



COG Operating, LLC

Lea County, NM

Sec 27, T22S, R34E

Squints Federal Com #4H

Wellbore #1

Design #1

DDC Anticollision Report

08 June, 2015



APR 22 2016



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date 6/8/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	20,940.1	Design #1 (Wellbore #1)	MWD default	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 27, T22S, R34E						
Squints Federal Com #2H - Wellbore #1 - Design #1	10,699.5	10,702.3	2,471.8	2,424.0	51.704	CC
Squints Federal Com #2H - Wellbore #1 - Design #1	15,700.0	15,796.7	2,473.0	2,293.0	13.741	ES
Squints Federal Com #2H - Wellbore #1 - Design #1	16,300.0	15,796.7	2,552.5	2,362.0	13.396	SF
Squints Federal Com #3H - Wellbore #1 - Design #1	10,679.4	10,679.3	1,319.8	1,272.1	27.663	CC
Squints Federal Com #3H - Wellbore #1 - Design #1	20,940.1	21,057.3	1,320.0	952.0	3.586	ES, SF
Squints Federal Com #6H - Wellbore #1 - Design #1	9,909.4	9,911.4	2,442.0	2,397.7	55.178	CC
Squints Federal Com #6H - Wellbore #1 - Design #1	10,100.0	10,089.1	2,442.4	2,397.3	54.188	ES
Squints Federal Com #6H - Wellbore #1 - Design #1	16,300.0	14,966.6	2,671.1	2,488.6	14.633	SF
Squints Federal Com #7H - Wellbore #1 - Design #1	9,936.9	9,935.9	1,349.7	1,305.4	30.419	CC
Squints Federal Com #7H - Wellbore #1 - Design #1	20,940.1	20,210.9	1,566.7	1,246.8	4.898	ES, SF
Squints Federal Com #8H - Wellbore #1 - Design #1	9,861.9	9,861.9	30.0	-14.0	0.681	Level 1, CC
Squints Federal Com #8H - Wellbore #1 - Design #1	9,900.0	9,900.0	30.0	-14.2	0.679	Level 1, ES, SF

Offset Design	Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1										Offset Site Error:	0.0 usft
Survey Program:	0-MWD default										Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	89.54	20.0	2,471.7	2,471.8			
100.0	100.0	103.0	103.0	0.1	0.1	89.54	20.0	2,471.7	2,471.8	2,471.6	N/A	
200.0	200.0	203.0	203.0	0.3	0.3	89.54	20.0	2,471.7	2,471.8	2,471.2	4,043.060	
300.0	300.0	303.0	303.0	0.5	0.5	89.54	20.0	2,471.7	2,471.8	2,470.7	2,329.900	
400.0	400.0	403.0	403.0	0.8	0.8	89.54	20.0	2,471.7	2,471.8	2,470.3	1,636.477	
500.0	500.0	503.0	503.0	1.0	1.0	89.54	20.0	2,471.7	2,471.8	2,469.8	1,261.138	
600.0	600.0	603.0	603.0	1.2	1.2	89.54	20.0	2,471.7	2,471.8	2,469.4	1,025.851	
700.0	700.0	703.0	703.0	1.4	1.4	89.54	20.0	2,471.7	2,471.8	2,468.9	864.554	
800.0	800.0	803.0	803.0	1.7	1.7	89.54	20.0	2,471.7	2,471.8	2,468.5	747.087	
900.0	900.0	903.0	903.0	1.9	1.9	89.54	20.0	2,471.7	2,471.8	2,468.0	657.723	
1,000.0	1,000.0	1,003.0	1,003.0	2.1	2.1	89.54	20.0	2,471.7	2,471.8	2,467.6	587.453	
1,100.0	1,100.0	1,103.0	1,103.0	2.3	2.3	89.54	20.0	2,471.7	2,471.8	2,467.1	530.749	
1,200.0	1,200.0	1,203.0	1,203.0	2.5	2.6	89.54	20.0	2,471.7	2,471.8	2,466.7	484.029	
1,300.0	1,300.0	1,303.0	1,303.0	2.8	2.8	89.54	20.0	2,471.7	2,471.8	2,466.2	444.868	
1,400.0	1,400.0	1,403.0	1,403.0	3.0	3.0	89.54	20.0	2,471.7	2,471.8	2,465.8	411.569	
1,500.0	1,500.0	1,503.0	1,503.0	3.2	3.2	89.54	20.0	2,471.7	2,471.8	2,465.3	382.908	

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



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Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design											Offset Site Error:	
Survey Program: 0-MWD default											0.0 usft	
Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1											Offset Well Error:	
											0.0 usft	
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)	Separation Factor	Warning
1,600.0	1,600.0	1,603.0	1,603.0	3.4	3.5	89.54	20.0	2,471.7	2,471.8	2,464.9	357.979	
1,700.0	1,700.0	1,703.0	1,703.0	3.7	3.7	89.54	20.0	2,471.7	2,471.8	2,464.4	336.098	
1,800.0	1,800.0	1,803.0	1,803.0	3.9	3.9	89.54	20.0	2,471.7	2,471.8	2,464.0	316.738	
1,900.0	1,900.0	1,903.0	1,903.0	4.1	4.1	89.54	20.0	2,471.7	2,471.8	2,463.5	299.486	
2,000.0	2,000.0	2,003.0	2,003.0	4.3	4.4	89.54	20.0	2,471.7	2,471.8	2,463.1	284.017	
2,100.0	2,100.0	2,103.0	2,103.0	4.6	4.6	89.54	20.0	2,471.7	2,471.8	2,462.6	270.067	
2,200.0	2,200.0	2,203.0	2,203.0	4.8	4.8	89.54	20.0	2,471.7	2,471.8	2,462.2	257.423	
2,300.0	2,300.0	2,303.0	2,303.0	5.0	5.0	89.54	20.0	2,471.7	2,471.8	2,461.7	245.911	
2,400.0	2,400.0	2,403.0	2,403.0	5.2	5.3	89.54	20.0	2,471.7	2,471.8	2,461.3	235.384	
2,500.0	2,500.0	2,503.0	2,503.0	5.5	5.5	89.54	20.0	2,471.7	2,471.8	2,460.8	225.721	
2,600.0	2,600.0	2,603.0	2,603.0	5.7	5.7	89.54	20.0	2,471.7	2,471.8	2,460.4	216.820	
2,700.0	2,700.0	2,703.0	2,703.0	5.9	5.9	89.54	20.0	2,471.7	2,471.8	2,459.9	208.595	
2,800.0	2,800.0	2,803.0	2,803.0	6.1	6.2	89.54	20.0	2,471.7	2,471.8	2,459.5	200.971	
2,900.0	2,900.0	2,903.0	2,903.0	6.4	6.4	89.54	20.0	2,471.7	2,471.8	2,459.0	193.884	
3,000.0	3,000.0	3,003.0	3,003.0	6.6	6.6	89.54	20.0	2,471.7	2,471.8	2,458.6	187.281	
3,100.0	3,100.0	3,103.0	3,103.0	6.8	6.8	89.54	20.0	2,471.7	2,471.8	2,458.1	181.112	
3,200.0	3,200.0	3,203.0	3,203.0	7.0	7.1	89.54	20.0	2,471.7	2,471.8	2,457.7	175.337	
3,300.0	3,300.0	3,303.0	3,303.0	7.3	7.3	89.54	20.0	2,471.7	2,471.8	2,457.2	169.919	
3,400.0	3,400.0	3,403.0	3,403.0	7.5	7.5	89.54	20.0	2,471.7	2,471.8	2,456.8	164.825	
3,500.0	3,500.0	3,503.0	3,503.0	7.7	7.7	89.54	20.0	2,471.7	2,471.8	2,456.3	160.028	
3,600.0	3,600.0	3,603.0	3,603.0	7.9	8.0	89.54	20.0	2,471.7	2,471.8	2,455.9	155.502	
3,700.0	3,700.0	3,703.0	3,703.0	8.2	8.2	89.54	20.0	2,471.7	2,471.8	2,455.4	151.226	
3,800.0	3,800.0	3,803.0	3,803.0	8.4	8.4	89.54	20.0	2,471.7	2,471.8	2,455.0	147.178	
3,900.0	3,900.0	3,903.0	3,903.0	8.6	8.6	89.54	20.0	2,471.7	2,471.8	2,454.5	143.341	
4,000.0	4,000.0	4,003.0	4,003.0	8.8	8.9	89.54	20.0	2,471.7	2,471.8	2,454.1	139.699	
4,100.0	4,100.0	4,103.0	4,103.0	9.1	9.1	89.54	20.0	2,471.7	2,471.8	2,453.6	136.238	
4,200.0	4,200.0	4,203.0	4,203.0	9.3	9.3	89.54	20.0	2,471.7	2,471.8	2,453.2	132.944	
4,300.0	4,300.0	4,303.0	4,303.0	9.5	9.5	89.54	20.0	2,471.7	2,471.8	2,452.7	129.806	
4,400.0	4,400.0	4,403.0	4,403.0	9.7	9.7	89.54	20.0	2,471.7	2,471.8	2,452.3	126.812	
4,500.0	4,500.0	4,503.0	4,503.0	10.0	10.0	89.54	20.0	2,471.7	2,471.8	2,451.8	123.953	
4,600.0	4,600.0	4,603.0	4,603.0	10.2	10.2	89.54	20.0	2,471.7	2,471.8	2,451.4	121.221	
4,700.0	4,700.0	4,703.0	4,703.0	10.4	10.4	89.54	20.0	2,471.7	2,471.8	2,450.9	118.606	
4,800.0	4,800.0	4,803.0	4,803.0	10.6	10.6	89.54	20.0	2,471.7	2,471.8	2,450.5	116.101	
4,900.0	4,900.0	4,903.0	4,903.0	10.9	10.9	89.54	20.0	2,471.7	2,471.8	2,450.0	113.701	
5,000.0	5,000.0	5,003.0	5,003.0	11.1	11.1	89.54	20.0	2,471.7	2,471.8	2,449.6	111.397	
5,100.0	5,100.0	5,103.0	5,103.0	11.3	11.3	89.54	20.0	2,471.7	2,471.8	2,449.1	109.185	
5,200.0	5,200.0	5,203.0	5,203.0	11.5	11.5	89.54	20.0	2,471.7	2,471.8	2,448.7	107.059	
5,300.0	5,300.0	5,303.0	5,303.0	11.8	11.8	89.54	20.0	2,471.7	2,471.8	2,448.2	105.015	
5,400.0	5,400.0	5,403.0	5,403.0	12.0	12.0	89.54	20.0	2,471.7	2,471.8	2,447.8	103.047	
5,500.0	5,500.0	5,503.0	5,503.0	12.2	12.2	89.54	20.0	2,471.7	2,471.8	2,447.3	101.151	
5,600.0	5,600.0	5,603.0	5,603.0	12.4	12.4	89.54	20.0	2,471.7	2,471.8	2,446.9	99.324	
5,700.0	5,700.0	5,703.0	5,703.0	12.7	12.7	89.54	20.0	2,471.7	2,471.8	2,446.4	97.561	
5,800.0	5,800.0	5,803.0	5,803.0	12.9	12.9	89.54	20.0	2,471.7	2,471.8	2,446.0	95.861	
5,900.0	5,900.0	5,903.0	5,903.0	13.1	13.1	89.54	20.0	2,471.7	2,471.8	2,445.5	94.218	
6,000.0	6,000.0	6,003.0	6,003.0	13.3	13.3	89.54	20.0	2,471.7	2,471.8	2,445.1	92.631	
6,100.0	6,100.0	6,103.0	6,103.0	13.6	13.6	89.54	20.0	2,471.7	2,471.8	2,444.6	91.096	
6,200.0	6,200.0	6,203.0	6,203.0	13.8	13.8	89.54	20.0	2,471.7	2,471.8	2,444.2	89.612	
6,300.0	6,300.0	6,303.0	6,303.0	14.0	14.0	89.54	20.0	2,471.7	2,471.8	2,443.7	88.175	
6,400.0	6,400.0	6,403.0	6,403.0	14.2	14.2	89.54	20.0	2,471.7	2,471.8	2,443.3	86.783	
6,500.0	6,500.0	6,503.0	6,503.0	14.5	14.5	89.54	20.0	2,471.7	2,471.8	2,442.8	85.434	
6,600.0	6,600.0	6,603.0	6,603.0	14.7	14.7	89.54	20.0	2,471.7	2,471.8	2,442.4	84.127	
6,700.0	6,700.0	6,703.0	6,703.0	14.9	14.9	89.54	20.0	2,471.7	2,471.8	2,441.9	82.860	

