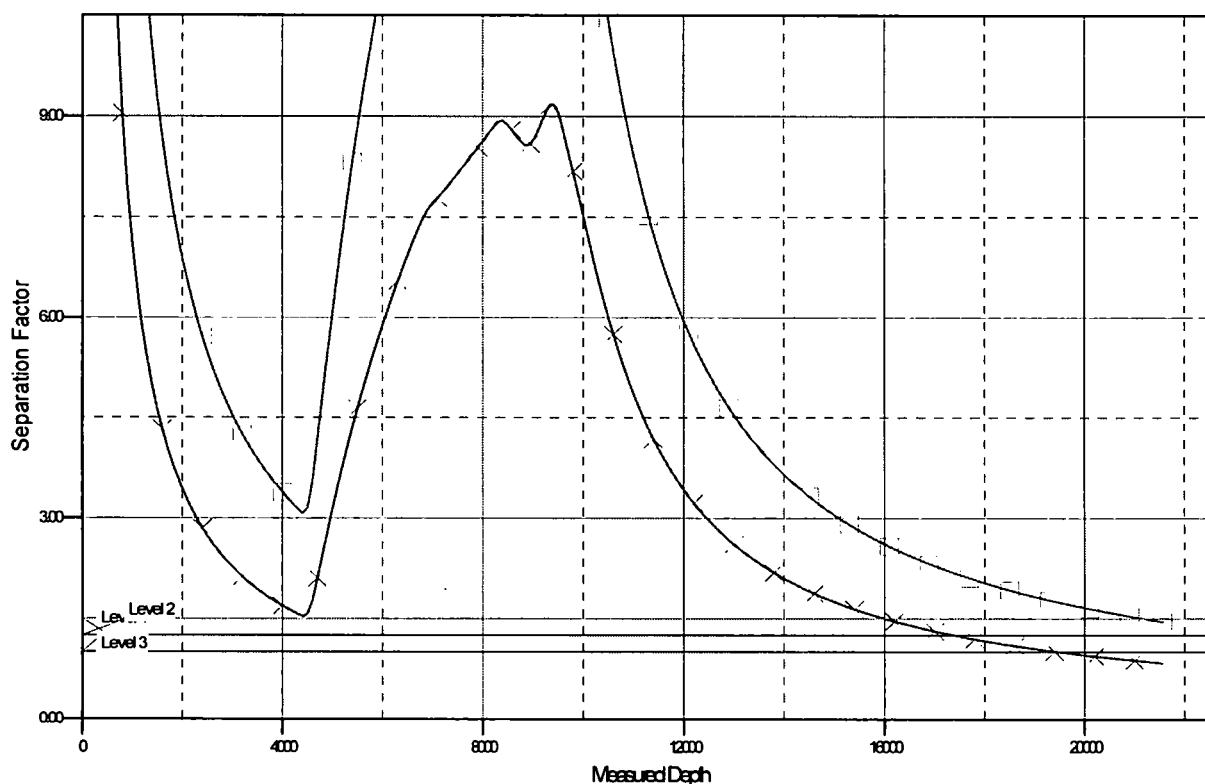
Company: COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Sec. 31, T 26 S, R 28- E
Site Error: 0.00 usft
Reference Well: Way South State Com 701H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
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Output errors are at 2.00 sigma
Database: EDM 5000.1
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB=29 @ 3110.00usft (Noram 23)
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.33334

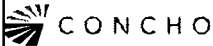
Coordinates are relative to: Way South State Com 701H
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Grid Convergence at Surface is: 0.11°

Separation Factor Plot



LEGEND

South State Com 702H, Wellbore #1, Plan #1 V0  Way South State Com 703H, Wellbore #1, Plan #1 V0



COG Operating L.L.C.
Project: Eddy County, NM (NAD 27 NME)
Site: Sec. 31, T 28 S, R 28 E
Well: Way South State Com 701H
Wellbore: Wellbore #1
Plan: Plan #1 (Way South State Com 701H/Wellbore #1)
Noram 23