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



HP
Anticollision Report



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Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning		
6,800.0	6,800.0	6,803.0	6,803.0	15.1	15.1	89.54	20.0	2,471.7	2,471.8	2,441.5	81.630		
6,900.0	6,900.0	6,903.0	6,903.0	15.4	15.4	89.54	20.0	2,471.7	2,471.8	2,441.1	80.435		
7,000.0	7,000.0	7,003.0	7,003.0	15.6	15.6	89.54	20.0	2,471.7	2,471.8	2,440.6	79.276		
7,100.0	7,100.0	7,103.0	7,103.0	15.8	15.8	89.54	20.0	2,471.7	2,471.8	2,440.2	78.149		
7,200.0	7,200.0	7,203.0	7,203.0	16.0	16.0	89.54	20.0	2,471.7	2,471.8	2,439.7	77.054		
7,300.0	7,300.0	7,303.0	7,303.0	16.3	16.3	89.54	20.0	2,471.7	2,471.8	2,439.3	75.989		
7,400.0	7,400.0	7,403.0	7,403.0	16.5	16.5	89.54	20.0	2,471.7	2,471.8	2,438.8	74.953		
7,500.0	7,500.0	7,503.0	7,503.0	16.7	16.7	89.54	20.0	2,471.7	2,471.8	2,438.4	73.945		
7,600.0	7,600.0	7,603.0	7,603.0	16.9	16.9	89.54	20.0	2,471.7	2,471.8	2,437.9	72.964		
7,700.0	7,700.0	7,703.0	7,703.0	17.2	17.2	89.54	20.0	2,471.7	2,471.8	2,437.5	72.008		
7,800.0	7,800.0	7,803.0	7,803.0	17.4	17.4	89.54	20.0	2,471.7	2,471.8	2,437.0	71.078		
7,900.0	7,900.0	7,903.0	7,903.0	17.6	17.6	89.54	20.0	2,471.7	2,471.8	2,436.6	70.171		
8,000.0	8,000.0	8,003.0	8,003.0	17.8	17.8	89.54	20.0	2,471.7	2,471.8	2,436.1	69.286		
8,100.0	8,100.0	8,103.0	8,103.0	18.1	18.1	89.54	20.0	2,471.7	2,471.8	2,435.7	68.424		
8,200.0	8,200.0	8,203.0	8,203.0	18.3	18.3	89.54	20.0	2,471.7	2,471.8	2,435.2	67.583		
8,300.0	8,300.0	8,303.0	8,303.0	18.5	18.5	89.54	20.0	2,471.7	2,471.8	2,434.8	66.763		
8,400.0	8,400.0	8,403.0	8,403.0	18.7	18.7	89.54	20.0	2,471.7	2,471.8	2,434.3	65.962		
8,500.0	8,500.0	8,503.0	8,503.0	19.0	19.0	89.54	20.0	2,471.7	2,471.8	2,433.9	65.180		
8,600.0	8,600.0	8,603.0	8,603.0	19.2	19.2	89.54	20.0	2,471.7	2,471.8	2,433.4	64.416		
8,700.0	8,700.0	8,703.0	8,703.0	19.4	19.4	89.54	20.0	2,471.7	2,471.8	2,433.0	63.670		
8,800.0	8,800.0	8,803.0	8,803.0	19.6	19.6	89.54	20.0	2,471.7	2,471.8	2,432.5	62.941		
8,900.0	8,900.0	8,903.0	8,903.0	19.9	19.9	89.54	20.0	2,471.7	2,471.8	2,432.1	62.229		
9,000.0	9,000.0	9,003.0	9,003.0	20.1	20.1	89.54	20.0	2,471.7	2,471.8	2,431.6	61.533		
9,100.0	9,100.0	9,103.0	9,103.0	20.3	20.3	89.54	20.0	2,471.7	2,471.8	2,431.2	60.852		
9,200.0	9,200.0	9,203.0	9,203.0	20.5	20.5	89.54	20.0	2,471.7	2,471.8	2,430.7	60.186		
9,300.0	9,300.0	9,303.0	9,303.0	20.8	20.8	89.54	20.0	2,471.7	2,471.8	2,430.3	59.534		
9,400.0	9,400.0	9,403.0	9,403.0	21.0	21.0	89.54	20.0	2,471.7	2,471.8	2,429.8	58.896		
9,500.0	9,500.0	9,503.0	9,503.0	21.2	21.2	89.54	20.0	2,471.7	2,471.8	2,429.4	58.272		
9,600.0	9,600.0	9,603.0	9,603.0	21.4	21.4	89.54	20.0	2,471.7	2,471.8	2,428.9	57.661		
9,700.0	9,700.0	9,703.0	9,703.0	21.7	21.7	89.54	20.0	2,471.7	2,471.8	2,428.5	57.063		
9,800.0	9,800.0	9,803.0	9,803.0	21.9	21.9	89.54	20.0	2,471.7	2,471.8	2,428.0	56.477		
9,900.0	9,900.0	9,903.0	9,903.0	22.1	22.1	89.54	20.0	2,471.7	2,471.8	2,427.6	55.902		
10,000.0	10,000.0	10,003.0	10,003.0	22.3	22.3	89.54	20.0	2,471.7	2,471.8	2,427.1	55.340		
10,100.0	10,100.0	10,103.0	10,103.0	22.6	22.6	89.54	20.0	2,471.7	2,471.8	2,426.7	54.788		
10,200.0	10,200.0	10,203.0	10,203.0	22.8	22.8	89.54	20.0	2,471.7	2,471.8	2,426.2	54.248		
10,300.0	10,300.0	10,303.0	10,303.0	23.0	23.0	89.54	20.0	2,471.7	2,471.8	2,425.8	53.718		
10,400.0	10,400.0	10,403.0	10,403.0	23.2	23.2	89.54	20.0	2,471.7	2,471.8	2,425.3	53.198		
10,500.0	10,500.0	10,503.0	10,503.0	23.5	23.5	89.54	20.0	2,471.7	2,471.8	2,424.9	52.688		
10,600.0	10,600.0	10,603.0	10,603.0	23.7	23.7	89.54	20.0	2,471.7	2,471.8	2,424.4	52.188		
10,627.5	10,627.5	10,630.5	10,630.5	23.7	23.7	89.54	20.0	2,471.7	2,471.8	2,424.3	52.052		
10,650.0	10,650.0	10,653.0	10,653.0	23.8	23.8	89.89	20.0	2,471.7	2,471.8	2,424.2	51.942		
10,675.0	10,674.9	10,677.9	10,677.9	23.8	23.9	89.93	20.0	2,471.7	2,471.8	2,424.1	51.821		
10,699.5	10,699.3	10,702.3	10,702.3	23.9	23.9	90.00	20.0	2,471.7	2,471.8	2,424.0	51.704 CC		
10,700.0	10,699.7	10,702.7	10,702.7	23.9	23.9	90.00	20.0	2,471.7	2,471.8	2,424.0	51.702		
10,725.0	10,724.3	10,727.3	10,727.3	24.0	24.0	90.10	20.0	2,471.7	2,471.8	2,423.9	51.584		
10,750.0	10,748.7	10,751.7	10,751.7	24.0	24.0	90.23	20.0	2,471.7	2,471.8	2,423.8	51.469		
10,775.0	10,772.7	10,776.1	10,776.1	24.1	24.1	90.38	20.2	2,471.7	2,471.8	2,423.7	51.356		
10,800.0	10,796.3	10,801.2	10,801.2	24.1	24.1	90.53	21.6	2,471.7	2,471.9	2,423.7	51.243		
10,825.0	10,819.4	10,826.7	10,826.5	24.2	24.2	90.69	24.3	2,471.7	2,472.0	2,423.6	51.131		
10,850.0	10,842.0	10,852.6	10,852.0	24.2	24.2	90.84	28.5	2,471.7	2,472.1	2,423.6	51.020		
10,875.0	10,864.1	10,878.9	10,877.7	24.3	24.3	90.99	34.1	2,471.6	2,472.2	2,423.6	50.910		
10,900.0	10,885.4	10,905.6	10,903.5	24.3	24.4	91.14	41.3	2,471.6	2,472.3	2,423.6	50.799		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1											Offset Site Error:	0.0 usft
Survey Program: 0-MWD default											Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
10,925.0	10,906.1	10,932.8	10,929.2	24.4	24.4	91.29	50.0	2,471.5	2,472.5	2,423.7	50.688	
10,950.0	10,926.0	10,960.5	10,954.9	24.4	24.5	91.44	60.4	2,471.5	2,472.6	2,423.7	50.575	
10,975.0	10,945.1	10,988.6	10,980.3	24.5	24.5	91.59	72.5	2,471.4	2,472.8	2,423.8	50.459	
11,000.0	10,963.3	11,017.2	11,005.3	24.6	24.6	91.73	86.3	2,471.3	2,473.0	2,423.9	50.341	
11,025.0	10,980.6	11,046.4	11,030.0	24.6	24.6	91.87	101.9	2,471.2	2,473.2	2,423.9	50.217	
11,050.0	10,997.0	11,076.0	11,054.0	24.7	24.7	92.00	119.2	2,471.1	2,473.4	2,424.0	50.088	
11,075.0	11,012.3	11,106.2	11,077.3	24.8	24.8	92.13	138.4	2,471.0	2,473.6	2,424.1	49.952	
11,100.0	11,026.6	11,136.8	11,099.7	24.8	24.9	92.26	159.3	2,470.9	2,473.8	2,424.1	49.807	
11,125.0	11,039.7	11,167.9	11,121.0	24.9	24.9	92.37	182.0	2,470.8	2,474.0	2,424.2	49.653	
11,150.0	11,051.8	11,199.6	11,141.1	25.0	25.0	92.48	206.4	2,470.6	2,474.2	2,424.2	49.488	
11,175.0	11,062.7	11,231.7	11,159.8	25.1	25.1	92.59	232.5	2,470.5	2,474.4	2,424.2	49.310	
11,200.0	11,072.3	11,264.2	11,176.9	25.2	25.2	92.68	260.1	2,470.3	2,474.6	2,424.2	49.118	
11,225.0	11,080.8	11,297.2	11,192.3	25.3	25.3	92.77	289.3	2,470.1	2,474.8	2,424.2	48.913	
11,250.0	11,088.0	11,330.5	11,205.8	25.4	25.5	92.85	319.7	2,470.0	2,474.9	2,424.1	48.693	
11,275.0	11,094.0	11,364.2	11,217.2	25.5	25.6	92.91	351.4	2,469.8	2,475.0	2,424.0	48.457	
11,300.0	11,098.7	11,398.1	11,226.4	25.6	25.8	92.97	384.1	2,469.6	2,475.2	2,423.8	48.208	
11,325.0	11,102.1	11,432.3	11,233.3	25.8	25.9	93.01	417.6	2,469.4	2,475.2	2,423.6	47.943	
11,350.0	11,104.2	11,466.7	11,237.9	25.9	26.1	93.04	451.7	2,469.2	2,475.3	2,423.4	47.665	
11,374.5	11,105.0	11,500.5	11,239.9	26.0	26.3	93.06	485.4	2,469.0	2,475.4	2,423.1	47.381	
11,400.0	11,105.1	11,531.2	11,239.9	26.2	26.5	93.05	516.1	2,468.8	2,475.3	2,422.8	47.092	
11,500.0	11,105.7	11,631.2	11,238.4	26.8	27.1	93.00	616.1	2,468.3	2,475.2	2,421.4	45.971	
11,600.0	11,106.4	11,731.2	11,237.0	27.6	27.8	92.96	716.0	2,467.7	2,475.2	2,419.8	44.737	
11,700.0	11,107.0	11,831.2	11,235.6	28.4	28.7	92.91	816.0	2,467.1	2,475.1	2,418.1	43.419	
11,800.0	11,107.6	11,931.1	11,234.2	29.4	29.6	92.86	916.0	2,466.5	2,475.0	2,416.1	42.049	
11,900.0	11,108.3	12,031.1	11,232.8	30.4	30.6	92.82	1,015.9	2,465.9	2,474.9	2,414.0	40.654	
12,000.0	11,108.9	12,131.1	11,231.4	31.5	31.7	92.77	1,115.9	2,465.4	2,474.8	2,411.8	39.257	
12,100.0	11,109.5	12,231.1	11,230.0	32.6	32.8	92.72	1,215.9	2,464.8	2,474.7	2,409.4	37.877	
12,200.0	11,110.1	12,331.1	11,228.6	33.8	34.0	92.67	1,315.8	2,464.2	2,474.6	2,406.9	36.526	
12,300.0	11,110.8	12,431.0	11,227.2	35.1	35.3	92.63	1,415.8	2,463.6	2,474.5	2,404.3	35.214	
12,400.0	11,111.4	12,531.0	11,225.8	36.4	36.6	92.58	1,515.8	2,463.1	2,474.5	2,401.6	33.950	
12,500.0	11,112.0	12,631.0	11,224.4	37.8	37.9	92.53	1,615.7	2,462.5	2,474.4	2,398.8	32.735	
12,600.0	11,112.6	12,731.0	11,223.0	39.1	39.3	92.49	1,715.7	2,461.9	2,474.3	2,395.9	31.574	
12,700.0	11,113.3	12,831.0	11,221.6	40.6	40.7	92.44	1,815.7	2,461.3	2,474.2	2,393.0	30.466	
12,800.0	11,113.9	12,930.9	11,220.2	42.0	42.2	92.39	1,915.6	2,460.7	2,474.2	2,390.0	29.412	
12,900.0	11,114.5	13,030.9	11,218.8	43.5	43.6	92.35	2,015.6	2,460.2	2,474.1	2,387.0	28.410	
13,000.0	11,115.2	13,130.9	11,217.4	45.0	45.1	92.30	2,115.6	2,459.6	2,474.0	2,383.9	27.459	
13,100.0	11,115.8	13,230.9	11,216.0	46.6	46.7	92.25	2,215.5	2,459.0	2,473.9	2,380.8	26.556	
13,200.0	11,116.4	13,330.9	11,214.6	48.1	48.2	92.20	2,315.5	2,458.4	2,473.9	2,377.6	25.700	
13,300.0	11,117.0	13,430.8	11,213.2	49.7	49.8	92.16	2,415.5	2,457.9	2,473.8	2,374.4	24.888	
13,400.0	11,117.7	13,530.8	11,211.8	51.3	51.4	92.11	2,515.4	2,457.3	2,473.8	2,371.2	24.118	
13,500.0	11,118.3	13,630.8	11,210.4	52.9	53.0	92.06	2,615.4	2,456.7	2,473.7	2,367.9	23.387	
13,600.0	11,118.9	13,730.8	11,209.0	54.5	54.6	92.02	2,715.4	2,456.1	2,473.6	2,364.6	22.693	
13,700.0	11,119.6	13,830.8	11,207.6	56.1	56.2	91.97	2,815.3	2,455.6	2,473.6	2,361.3	22.035	
13,800.0	11,120.2	13,930.7	11,206.2	57.8	57.8	91.92	2,915.3	2,455.0	2,473.5	2,358.0	21.409	
13,900.0	11,120.8	14,030.7	11,204.8	59.4	59.5	91.88	3,015.3	2,454.4	2,473.5	2,354.6	20.813	
14,000.0	11,121.4	14,130.7	11,203.4	61.1	61.1	91.83	3,115.2	2,453.8	2,473.4	2,351.2	20.247	
14,100.0	11,122.1	14,230.7	11,202.0	62.8	62.8	91.78	3,215.2	2,453.2	2,473.4	2,347.9	19.708	
14,200.0	11,122.7	14,330.6	11,200.6	64.4	64.5	91.73	3,315.2	2,452.7	2,473.3	2,344.4	19.194	
14,300.0	11,123.3	14,430.6	11,199.2	66.1	66.2	91.69	3,415.2	2,452.1	2,473.3	2,341.0	18.705	
14,400.0	11,123.9	14,530.6	11,197.8	67.8	67.8	91.64	3,515.1	2,451.5	2,473.2	2,337.6	18.237	
14,500.0	11,124.6	14,630.6	11,196.4	69.5	69.5	91.59	3,615.1	2,450.9	2,473.2	2,334.2	17.791	
14,600.0	11,125.2	14,730.6	11,195.0	71.2	71.2	91.55	3,715.1	2,450.4	2,473.1	2,330.7	17.365	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference	Vertical	Measured	Vertical	Semi Major Axis		Highside	Offset Wellbore Centre		Distance		Separation	Warning	
Measured Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Factor		
14,700.0	11,125.8	14,830.5	11,193.6	72.9	73.0	91.50	3,815.0	2,449.8	2,473.1	2,327.2	16.957		
14,800.0	11,126.5	14,930.5	11,192.1	74.6	74.7	91.45	3,915.0	2,449.2	2,473.0	2,323.8	16.566		
14,900.0	11,127.1	15,030.5	11,190.7	76.4	76.4	91.41	4,015.0	2,448.6	2,473.0	2,320.3	16.193		
15,000.0	11,127.7	15,130.5	11,189.3	78.1	78.1	91.36	4,114.9	2,448.0	2,473.0	2,316.8	15.834		
15,100.0	11,128.3	15,230.5	11,187.9	79.8	79.8	91.31	4,214.9	2,447.5	2,472.9	2,313.3	15.491		
15,200.0	11,129.0	15,330.4	11,186.5	81.6	81.6	91.26	4,314.9	2,446.9	2,472.9	2,309.8	15.161		
15,300.0	11,129.6	15,430.4	11,185.1	83.3	83.3	91.22	4,414.8	2,446.3	2,472.9	2,306.3	14.844		
15,400.0	11,130.2	15,530.4	11,183.7	85.0	85.1	91.17	4,514.8	2,445.7	2,472.8	2,302.8	14.540		
15,500.0	11,130.9	15,630.4	11,182.3	86.8	86.8	91.12	4,614.8	2,445.2	2,472.8	2,299.2	14.247		
15,600.0	11,131.5	15,730.4	11,180.9	88.5	88.5	91.08	4,714.7	2,444.6	2,472.8	2,295.7	13.966		
15,656.6	11,131.8	15,787.0	11,180.1	89.5	89.5	91.05	4,771.4	2,444.3	2,472.8	2,293.7	13.811		
15,700.0	11,132.1	15,796.7	11,180.0	90.3	89.7	91.04	4,781.1	2,444.2	2,473.0	2,293.0	13.741	ES	
15,800.0	11,132.7	15,796.7	11,180.0	92.0	89.7	91.04	4,781.1	2,444.2	2,476.3	2,294.6	13.627		
15,900.0	11,133.4	15,796.7	11,180.0	93.8	89.7	91.04	4,781.1	2,444.2	2,483.7	2,300.2	13.536		
16,000.0	11,134.0	15,796.7	11,180.0	95.6	89.7	91.04	4,781.1	2,444.2	2,495.1	2,309.8	13.469		
16,100.0	11,134.6	15,796.7	11,180.0	97.3	89.7	91.04	4,781.1	2,444.2	2,510.4	2,323.4	13.424		
16,200.0	11,135.2	15,796.7	11,180.0	99.1	89.7	91.04	4,781.1	2,444.2	2,529.5	2,340.8	13.400		
16,300.0	11,135.9	15,796.7	11,180.0	100.9	89.7	91.04	4,781.1	2,444.2	2,552.5	2,362.0	13.396	SF	
16,400.0	11,136.5	15,796.7	11,180.0	102.6	89.7	91.04	4,781.1	2,444.2	2,579.1	2,386.8	13.411		
16,500.0	11,137.1	15,796.7	11,180.0	104.4	89.7	91.04	4,781.1	2,444.2	2,609.3	2,415.2	13.445		
16,600.0	11,137.8	15,796.7	11,180.0	106.2	89.7	91.04	4,781.1	2,444.2	2,642.9	2,447.1	13.495		
16,700.0	11,138.4	15,796.7	11,180.0	107.9	89.7	91.04	4,781.1	2,444.2	2,679.8	2,482.2	13.560		
16,800.0	11,139.0	15,796.7	11,180.0	109.7	89.7	91.04	4,781.1	2,444.2	2,720.0	2,520.6	13.641		
16,900.0	11,139.6	15,796.7	11,180.0	111.5	89.7	91.04	4,781.1	2,444.2	2,763.1	2,561.9	13.735		
17,000.0	11,140.3	15,796.7	11,180.0	113.3	89.7	91.04	4,781.1	2,444.2	2,809.2	2,606.2	13.841		
17,100.0	11,140.9	15,796.7	11,180.0	115.1	89.7	91.04	4,781.1	2,444.2	2,858.0	2,653.2	13.960		
17,200.0	11,141.5	15,796.7	11,180.0	116.8	89.7	91.04	4,781.1	2,444.2	2,909.4	2,702.9	14.088		
17,300.0	11,142.2	15,796.7	11,180.0	118.6	89.7	91.04	4,781.1	2,444.2	2,963.3	2,755.0	14.226		
17,400.0	11,142.8	15,796.7	11,180.0	120.4	89.7	91.04	4,781.1	2,444.2	3,019.6	2,809.5	14.373		
17,500.0	11,143.4	15,796.7	11,180.0	122.2	89.7	91.04	4,781.1	2,444.2	3,078.0	2,866.2	14.528		
17,600.0	11,144.0	15,796.7	11,180.0	124.0	89.7	91.04	4,781.1	2,444.2	3,138.6	2,925.0	14.690		
17,700.0	11,144.7	15,796.7	11,180.0	125.8	89.7	91.04	4,781.1	2,444.2	3,201.2	2,985.7	14.859		
17,800.0	11,145.3	15,796.7	11,180.0	127.6	89.7	91.04	4,781.1	2,444.2	3,265.6	3,048.4	15.033		
17,900.0	11,145.9	15,796.7	11,180.0	129.3	89.7	91.04	4,781.1	2,444.2	3,331.8	3,112.8	15.213		
18,000.0	11,146.5	15,796.7	11,180.0	131.1	89.7	91.04	4,781.1	2,444.2	3,399.6	3,178.8	15.396		
18,100.0	11,147.2	15,796.7	11,180.0	132.9	89.7	91.04	4,781.1	2,444.2	3,469.0	3,246.4	15.584		
18,200.0	11,147.8	15,796.7	11,180.0	134.7	89.7	91.04	4,781.1	2,444.2	3,539.9	3,315.5	15.776		
18,300.0	11,148.4	15,796.7	11,180.0	136.5	89.7	91.04	4,781.1	2,444.2	3,612.1	3,385.9	15.970		
18,400.0	11,149.1	15,796.7	11,180.0	138.3	89.7	91.04	4,781.1	2,444.2	3,685.6	3,457.6	16.167		
18,500.0	11,149.7	15,796.7	11,180.0	140.1	89.7	91.04	4,781.1	2,444.2	3,760.4	3,530.6	16.366		
18,600.0	11,150.3	15,796.7	11,180.0	141.9	89.7	91.04	4,781.1	2,444.2	3,836.3	3,604.7	16.567		
18,700.0	11,150.9	15,796.7	11,180.0	143.7	89.7	91.04	4,781.1	2,444.2	3,913.3	3,679.9	16.769		
18,800.0	11,151.6	15,796.7	11,180.0	145.5	89.7	91.04	4,781.1	2,444.2	3,991.3	3,756.1	16.973		
18,900.0	11,152.2	15,796.7	11,180.0	147.3	89.7	91.04	4,781.1	2,444.2	4,070.2	3,833.3	17.177		
19,000.0	11,152.8	15,796.7	11,180.0	149.1	89.7	91.04	4,781.1	2,444.2	4,150.1	3,911.4	17.383		
19,100.0	11,153.4	15,796.7	11,180.0	150.9	89.7	91.04	4,781.1	2,444.2	4,230.8	3,990.3	17.588		
19,200.0	11,154.1	15,796.7	11,180.0	152.7	89.7	91.04	4,781.1	2,444.2	4,312.4	4,070.0	17.794		
19,300.0	11,154.7	15,796.7	11,180.0	154.5	89.7	91.04	4,781.1	2,444.2	4,394.7	4,150.5	18.000		
19,400.0	11,155.3	15,796.7	11,180.0	156.3	89.7	91.04	4,781.1	2,444.2	4,477.7	4,231.7	18.206		
19,500.0	11,156.0	15,796.7	11,180.0	158.1	89.7	91.04	4,781.1	2,444.2	4,561.4	4,313.6	18.412		
19,600.0	11,156.6	15,796.7	11,180.0	159.9	89.7	91.04	4,781.1	2,444.2	4,645.7	4,396.2	18.617		