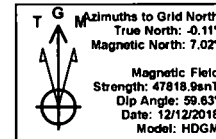
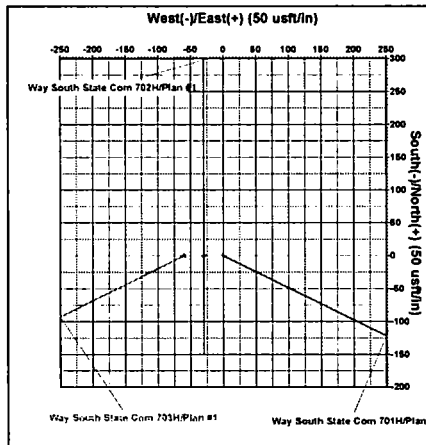
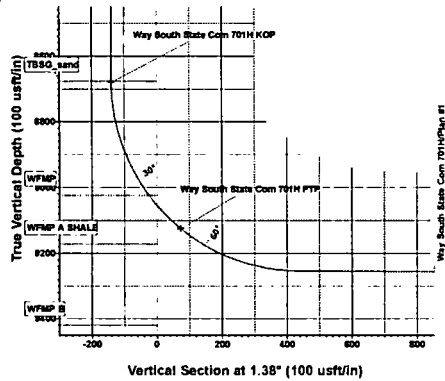
WELL DETAILS: Way South State Com 701H

Ground Elevation:: 3081.00
RKB Elevation: KB=29 @ 3110.00usft (Noram 23)
Rig Name: Noram 23

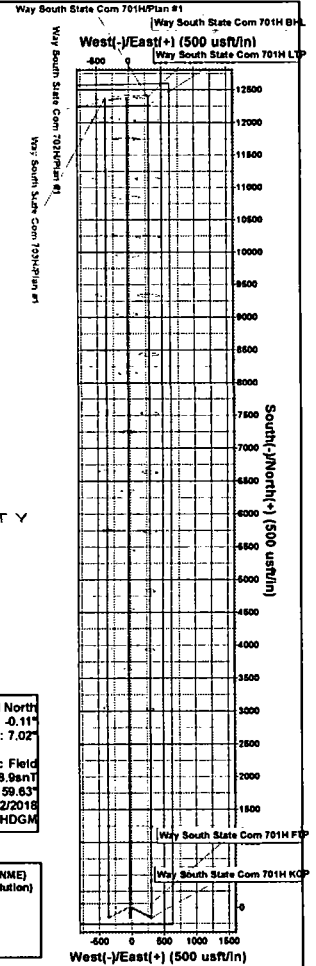
Northing 364000.90 Easting 566224.50 Latitude 32.00057 Longitude -104.11970

Planned Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
2	4405.84	0.00	0.00	4405.84	0.00	0.00	0.00	0.00	0.00	Start 3593.53 hold at 4655.84 MD
3	4655.84	5.00	118.00	4655.52	-4.78	9.80	2.00	118.00	-4.54	Start Drop -2.00
4	8249.37	5.00	118.00	8235.38	-142.08	291.30	0.00	0.00	-135.03	Start 195.00 hold at 8499.37 MD
5	8499.37	0.00	0.00	8485.06	-146.85	301.10	2.00	180.00	-139.57	Start DLS 10.00 TFO 359.99
6	8694.37	0.00	0.00	8680.06	-146.85	301.10	0.00	0.00	-139.57	Start 11969.06 hold at 9590.40 MD
7	9590.40	89.60	359.99	9253.00	422.13	300.96	10.00	359.99	429.25	TD at 21559.45
8	21559.45	89.60	359.99	9336.00	12390.90	298.20	0.00	0.00	12394.49	



PROJECT DETAILS: Eddy County, NM (NAD 27 NME)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



Vertical Section at 1.38° (300 usft/in)