19,700.0	11,157.2	15,796.7	11,180.0	161.7	89.7	91.04	4,781.1	2,444.2	4,730.7	4,479.4	18.821		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design											Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1											Offset Well Error:	0.0 usft
Survey Program: 0-MWD default												
Reference	Measured	Offset	Vertical	Semi Major Axis	Offset	Highside	Offset Wellbore Centre	Distance	Between	Separation	Warning	
Depth	Depth	Depth	Depth	Reference	Offset	Toolface	+N-S	Between	Centres	Factor		
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)			
19,800.0	11,157.8	15,796.7	11,180.0	163.5	89.7	91.04	4,781.1	2,444.2	4,816.2	4,563.1	19.025	
19,900.0	11,158.5	15,796.7	11,180.0	165.3	89.7	91.04	4,781.1	2,444.2	4,902.3	4,647.4	19.228	
20,000.0	11,159.1	15,796.7	11,180.0	167.1	89.7	91.04	4,781.1	2,444.2	4,988.9	4,732.2	19.431	
20,100.0	11,159.7	15,796.7	11,180.0	168.9	89.7	91.04	4,781.1	2,444.2	5,076.0	4,817.5	19.632	
20,200.0	11,160.4	15,796.7	11,180.0	170.7	89.7	91.04	4,781.1	2,444.2	5,163.6	4,903.2	19.832	
20,300.0	11,161.0	15,796.7	11,180.0	172.5	89.7	91.04	4,781.1	2,444.2	5,251.6	4,989.4	20.031	
20,400.0	11,161.6	15,796.7	11,180.0	174.3	89.7	91.04	4,781.1	2,444.2	5,340.0	5,076.0	20.230	
20,500.0	11,162.2	15,796.7	11,180.0	176.1	89.7	91.04	4,781.1	2,444.2	5,428.8	5,163.1	20.426	
20,600.0	11,162.9	15,796.7	11,180.0	177.9	89.7	91.04	4,781.1	2,444.2	5,518.1	5,250.5	20.622	
20,700.0	11,163.5	15,796.7	11,180.0	179.7	89.7	91.04	4,781.1	2,444.2	5,607.6	5,338.2	20.816	
20,800.0	11,164.1	15,796.7	11,180.0	181.5	89.7	91.04	4,781.1	2,444.2	5,697.6	5,426.4	21.009	
20,900.0	11,164.7	15,796.7	11,180.0	183.3	89.7	91.04	4,781.1	2,444.2	5,787.8	5,514.8	21.201	
20,940.1	11,165.0	15,796.7	11,180.0	184.1	89.7	91.04	4,781.1	2,444.2	5,824.1	5,550.4	21.277	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design											Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1											Offset Well Error:	0.0 usft
Survey Program: 0-MWD default												
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.54	10.6	1,319.8	1,319.8			
100.0	100.0	100.0	100.0	0.1	0.1	89.54	10.6	1,319.8	1,319.8	1,319.7	8,510.239	
200.0	200.0	200.0	200.0	0.3	0.3	89.54	10.6	1,319.8	1,319.8	1,319.2	2,182.926	
300.0	300.0	300.0	300.0	0.5	0.5	89.54	10.6	1,319.8	1,319.8	1,318.8	1,252.041	
400.0	400.0	400.0	400.0	0.8	0.8	89.54	10.6	1,319.8	1,319.8	1,318.3	877.739	
500.0	500.0	500.0	500.0	1.0	1.0	89.54	10.6	1,319.8	1,319.8	1,317.9	675.728	
600.0	600.0	600.0	600.0	1.2	1.2	89.54	10.6	1,319.8	1,319.8	1,317.4	549.305	
700.0	700.0	700.0	700.0	1.4	1.4	89.54	10.6	1,319.8	1,319.8	1,317.0	462.732	
800.0	800.0	800.0	800.0	1.7	1.7	89.54	10.6	1,319.8	1,319.8	1,316.5	399.733	
900.0	900.0	900.0	900.0	1.9	1.9	89.54	10.6	1,319.8	1,319.8	1,316.1	351.832	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	89.54	10.6	1,319.8	1,319.8	1,315.6	314.183	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	89.54	10.6	1,319.8	1,319.8	1,315.2	283.812	
1,200.0	1,200.0	1,200.0	1,200.0	2.5	2.5	89.54	10.6	1,319.8	1,319.8	1,314.7	258.796	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	89.54	10.6	1,319.8	1,319.8	1,314.3	237.832	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	89.54	10.6	1,319.8	1,319.8	1,313.8	220.010	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	89.54	10.6	1,319.8	1,319.8	1,313.4	204.673	
1,600.0	1,600.0	1,600.0	1,600.0	3.4	3.4	89.54	10.6	1,319.8	1,319.8	1,312.9	191.335	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	89.54	10.6	1,319.8	1,319.8	1,312.5	179.629	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	89.54	10.6	1,319.8	1,319.8	1,312.0	169.273	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	89.54	10.6	1,319.8	1,319.8	1,311.6	160.046	
2,000.0	2,000.0	2,000.0	2,000.0	4.3	4.3	89.54	10.6	1,319.8	1,319.8	1,311.1	151.772	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	89.54	10.6	1,319.8	1,319.8	1,310.7	144.312	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	89.54	10.6	1,319.8	1,319.8	1,310.2	137.551	
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	89.54	10.6	1,319.8	1,319.8	1,309.8	131.396	
2,400.0	2,400.0	2,400.0	2,400.0	5.2	5.2	89.54	10.6	1,319.8	1,319.8	1,309.3	125.767	
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	89.54	10.6	1,319.8	1,319.8	1,308.9	120.601	
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	89.54	10.6	1,319.8	1,319.8	1,308.4	115.843	
2,700.0	2,700.0	2,700.0	2,700.0	5.9	5.9	89.54	10.6	1,319.8	1,319.8	1,308.0	111.446	
2,800.0	2,800.0	2,800.0	2,800.0	6.1	6.1	89.54	10.6	1,319.8	1,319.8	1,307.6	107.370	
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	89.54	10.6	1,319.8	1,319.8	1,307.1	103.582	
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	89.54	10.6	1,319.8	1,319.8	1,306.7	100.052	
3,100.0	3,100.0	3,100.0	3,100.0	6.8	6.8	89.54	10.6	1,319.8	1,319.8	1,306.2	96.755	
3,200.0	3,200.0	3,200.0	3,200.0	7.0	7.0	89.54	10.6	1,319.8	1,319.8	1,305.8	93.668	
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	89.54	10.6	1,319.8	1,319.8	1,305.3	90.773	
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	89.54	10.6	1,319.8	1,319.8	1,304.9	88.050	
3,500.0	3,500.0	3,500.0	3,500.0	7.7	7.7	89.54	10.6	1,319.8	1,319.8	1,304.4	85.487	
3,600.0	3,600.0	3,600.0	3,600.0	7.9	7.9	89.54	10.6	1,319.8	1,319.8	1,304.0	83.068	
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	89.54	10.6	1,319.8	1,319.8	1,303.5	80.782	
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	89.54	10.6	1,319.8	1,319.8	1,303.1	78.619	
3,900.0	3,900.0	3,900.0	3,900.0	8.6	8.6	89.54	10.6	1,319.8	1,319.8	1,302.6	76.569	
4,000.0	4,000.0	4,000.0	4,000.0	8.8	8.8	89.54	10.6	1,319.8	1,319.8	1,302.2	74.623	
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	89.54	10.6	1,319.8	1,319.8	1,301.7	72.773	
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	89.54	10.6	1,319.8	1,319.8	1,301.3	71.013	
4,300.0	4,300.0	4,300.0	4,300.0	9.5	9.5	89.54	10.6	1,319.8	1,319.8	1,300.8	69.336	
4,400.0	4,400.0	4,400.0	4,400.0	9.7	9.7	89.54	10.6	1,319.8	1,319.8	1,300.4	67.736	
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	89.54	10.6	1,319.8	1,319.8	1,299.9	66.209	
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	89.54	10.6	1,319.8	1,319.8	1,299.5	64.749	
4,700.0	4,700.0	4,700.0	4,700.0	10.4	10.4	89.54	10.6	1,319.8	1,319.8	1,299.0	63.352	
4,800.0	4,800.0	4,800.0	4,800.0	10.6	10.6	89.54	10.6	1,319.8	1,319.8	1,298.6	62.014	
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	89.54	10.6	1,319.8	1,319.8	1,298.1	60.731	
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	89.54	10.6	1,319.8	1,319.8	1,297.7	59.500	
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	89.54	10.6	1,319.8	1,319.8	1,297.2	58.318	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1											Offset Site Error: 0.0 usft	
Survey Program: 0-MWD default											Offset Well Error: 0.0 usft	
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)	Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning:	
5,200.0	5,200.0	5,200.0	5,200.0	11.5	11.5	89.54	10.6	1,319.8	1,319.8	1,296.8	57.183	
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	89.54	10.6	1,319.8	1,319.8	1,296.3	56.090	
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	89.54	10.6	1,319.8	1,319.8	1,295.9	55.039	
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	89.54	10.6	1,319.8	1,319.8	1,295.4	54.026	
5,600.0	5,600.0	5,600.0	5,600.0	12.4	12.4	89.54	10.6	1,319.8	1,319.8	1,295.0	53.050	
5,700.0	5,700.0	5,700.0	5,700.0	12.7	12.7	89.54	10.6	1,319.8	1,319.8	1,294.5	52.108	
5,800.0	5,800.0	5,800.0	5,800.0	12.9	12.9	89.54	10.6	1,319.8	1,319.8	1,294.1	51.200	
5,900.0	5,900.0	5,900.0	5,900.0	13.1	13.1	89.54	10.6	1,319.8	1,319.8	1,293.6	50.322	
6,000.0	6,000.0	6,000.0	6,000.0	13.3	13.3	89.54	10.6	1,319.8	1,319.8	1,293.2	49.474	
6,100.0	6,100.0	6,100.0	6,100.0	13.6	13.6	89.54	10.6	1,319.8	1,319.8	1,292.7	48.654	
6,200.0	6,200.0	6,200.0	6,200.0	13.8	13.8	89.54	10.6	1,319.8	1,319.8	1,292.3	47.861	
6,300.0	6,300.0	6,300.0	6,300.0	14.0	14.0	89.54	10.6	1,319.8	1,319.8	1,291.8	47.093	
6,400.0	6,400.0	6,400.0	6,400.0	14.2	14.2	89.54	10.6	1,319.8	1,319.8	1,291.4	46.350	
6,500.0	6,500.0	6,500.0	6,500.0	14.5	14.5	89.54	10.6	1,319.8	1,319.8	1,290.9	45.630	
6,600.0	6,600.0	6,600.0	6,600.0	14.7	14.7	89.54	10.6	1,319.8	1,319.8	1,290.5	44.931	
6,700.0	6,700.0	6,700.0	6,700.0	14.9	14.9	89.54	10.6	1,319.8	1,319.8	1,290.0	44.254	
6,800.0	6,800.0	6,800.0	6,800.0	15.1	15.1	89.54	10.6	1,319.8	1,319.8	1,289.6	43.597	
6,900.0	6,900.0	6,900.0	6,900.0	15.4	15.4	89.54	10.6	1,319.8	1,319.8	1,289.1	42.959	
7,000.0	7,000.0	7,000.0	7,000.0	15.6	15.6	89.54	10.6	1,319.8	1,319.8	1,288.7	42.340	
7,100.0	7,100.0	7,100.0	7,100.0	15.8	15.8	89.54	10.6	1,319.8	1,319.8	1,288.2	41.738	
7,200.0	7,200.0	7,200.0	7,200.0	16.0	16.0	89.54	10.6	1,319.8	1,319.8	1,287.8	41.153	
7,300.0	7,300.0	7,300.0	7,300.0	16.3	16.3	89.54	10.6	1,319.8	1,319.8	1,287.3	40.584	
7,400.0	7,400.0	7,400.0	7,400.0	16.5	16.5	89.54	10.6	1,319.8	1,319.8	1,286.9	40.030	
7,500.0	7,500.0	7,500.0	7,500.0	16.7	16.7	89.54	10.6	1,319.8	1,319.8	1,286.4	39.492	
7,600.0	7,600.0	7,600.0	7,600.0	16.9	16.9	89.54	10.6	1,319.8	1,319.8	1,286.0	38.968	
7,700.0	7,700.0	7,700.0	7,700.0	17.2	17.2	89.54	10.6	1,319.8	1,319.8	1,285.5	38.457	
7,800.0	7,800.0	7,800.0	7,800.0	17.4	17.4	89.54	10.6	1,319.8	1,319.8	1,285.1	37.960	
7,900.0	7,900.0	7,900.0	7,900.0	17.6	17.6	89.54	10.6	1,319.8	1,319.8	1,284.6	37.476	
8,000.0	8,000.0	8,000.0	8,000.0	17.8	17.8	89.54	10.6	1,319.8	1,319.8	1,284.2	37.003	
8,100.0	8,100.0	8,100.0	8,100.0	18.1	18.1	89.54	10.6	1,319.8	1,319.8	1,283.7	36.543	
8,200.0	8,200.0	8,200.0	8,200.0	18.3	18.3	89.54	10.6	1,319.8	1,319.8	1,283.3	36.094	
8,300.0	8,300.0	8,300.0	8,300.0	18.5	18.5	89.54	10.6	1,319.8	1,319.8	1,282.8	35.655	
8,400.0	8,400.0	8,400.0	8,400.0	18.7	18.7	89.54	10.6	1,319.8	1,319.8	1,282.4	35.228	
8,500.0	8,500.0	8,500.0	8,500.0	19.0	19.0	89.54	10.6	1,319.8	1,319.8	1,281.9	34.810	
8,600.0	8,600.0	8,600.0	8,600.0	19.2	19.2	89.54	10.6	1,319.8	1,319.8	1,281.5	34.402	
8,700.0	8,700.0	8,700.0	8,700.0	19.4	19.4	89.54	10.6	1,319.8	1,319.8	1,281.0	34.004	
8,800.0	8,800.0	8,800.0	8,800.0	19.6	19.6	89.54	10.6	1,319.8	1,319.8	1,280.6	33.614	
8,900.0	8,900.0	8,900.0	8,900.0	19.9	19.9	89.54	10.6	1,319.8	1,319.8	1,280.1	33.234	
9,000.0	9,000.0	9,000.0	9,000.0	20.1	20.1	89.54	10.6	1,319.8	1,319.8	1,279.7	32.862	
9,100.0	9,100.0	9,100.0	9,100.0	20.3	20.3	89.54	10.6	1,319.8	1,319.8	1,279.2	32.498	
9,200.0	9,200.0	9,200.0	9,200.0	20.5	20.5	89.54	10.6	1,319.8	1,319.8	1,278.8	32.142	
9,300.0	9,300.0	9,300.0	9,300.0	20.8	20.8	89.54	10.6	1,319.8	1,319.8	1,278.3	31.794	
9,400.0	9,400.0	9,400.0	9,400.0	21.0	21.0	89.54	10.6	1,319.8	1,319.8	1,277.9	31.454	
9,500.0	9,500.0	9,500.0	9,500.0	21.2	21.2	89.54	10.6	1,319.8	1,319.8	1,277.4	31.120	
9,600.0	9,600.0	9,600.0	9,600.0	21.4	21.4	89.54	10.6	1,319.8	1,319.8	1,277.0	30.794	
9,700.0	9,700.0	9,700.0	9,700.0	21.7	21.7	89.54	10.6	1,319.8	1,319.8	1,276.5	30.474	
9,800.0	9,800.0	9,800.0	9,800.0	21.9	21.9	89.54	10.6	1,319.8	1,319.8	1,276.1	30.161	
9,900.0	9,900.0	9,900.0	9,900.0	22.1	22.1	89.54	10.6	1,319.8	1,319.8	1,275.6	29.854	
10,000.0	10,000.0	10,000.0	10,000.0	22.3	22.3	89.54	10.6	1,319.8	1,319.8	1,275.2	29.554	
10,100.0	10,100.0	10,100.0	10,100.0	22.6	22.6	89.54	10.6	1,319.8	1,319.8	1,274.7	29.259	
10,200.0	10,200.0	10,200.0	10,200.0	22.8	22.8	89.54	10.6	1,319.8	1,319.8	1,274.3	28.971	
10,300.0	10,300.0	10,300.0	10,300.0	23.0	23.0	89.54	10.6	1,319.8	1,319.8	1,273.8	28.688	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
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)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
10,400.0	10,400.0	10,400.0	10,400.0	23.2	23.2	89.54	10.6	1,319.8	1,319.8	1,273.4	28.410		
10,500.0	10,500.0	10,500.0	10,500.0	23.5	23.5	89.54	10.6	1,319.8	1,319.8	1,272.9	28.138		
10,600.0	10,600.0	10,600.0	10,600.0	23.7	23.7	89.54	10.6	1,319.8	1,319.8	1,272.5	27.871		
10,627.5	10,627.5	10,627.5	10,627.5	23.7	23.7	89.54	10.6	1,319.8	1,319.8	1,272.4	27.798		
10,650.0	10,650.0	10,650.0	10,650.0	23.8	23.8	89.90	10.6	1,319.8	1,319.8	1,272.3	27.739		
10,675.0	10,674.9	10,674.9	10,674.9	23.8	23.8	89.98	10.6	1,319.8	1,319.8	1,272.1	27.674		
10,679.4	10,679.3	10,679.3	10,679.3	23.9	23.9	90.00	10.6	1,319.8	1,319.8	1,272.1	27.663	CC	
10,700.0	10,699.7	10,699.7	10,699.7	23.9	23.9	90.11	10.6	1,319.8	1,319.8	1,272.0	27.611		
10,725.0	10,724.3	10,724.3	10,724.3	24.0	24.0	90.30	10.6	1,319.8	1,319.9	1,271.9	27.549		
10,750.0	10,748.7	10,748.7	10,748.7	24.0	24.0	90.54	10.6	1,319.8	1,319.9	1,271.9	27.488		
10,775.0	10,772.7	10,773.7	10,773.7	24.1	24.1	90.80	11.3	1,319.8	1,320.0	1,271.9	27.428		
10,800.0	10,796.3	10,799.1	10,799.0	24.1	24.1	91.07	13.4	1,319.8	1,320.1	1,271.9	27.369		
10,825.0	10,819.4	10,824.8	10,824.5	24.2	24.2	91.33	16.8	1,319.8	1,320.2	1,271.9	27.312		
10,850.0	10,842.0	10,851.0	10,850.2	24.2	24.2	91.59	21.8	1,319.7	1,320.4	1,271.9	27.255		
10,875.0	10,864.1	10,877.5	10,875.9	24.3	24.3	91.85	28.2	1,319.7	1,320.6	1,272.0	27.200		
10,900.0	10,885.4	10,904.4	10,901.6	24.3	24.4	92.11	36.1	1,319.6	1,320.8	1,272.1	27.145		
10,925.0	10,906.1	10,931.7	10,927.2	24.4	24.4	92.36	45.7	1,319.6	1,321.0	1,272.3	27.090		
10,950.0	10,926.0	10,959.4	10,952.5	24.4	24.5	92.61	56.9	1,319.5	1,321.3	1,272.4	27.035		
10,975.0	10,945.1	10,987.6	10,977.6	24.5	24.5	92.85	69.7	1,319.5	1,321.6	1,272.6	26.980		
11,000.0	10,963.3	11,016.2	11,002.2	24.6	24.6	93.09	84.2	1,319.4	1,321.9	1,272.8	26.923		
11,025.0	10,980.6	11,045.2	11,026.3	24.6	24.6	93.32	100.4	1,319.3	1,322.2	1,272.9	26.864		
11,050.0	10,997.0	11,074.7	11,049.7	24.7	24.7	93.54	118.4	1,319.2	1,322.5	1,273.1	26.803		
11,075.0	11,012.3	11,104.6	11,072.2	24.8	24.8	93.75	138.0	1,319.1	1,322.8	1,273.3	26.738		
11,100.0	11,026.6	11,134.9	11,093.8	24.8	24.9	93.95	159.3	1,318.9	1,323.1	1,273.5	26.668		
11,125.0	11,039.7	11,165.6	11,114.2	24.9	24.9	94.14	182.2	1,318.8	1,323.4	1,273.6	26.594		
11,150.0	11,051.8	11,195.7	11,133.3	25.0	25.0	94.32	206.8	1,318.6	1,323.7	1,273.8	26.513		
11,175.0	11,062.7	11,228.3	11,151.0	25.1	25.1	94.49	232.8	1,318.5	1,324.0	1,273.9	26.426		
11,200.0	11,072.3	11,260.1	11,167.2	25.2	25.2	94.64	260.3	1,318.3	1,324.2	1,274.0	26.331		
11,225.0	11,080.8	11,292.3	11,181.6	25.3	25.4	94.77	289.1	1,318.2	1,324.5	1,274.0	26.229		
11,250.0	11,088.0	11,324.8	11,194.1	25.4	25.5	94.89	319.1	1,318.0	1,324.7	1,274.0	26.118		
11,275.0	11,094.0	11,357.6	11,204.6	25.5	25.6	94.99	350.1	1,317.8	1,324.9	1,273.9	25.997		
11,300.0	11,098.7	11,390.6	11,213.1	25.6	25.8	95.07	382.0	1,317.6	1,325.0	1,273.8	25.869		
11,325.0	11,102.1	11,423.7	11,219.3	25.8	25.9	95.13	414.6	1,317.4	1,325.2	1,273.7	25.732		
11,350.0	11,104.2	11,457.0	11,223.3	25.9	26.1	95.17	447.6	1,317.2	1,325.2	1,273.5	25.587		
11,374.5	11,105.0	11,489.7	11,224.9	26.0	26.3	95.19	480.3	1,317.0	1,325.3	1,273.2	25.438		
11,400.0	11,105.1	11,518.1	11,224.8	26.2	26.4	95.18	508.7	1,316.9	1,325.3	1,272.9	25.286		
11,500.0	11,105.7	11,618.1	11,224.0	26.8	27.1	95.12	608.6	1,316.3	1,325.1	1,271.5	24.683		
11,600.0	11,106.4	11,718.1	11,223.3	27.6	27.8	95.06	708.6	1,315.7	1,325.0	1,269.8	24.017		
11,700.0	11,107.0	11,818.1	11,222.5	28.4	28.6	95.00	808.6	1,315.1	1,324.9	1,268.0	23.305		
11,800.0	11,107.6	11,918.1	11,221.7	29.4	29.6	94.94	908.6	1,314.5	1,324.8	1,266.1	22.566		
11,900.0	11,108.3	12,018.1	11,220.9	30.4	30.6	94.88	1,008.6	1,313.9	1,324.6	1,263.9	21.814		
12,000.0	11,108.9	12,118.1	11,220.1	31.5	31.6	94.82	1,108.6	1,313.3	1,324.5	1,261.6	21.061		
12,100.0	11,109.5	12,218.0	11,219.3	32.6	32.8	94.76	1,208.6	1,312.7	1,324.4	1,259.2	20.317		
12,200.0	11,110.1	12,318.0	11,218.6	33.8	34.0	94.70	1,308.5	1,312.2	1,324.3	1,256.7	19.590		
12,300.0	11,110.8	12,418.0	11,217.8	35.1	35.2	94.63	1,408.5	1,311.6	1,324.2	1,254.1	18.884		
12,400.0	11,111.4	12,518.0	11,217.0	36.4	36.6	94.57	1,508.5	1,311.0	1,324.1	1,251.3	18.203		
12,500.0	11,112.0	12,618.0	11,216.2	37.8	37.9	94.51	1,608.5	1,310.4	1,324.0	1,248.5	17.550		
12,600.0	11,112.6	12,718.0	11,215.4	39.1	39.3	94.45	1,708.5	1,309.8	1,323.9	1,245.6	16.925		
12,700.0	11,113.3	12,818.0	11,214.6	40.6	40.7	94.39	1,808.5	1,309.2	1,323.7	1,242.7	16.329		
12,800.0	11,113.9	12,918.0	11,213.9	42.0	42.2	94.33	1,908.5	1,308.6	1,323.6	1,239.7	15.762		
12,900.0	11,114.5	13,018.0	11,213.1	43.5	43.6	94.27	2,008.4	1,308.0	1,323.5	1,236.6	15.224		
13,000.0	11,115.2	13,118.0	11,212.3	45.0	45.1	94.21	2,108.4	1,307.5	1,323.4	1,233.5	14.712		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1											Offset Site Error:	0.0 usft
Survey Program: 0-MWD default											Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/S (usft)	+E/W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
13,100.0	11,115.8	13,217.9	11,211.5	46.6	46.7	94.15	2,208.4	1,306.9	1,323.3	1,230.3	14.227	
13,200.0	11,116.4	13,317.9	11,210.7	48.1	48.2	94.09	2,308.4	1,306.3	1,323.2	1,227.1	13.767	
13,300.0	11,117.0	13,417.9	11,209.9	49.7	49.8	94.03	2,408.4	1,305.7	1,323.1	1,223.9	13.331	
13,400.0	11,117.7	13,517.9	11,209.1	51.3	51.4	93.96	2,508.4	1,305.1	1,323.0	1,220.6	12.917	
13,500.0	11,118.3	13,617.9	11,208.4	52.9	53.0	93.90	2,608.4	1,304.5	1,322.9	1,217.3	12.525	
13,600.0	11,118.9	13,717.9	11,207.6	54.5	54.6	93.84	2,708.3	1,303.9	1,322.8	1,214.0	12.152	
13,700.0	11,119.6	13,817.9	11,206.8	56.1	56.2	93.78	2,808.3	1,303.3	1,322.8	1,210.6	11.798	
13,800.0	11,120.2	13,917.9	11,206.0	57.8	57.8	93.72	2,908.3	1,302.7	1,322.7	1,207.3	11.462	
13,900.0	11,120.8	14,017.9	11,205.2	59.4	59.5	93.66	3,008.3	1,302.2	1,322.6	1,203.9	11.142	
14,000.0	11,121.4	14,117.9	11,204.4	61.1	61.1	93.60	3,108.3	1,301.6	1,322.5	1,200.5	10.838	
14,100.0	11,122.1	14,217.8	11,203.7	62.8	62.8	93.54	3,208.3	1,301.0	1,322.4	1,197.0	10.549	
14,200.0	11,122.7	14,317.8	11,202.9	64.4	64.5	93.48	3,308.2	1,300.4	1,322.3	1,193.6	10.273	
14,300.0	11,123.3	14,417.8	11,202.1	66.1	66.2	93.42	3,408.2	1,299.8	1,322.2	1,190.1	10.010	
14,400.0	11,123.9	14,517.8	11,201.3	67.8	67.9	93.35	3,508.2	1,299.2	1,322.1	1,186.7	9.759	
14,500.0	11,124.6	14,617.8	11,200.5	69.5	69.6	93.29	3,608.2	1,298.6	1,322.1	1,183.2	9.520	
14,600.0	11,125.2	14,717.8	11,199.7	71.2	71.3	93.23	3,708.2	1,298.0	1,322.0	1,179.7	9.291	
14,700.0	11,125.8	14,817.8	11,199.0	72.9	73.0	93.17	3,808.2	1,297.4	1,321.9	1,176.2	9.072	
14,800.0	11,126.5	14,917.8	11,198.2	74.6	74.7	93.11	3,908.2	1,296.9	1,321.8	1,172.7	8.862	
14,900.0	11,127.1	15,017.8	11,197.4	76.4	76.4	93.05	4,008.1	1,296.3	1,321.8	1,169.2	8.662	
15,000.0	11,127.7	15,117.8	11,196.6	78.1	78.1	92.99	4,108.1	1,295.7	1,321.7	1,165.6	8.469	
15,100.0	11,128.3	15,217.7	11,195.8	79.8	79.9	92.93	4,208.1	1,295.1	1,321.6	1,162.1	8.285	
15,200.0	11,129.0	15,317.7	11,195.0	81.6	81.6	92.87	4,308.1	1,294.5	1,321.5	1,158.5	8.108	
15,300.0	11,129.6	15,417.7	11,194.3	83.3	83.3	92.80	4,408.1	1,293.9	1,321.5	1,155.0	7.938	
15,400.0	11,130.2	15,517.7	11,193.5	85.0	85.1	92.74	4,508.1	1,293.3	1,321.4	1,151.4	7.775	
15,500.0	11,130.9	15,617.7	11,192.7	86.8	86.8	92.68	4,608.1	1,292.7	1,321.3	1,147.9	7.618	
15,600.0	11,131.5	15,717.7	11,191.9	88.5	88.6	92.62	4,708.0	1,292.2	1,321.3	1,144.3	7.467	
15,700.0	11,132.1	15,817.7	11,191.1	90.3	90.3	92.56	4,808.0	1,291.6	1,321.2	1,140.8	7.321	
15,800.0	11,132.7	15,917.7	11,190.3	92.0	92.1	92.50	4,908.0	1,291.0	1,321.2	1,137.2	7.181	
15,900.0	11,133.4	16,017.7	11,189.6	93.8	93.8	92.44	5,008.0	1,290.4	1,321.1	1,133.6	7.046	
16,000.0	11,134.0	16,117.7	11,188.8	95.6	95.6	92.38	5,108.0	1,289.8	1,321.0	1,130.0	6.916	
16,100.0	11,134.6	16,217.6	11,188.0	97.3	97.4	92.32	5,208.0	1,289.2	1,321.0	1,126.4	6.790	
16,200.0	11,135.2	16,317.6	11,187.2	99.1	99.1	92.25	5,308.0	1,288.6	1,320.9	1,122.8	6.669	
16,300.0	11,135.9	16,417.6	11,186.4	100.9	100.9	92.19	5,407.9	1,288.0	1,320.9	1,119.3	6.552	
16,400.0	11,136.5	16,517.6	11,185.6	102.6	102.6	92.13	5,507.9	1,287.4	1,320.8	1,115.7	6.438	
16,500.0	11,137.1	16,617.6	11,184.8	104.4	104.4	92.07	5,607.9	1,286.9	1,320.8	1,112.1	6.329	
16,600.0	11,137.8	16,717.6	11,184.1	106.2	106.2	92.01	5,707.9	1,286.3	1,320.7	1,108.5	6.223	
16,700.0	11,138.4	16,817.6	11,183.3	107.9	108.0	91.95	5,807.9	1,285.7	1,320.7	1,104.9	6.120	
16,800.0	11,139.0	16,917.6	11,182.5	109.7	109.7	91.89	5,907.9	1,285.1	1,320.6	1,101.3	6.021	
16,900.0	11,139.6	17,017.6	11,181.7	111.5	111.5	91.83	6,007.8	1,284.5	1,320.6	1,097.7	5.924	
17,000.0	11,140.3	17,117.6	11,180.9	113.3	113.3	91.76	6,107.8	1,283.9	1,320.5	1,094.1	5.831	
17,100.0	11,140.9	17,217.5	11,180.1	115.1	115.1	91.70	6,207.8	1,283.3	1,320.5	1,090.5	5.740	
17,200.0	11,141.5	17,317.5	11,179.4	116.8	116.8	91.64	6,307.8	1,282.7	1,320.5	1,086.9	5.653	
17,300.0	11,142.2	17,417.5	11,178.6	118.6	118.6	91.58	6,407.8	1,282.1	1,320.4	1,083.2	5.567	
17,400.0	11,142.8	17,517.5	11,177.8	120.4	120.4	91.52	6,507.8	1,281.6	1,320.4	1,079.6	5.485	
17,500.0	11,143.4	17,617.5	11,177.0	122.2	122.2	91.46	6,607.8	1,281.0	1,320.3	1,076.0	5.404	
17,600.0	11,144.0	17,717.5	11,176.2	124.0	124.0	91.40	6,707.7	1,280.4	1,320.3	1,072.4	5.326	
17,700.0	11,144.7	17,817.5	11,175.4	125.8	125.8	91.34	6,807.7	1,279.8	1,320.3	1,068.8	5.250	
17,800.0	11,145.3	17,917.5	11,174.7	127.6	127.6	91.27	6,907.7	1,279.2	1,320.2	1,065.2	5.176	
17,900.0	11,145.9	18,017.5	11,173.9	129.3	129.3	91.21	7,007.7	1,278.6	1,320.2	1,061.6	5.105	
18,000.0	11,146.5	18,117.5	11,173.1	131.1	131.1	91.15	7,107.7	1,278.0	1,320.2	1,058.0	5.035	
18,100.0	11,147.2	18,217.4	11,172.3	132.9	132.9	91.09	7,207.7	1,277.4	1,320.2	1,054.4	4.967	
18,200.0	11,147.8	18,317.4	11,171.5	134.7	134.7	91.03	7,307.7	1,276.9	1,320.1	1,050.7	4.900	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning	
18,300.0	11,148.4	18,417.4	11,170.7	136.5	136.5	90.97	7,407.6	1,276.3	1,320.1	1,047.1	4.836		
18,400.0	11,149.1	18,517.4	11,170.0	138.3	138.3	90.91	7,507.6	1,275.7	1,320.1	1,043.5	4.773		
18,500.0	11,149.7	18,617.4	11,169.2	140.1	140.1	90.85	7,607.6	1,275.1	1,320.1	1,039.9	4.712		
18,600.0	11,150.3	18,717.4	11,168.4	141.9	141.9	90.78	7,707.6	1,274.5	1,320.0	1,036.3	4.652		
18,700.0	11,150.9	18,817.4	11,167.6	143.7	143.7	90.72	7,807.6	1,273.9	1,320.0	1,032.7	4.594		
18,800.0	11,151.6	18,917.4	11,166.8	145.5	145.5	90.66	7,907.6	1,273.3	1,320.0	1,029.1	4.537		
18,900.0	11,152.2	19,017.4	11,166.0	147.3	147.3	90.60	8,007.6	1,272.7	1,320.0	1,025.5	4.482		
19,000.0	11,152.8	19,117.4	11,165.2	149.1	149.1	90.54	8,107.5	1,272.1	1,320.0	1,021.9	4.427		
19,100.0	11,153.4	19,217.3	11,164.5	150.9	150.9	90.48	8,207.5	1,271.6	1,320.0	1,018.2	4.375		
19,200.0	11,154.1	19,317.3	11,163.7	152.7	152.7	90.42	8,307.5	1,271.0	1,320.0	1,014.6	4.323		
19,300.0	11,154.7	19,417.3	11,162.9	154.5	154.5	90.36	8,407.5	1,270.4	1,320.0	1,011.0	4.273		
19,400.0	11,155.3	19,517.3	11,162.1	156.3	156.3	90.29	8,507.5	1,269.8	1,320.0	1,007.4	4.223		
19,500.0	11,156.0	19,617.3	11,161.3	158.1	158.1	90.23	8,607.5	1,269.2	1,319.9	1,003.8	4.175		
19,600.0	11,156.6	19,717.3	11,160.5	159.9	159.9	90.17	8,707.5	1,268.6	1,319.9	1,000.2	4.128		
19,700.0	11,157.2	19,817.3	11,159.8	161.7	161.7	90.11	8,807.4	1,268.0	1,319.9	996.6	4.082		
19,800.0	11,157.8	19,917.3	11,159.0	163.5	163.5	90.05	8,907.4	1,267.4	1,319.9	993.0	4.037		
19,806.5	11,157.9	19,923.8	11,158.9	163.6	163.6	90.05	8,914.0	1,267.4	1,319.9	992.8	4.034		
19,900.0	11,158.5	20,017.3	11,158.2	165.3	165.3	89.99	9,007.4	1,266.8	1,319.9	989.4	3.993		
20,000.0	11,159.1	20,117.3	11,157.4	167.1	167.1	89.93	9,107.4	1,266.3	1,319.9	985.8	3.950		
20,100.0	11,159.7	20,217.2	11,156.6	168.9	168.9	89.87	9,207.4	1,265.7	1,319.9	982.2	3.908		
20,200.0	11,160.4	20,317.2	11,155.8	170.7	170.7	89.80	9,307.4	1,265.1	1,320.0	978.6	3.867		
20,300.0	11,161.0	20,417.2	11,155.1	172.5	172.5	89.74	9,407.3	1,264.5	1,320.0	975.0	3.826		
20,400.0	11,161.6	20,517.2	11,154.3	174.3	174.3	89.68	9,507.3	1,263.9	1,320.0	971.4	3.787		
20,500.0	11,162.2	20,617.2	11,153.5	176.1	176.1	89.62	9,607.3	1,263.3	1,320.0	967.8	3.748		
20,600.0	11,162.9	20,717.2	11,152.7	177.9	177.9	89.56	9,707.3	1,262.7	1,320.0	964.2	3.710		
20,700.0	11,163.5	20,817.2	11,151.9	179.7	179.7	89.50	9,807.3	1,262.1	1,320.0	960.6	3.673		
20,800.0	11,164.1	20,917.2	11,151.1	181.5	181.5	89.44	9,907.3	1,261.6	1,320.0	957.0	3.636		
20,900.0	11,164.7	21,017.2	11,150.4	183.3	183.3	89.38	10,007.3	1,261.0	1,320.0	953.4	3.600		
20,940.1	11,165.0	21,057.3	11,150.0	184.1	184.0	89.35	10,047.4	1,260.7	1,320.0	952.0	3.586 ES, SF		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design											Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #6H - Wellbore #1 - Design #1											Offset Well Error:	0.0 usft
Survey Program: 0-MWD default												
Reference Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	2.0	2.0	0.0	0.0	89.54	19.7	2,441.9	2,442.0			
100.0	100.0	102.0	102.0	0.1	0.1	89.54	19.7	2,441.9	2,442.0	2,441.8	N/A	
200.0	200.0	202.0	202.0	0.3	0.3	89.54	19.7	2,441.9	2,442.0	2,441.4	4,009.054	
300.0	300.0	302.0	302.0	0.5	0.5	89.54	19.7	2,441.9	2,442.0	2,440.9	2,306.696	
400.0	400.0	402.0	402.0	0.8	0.8	89.54	19.7	2,441.9	2,442.0	2,440.5	1,619.156	
500.0	500.0	502.0	502.0	1.0	1.0	89.54	19.7	2,441.9	2,442.0	2,440.0	1,247.364	
600.0	600.0	602.0	602.0	1.2	1.2	89.54	19.7	2,441.9	2,442.0	2,439.6	1,014.429	
700.0	700.0	702.0	702.0	1.4	1.4	89.54	19.7	2,441.9	2,442.0	2,439.1	854.802	
800.0	800.0	802.0	802.0	1.7	1.7	89.54	19.7	2,441.9	2,442.0	2,438.7	738.582	
900.0	900.0	902.0	902.0	1.9	1.9	89.54	19.7	2,441.9	2,442.0	2,438.2	650.182	
1,000.0	1,000.0	1,002.0	1,002.0	2.1	2.1	89.54	19.7	2,441.9	2,442.0	2,437.8	580.681	
1,100.0	1,100.0	1,102.0	1,102.0	2.3	2.3	89.54	19.7	2,441.9	2,442.0	2,437.3	524.604	
1,200.0	1,200.0	1,202.0	1,202.0	2.5	2.5	89.54	19.7	2,441.9	2,442.0	2,436.9	478.403	
1,300.0	1,300.0	1,302.0	1,302.0	2.8	2.8	89.54	19.7	2,441.9	2,442.0	2,436.4	439.682	
1,400.0	1,400.0	1,402.0	1,402.0	3.0	3.0	89.54	19.7	2,441.9	2,442.0	2,436.0	406.759	
1,500.0	1,500.0	1,502.0	1,502.0	3.2	3.2	89.54	19.7	2,441.9	2,442.0	2,435.5	378.424	
1,600.0	1,600.0	1,602.0	1,602.0	3.4	3.5	89.54	19.7	2,441.9	2,442.0	2,435.1	353.779	
1,700.0	1,700.0	1,702.0	1,702.0	3.7	3.7	89.54	19.7	2,441.9	2,442.0	2,434.6	332.147	
1,800.0	1,800.0	1,802.0	1,802.0	3.9	3.9	89.54	19.7	2,441.9	2,442.0	2,434.2	313.009	
1,900.0	1,900.0	1,902.0	1,902.0	4.1	4.1	89.54	19.7	2,441.9	2,442.0	2,433.7	295.956	
2,000.0	2,000.0	2,002.0	2,002.0	4.3	4.4	89.54	19.7	2,441.9	2,442.0	2,433.3	280.665	
2,100.0	2,100.0	2,102.0	2,102.0	4.6	4.6	89.54	19.7	2,441.9	2,442.0	2,432.8	266.876	
2,200.0	2,200.0	2,202.0	2,202.0	4.8	4.8	89.54	19.7	2,441.9	2,442.0	2,432.4	254.379	
2,300.0	2,300.0	2,302.0	2,302.0	5.0	5.0	89.54	19.7	2,441.9	2,442.0	2,431.9	243.000	
2,400.0	2,400.0	2,402.0	2,402.0	5.2	5.3	89.54	19.7	2,441.9	2,442.0	2,431.5	232.596	
2,500.0	2,500.0	2,502.0	2,502.0	5.5	5.5	89.54	19.7	2,441.9	2,442.0	2,431.0	223.045	
2,600.0	2,600.0	2,602.0	2,602.0	5.7	5.7	89.54	19.7	2,441.9	2,442.0	2,430.6	214.248	
2,700.0	2,700.0	2,702.0	2,702.0	5.9	5.9	89.54	19.7	2,441.9	2,442.0	2,430.1	206.119	
2,800.0	2,800.0	2,802.0	2,802.0	6.1	6.2	89.54	19.7	2,441.9	2,442.0	2,429.7	198.584	
2,900.0	2,900.0	2,902.0	2,902.0	6.4	6.4	89.54	19.7	2,441.9	2,442.0	2,429.2	191.581	
3,000.0	3,000.0	3,002.0	3,002.0	6.6	6.6	89.54	19.7	2,441.9	2,442.0	2,428.8	185.054	
3,100.0	3,100.0	3,102.0	3,102.0	6.8	6.8	89.54	19.7	2,441.9	2,442.0	2,428.3	178.958	
3,200.0	3,200.0	3,202.0	3,202.0	7.0	7.0	89.54	19.7	2,441.9	2,442.0	2,427.9	173.251	
3,300.0	3,300.0	3,302.0	3,302.0	7.3	7.3	89.54	19.7	2,441.9	2,442.0	2,427.4	167.896	
3,400.0	3,400.0	3,402.0	3,402.0	7.5	7.5	89.54	19.7	2,441.9	2,442.0	2,427.0	162.862	
3,500.0	3,500.0	3,502.0	3,502.0	7.7	7.7	89.54	19.7	2,441.9	2,442.0	2,426.5	158.122	
3,600.0	3,600.0	3,602.0	3,602.0	7.9	7.9	89.54	19.7	2,441.9	2,442.0	2,426.1	153.649	
3,700.0	3,700.0	3,702.0	3,702.0	8.2	8.2	89.54	19.7	2,441.9	2,442.0	2,425.6	149.423	
3,800.0	3,800.0	3,802.0	3,802.0	8.4	8.4	89.54	19.7	2,441.9	2,442.0	2,425.2	145.423	
3,900.0	3,900.0	3,902.0	3,902.0	8.6	8.6	89.54	19.7	2,441.9	2,442.0	2,424.7	141.631	
4,000.0	4,000.0	4,002.0	4,002.0	8.8	8.8	89.54	19.7	2,441.9	2,442.0	2,424.3	138.033	
4,100.0	4,100.0	4,102.0	4,102.0	9.1	9.1	89.54	19.7	2,441.9	2,442.0	2,423.8	134.612	
4,200.0	4,200.0	4,202.0	4,202.0	9.3	9.3	89.54	19.7	2,441.9	2,442.0	2,423.4	131.357	
4,300.0	4,300.0	4,302.0	4,302.0	9.5	9.5	89.54	19.7	2,441.9	2,442.0	2,422.9	128.256	
4,400.0	4,400.0	4,402.0	4,402.0	9.7	9.7	89.54	19.7	2,441.9	2,442.0	2,422.5	125.297	
4,500.0	4,500.0	4,502.0	4,502.0	10.0	10.0	89.54	19.7	2,441.9	2,442.0	2,422.0	122.473	
4,600.0	4,600.0	4,602.0	4,602.0	10.2	10.2	89.54	19.7	2,441.9	2,442.0	2,421.6	119.772	
4,700.0	4,700.0	4,702.0	4,702.0	10.4	10.4	89.54	19.7	2,441.9	2,442.0	2,421.1	117.188	
4,800.0	4,800.0	4,802.0	4,802.0	10.6	10.6	89.54	19.7	2,441.9	2,442.0	2,420.7	114.714	
4,900.0	4,900.0	4,902.0	4,902.0	10.9	10.9	89.54	19.7	2,441.9	2,442.0	2,420.2	112.341	
5,000.0	5,000.0	5,002.0	5,002.0	11.1	11.1	89.54	19.7	2,441.9	2,442.0	2,419.8	110.065	
5,100.0	5,100.0	5,102.0	5,102.0	11.3	11.3	89.54	19.7	2,441.9	2,442.0	2,419.3	107.879	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #6H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
5,200.0	5,200.0	5,202.0	5,202.0	11.5	11.5	89.54	19.7	2,441.9	2,442.0	2,418.9	105.779		
5,300.0	5,300.0	5,302.0	5,302.0	11.8	11.8	89.54	19.7	2,441.9	2,442.0	2,418.4	103.758		
5,400.0	5,400.0	5,402.0	5,402.0	12.0	12.0	89.54	19.7	2,441.9	2,442.0	2,418.0	101.814		
5,500.0	5,500.0	5,502.0	5,502.0	12.2	12.2	89.54	19.7	2,441.9	2,442.0	2,417.5	99.941		
5,600.0	5,600.0	5,602.0	5,602.0	12.4	12.4	89.54	19.7	2,441.9	2,442.0	2,417.1	98.135		
5,700.0	5,700.0	5,702.0	5,702.0	12.7	12.7	89.54	19.7	2,441.9	2,442.0	2,416.6	96.394		
5,800.0	5,800.0	5,802.0	5,802.0	12.9	12.9	89.54	19.7	2,441.9	2,442.0	2,416.2	94.713		
5,900.0	5,900.0	5,902.0	5,902.0	13.1	13.1	89.54	19.7	2,441.9	2,442.0	2,415.7	93.090		
6,000.0	6,000.0	6,002.0	6,002.0	13.3	13.3	89.54	19.7	2,441.9	2,442.0	2,415.3	91.522		
6,100.0	6,100.0	6,102.0	6,102.0	13.6	13.6	89.54	19.7	2,441.9	2,442.0	2,414.8	90.005		
6,200.0	6,200.0	6,202.0	6,202.0	13.8	13.8	89.54	19.7	2,441.9	2,442.0	2,414.4	88.538		
6,300.0	6,300.0	6,302.0	6,302.0	14.0	14.0	89.54	19.7	2,441.9	2,442.0	2,413.9	87.118		
6,400.0	6,400.0	6,402.0	6,402.0	14.2	14.2	89.54	19.7	2,441.9	2,442.0	2,413.5	85.743		
6,500.0	6,500.0	6,502.0	6,502.0	14.5	14.5	89.54	19.7	2,441.9	2,442.0	2,413.0	84.411		
6,600.0	6,600.0	6,602.0	6,602.0	14.7	14.7	89.54	19.7	2,441.9	2,442.0	2,412.6	83.119		
6,700.0	6,700.0	6,702.0	6,702.0	14.9	14.9	89.54	19.7	2,441.9	2,442.0	2,412.2	81.867		
6,800.0	6,800.0	6,802.0	6,802.0	15.1	15.1	89.54	19.7	2,441.9	2,442.0	2,411.7	80.651		
6,900.0	6,900.0	6,902.0	6,902.0	15.4	15.4	89.54	19.7	2,441.9	2,442.0	2,411.3	79.471		
7,000.0	7,000.0	7,002.0	7,002.0	15.6	15.6	89.54	19.7	2,441.9	2,442.0	2,410.8	78.326		
7,100.0	7,100.0	7,102.0	7,102.0	15.8	15.8	89.54	19.7	2,441.9	2,442.0	2,410.4	77.212		
7,200.0	7,200.0	7,202.0	7,202.0	16.0	16.0	89.54	19.7	2,441.9	2,442.0	2,409.9	76.130		
7,300.0	7,300.0	7,302.0	7,302.0	16.3	16.3	89.54	19.7	2,441.9	2,442.0	2,409.5	75.078		
7,400.0	7,400.0	7,402.0	7,402.0	16.5	16.5	89.54	19.7	2,441.9	2,442.0	2,409.0	74.055		
7,500.0	7,500.0	7,502.0	7,502.0	16.7	16.7	89.54	19.7	2,441.9	2,442.0	2,408.6	73.059		
7,600.0	7,600.0	7,602.0	7,602.0	16.9	16.9	89.54	19.7	2,441.9	2,442.0	2,408.1	72.089		
7,700.0	7,700.0	7,702.0	7,702.0	17.2	17.2	89.54	19.7	2,441.9	2,442.0	2,407.7	71.145		
7,800.0	7,800.0	7,802.0	7,802.0	17.4	17.4	89.54	19.7	2,441.9	2,442.0	2,407.2	70.225		
7,900.0	7,900.0	7,902.0	7,902.0	17.6	17.6	89.54	19.7	2,441.9	2,442.0	2,406.8	69.329		
8,000.0	8,000.0	8,002.0	8,002.0	17.8	17.8	89.54	19.7	2,441.9	2,442.0	2,406.3	68.455		
8,100.0	8,100.0	8,102.0	8,102.0	18.1	18.1	89.54	19.7	2,441.9	2,442.0	2,405.9	67.603		
8,200.0	8,200.0	8,202.0	8,202.0	18.3	18.3	89.54	19.7	2,441.9	2,442.0	2,405.4	66.772		
8,300.0	8,300.0	8,302.0	8,302.0	18.5	18.5	89.54	19.7	2,441.9	2,442.0	2,405.0	65.962		
8,400.0	8,400.0	8,402.0	8,402.0	18.7	18.7	89.54	19.7	2,441.9	2,442.0	2,404.5	65.170		
8,500.0	8,500.0	8,502.0	8,502.0	19.0	19.0	89.54	19.7	2,441.9	2,442.0	2,404.1	64.398		
8,600.0	8,600.0	8,602.0	8,602.0	19.2	19.2	89.54	19.7	2,441.9	2,442.0	2,403.6	63.643		
8,700.0	8,700.0	8,702.0	8,702.0	19.4	19.4	89.54	19.7	2,441.9	2,442.0	2,403.2	62.906		
8,800.0	8,800.0	8,802.0	8,802.0	19.6	19.6	89.54	19.7	2,441.9	2,442.0	2,402.7	62.186		
8,900.0	8,900.0	8,902.0	8,902.0	19.9	19.9	89.54	19.7	2,441.9	2,442.0	2,402.3	61.482		
9,000.0	9,000.0	9,002.0	9,002.0	20.1	20.1	89.54	19.7	2,441.9	2,442.0	2,401.8	60.794		
9,100.0	9,100.0	9,102.0	9,102.0	20.3	20.3	89.54	19.7	2,441.9	2,442.0	2,401.4	60.121		
9,200.0	9,200.0	9,202.0	9,202.0	20.5	20.5	89.54	19.7	2,441.9	2,442.0	2,400.9	59.463		
9,300.0	9,300.0	9,302.0	9,302.0	20.8	20.8	89.54	19.7	2,441.9	2,442.0	2,400.5	58.819		
9,400.0	9,400.0	9,402.0	9,402.0	21.0	21.0	89.54	19.7	2,441.9	2,442.0	2,400.0	58.189		
9,500.0	9,500.0	9,502.0	9,502.0	21.2	21.2	89.54	19.7	2,441.9	2,442.0	2,399.6	57.573		
9,600.0	9,600.0	9,602.0	9,602.0	21.4	21.4	89.54	19.7	2,441.9	2,442.0	2,399.1	56.969		
9,700.0	9,700.0	9,702.0	9,702.0	21.7	21.7	89.54	19.7	2,441.9	2,442.0	2,398.7	56.378		
9,800.0	9,800.0	9,802.0	9,802.0	21.9	21.9	89.54	19.7	2,441.9	2,442.0	2,398.2	55.799		
9,900.0	9,900.0	9,902.0	9,902.0	22.1	22.1	89.54	19.7	2,441.9	2,442.0	2,397.8	55.231		
9,909.4	9,909.4	9,911.4	9,911.4	22.1	22.1	89.54	19.7	2,441.9	2,442.0	2,397.7	55.178 CC		
10,000.0	10,000.0	9,998.7	9,998.5	22.3	22.3	89.43	24.3	2,441.9	2,442.0	2,397.4	54.689		
10,100.0	10,100.0	10,089.1	10,086.3	22.6	22.5	88.94	45.1	2,441.9	2,442.4	2,397.3	54.188 ES		
10,200.0	10,200.0	10,169.2	10,159.7	22.8	22.7	88.19	77.1	2,441.9	2,443.5	2,398.0	53.738		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27, T22S, R34E - Squints Federal Com #6H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
10,300.0	10,300.0	10,237.2	10,216.9	23.0	22.8	87.34	113.6	2,441.9	2,446.1	2,400.2	53.346		
10,400.0	10,400.0	10,293.3	10,260.0	23.2	23.0	86.49	149.6	2,442.0	2,450.7	2,404.4	53.019		
10,500.0	10,500.0	10,339.3	10,291.9	23.5	23.1	85.72	182.7	2,442.0	2,457.8	2,411.2	52.768		
10,600.0	10,600.0	10,375.0	10,314.4	23.7	23.2	85.08	210.4	2,442.0	2,467.9	2,420.9	52.605		
10,627.5	10,627.5	10,386.2	10,321.0	23.7	23.2	84.87	219.4	2,442.0	2,471.2	2,424.2	52.564		
10,650.0	10,650.0	10,393.6	10,325.2	23.8	23.3	84.72	225.5	2,442.0	2,474.0	2,426.9	52.552		
10,675.0	10,674.9	10,400.0	10,328.8	23.8	23.3	84.22	230.8	2,442.0	2,477.3	2,430.1	52.546		
10,700.0	10,699.7	10,410.5	10,334.6	23.9	23.3	83.63	239.6	2,442.0	2,480.5	2,433.3	52.529		
10,725.0	10,724.3	10,425.0	10,342.2	24.0	23.4	82.98	251.9	2,442.0	2,483.9	2,436.6	52.504		
10,750.0	10,748.7	10,425.0	10,342.2	24.0	23.4	82.58	251.9	2,442.0	2,487.3	2,439.9	52.540		
10,775.0	10,772.7	10,437.1	10,348.3	24.1	23.4	81.98	262.3	2,442.0	2,490.6	2,443.2	52.524		
10,800.0	10,796.3	10,450.0	10,354.5	24.1	23.5	81.38	273.7	2,442.0	2,494.0	2,446.5	52.513		
10,825.0	10,819.4	10,450.0	10,354.5	24.2	23.5	80.97	273.7	2,442.0	2,497.4	2,449.9	52.556		
10,850.0	10,842.0	10,464.7	10,361.2	24.2	23.5	80.37	286.8	2,442.0	2,500.7	2,453.2	52.550		
10,875.0	10,864.1	10,475.0	10,365.6	24.3	23.5	79.84	296.0	2,442.0	2,504.0	2,456.4	52.568		
10,900.0	10,885.4	10,483.6	10,369.2	24.3	23.6	79.34	303.9	2,442.0	2,507.3	2,459.6	52.598		
10,925.0	10,906.1	10,500.0	10,375.6	24.4	23.7	78.77	319.0	2,442.0	2,510.4	2,462.7	52.607		
10,950.0	10,926.0	10,500.0	10,375.6	24.4	23.7	78.41	319.0	2,442.0	2,513.5	2,465.8	52.681		
10,975.0	10,945.1	10,512.6	10,380.1	24.5	23.7	77.92	330.7	2,442.1	2,516.5	2,468.7	52.712		
11,000.0	10,963.3	10,525.0	10,384.3	24.6	23.8	77.46	342.4	2,442.1	2,519.3	2,471.6	52.748		
11,025.0	10,980.6	10,532.2	10,386.6	24.6	23.8	77.07	349.2	2,442.1	2,522.1	2,474.3	52.803		
11,050.0	10,997.0	10,542.0	10,389.5	24.7	23.8	76.68	358.6	2,442.1	2,524.7	2,476.9	52.848		
11,075.0	11,012.3	10,550.0	10,391.8	24.8	23.9	76.33	366.3	2,442.1	2,527.1	2,479.3	52.898		
11,100.0	11,026.6	10,561.9	10,394.9	24.8	23.9	75.97	377.8	2,442.1	2,529.4	2,481.6	52.925		
11,125.0	11,039.7	10,575.0	10,398.0	24.9	24.0	75.63	390.5	2,442.1	2,531.5	2,483.7	52.940		
11,150.0	11,051.8	10,575.0	10,398.0	25.0	24.0	75.40	390.5	2,442.1	2,533.5	2,485.7	53.000		
11,175.0	11,062.7	10,592.0	10,401.5	25.1	24.1	75.10	407.1	2,442.1	2,535.3	2,487.4	52.970		
11,200.0	11,072.3	10,600.0	10,402.9	25.2	24.1	74.88	415.0	2,442.1	2,536.9	2,489.0	52.966		
11,225.0	11,080.8	10,612.2	10,404.9	25.3	24.2	74.67	427.0	2,442.1	2,538.3	2,490.3	52.921		
11,250.0	11,088.0	10,625.0	10,406.6	25.4	24.3	74.48	439.7	2,442.1	2,539.5	2,491.4	52.852		
11,275.0	11,094.0	10,632.5	10,407.4	25.5	24.3	74.35	447.1	2,442.1	2,540.5	2,492.3	52.785		
11,300.0	11,098.7	10,650.0	10,409.0	25.6	24.4	74.22	464.6	2,442.1	2,541.3	2,493.0	52.640		
11,325.0	11,102.1	10,650.0	10,409.0	25.8	24.4	74.16	464.6	2,442.1	2,541.8	2,493.5	52.565		
11,350.0	11,104.2	10,662.9	10,409.7	25.9	24.5	74.11	477.5	2,442.1	2,542.2	2,493.7	52.390		
11,374.5	11,105.0	10,675.0	10,410.0	26.0	24.5	74.09	489.6	2,442.1	2,542.4	2,493.7	52.196		
11,400.0	11,105.1	10,683.3	10,410.1	26.2	24.6	74.09	497.8	2,442.1	2,542.5	2,493.6	51.997		
11,500.0	11,105.7	10,774.4	10,408.8	26.8	25.2	74.05	589.0	2,442.2	2,543.6	2,493.5	50.773		
11,600.0	11,106.4	10,874.4	10,407.4	27.6	26.0	74.01	688.9	2,442.2	2,544.8	2,493.3	49.366		
11,700.0	11,107.0	10,974.4	10,406.0	28.4	26.8	73.97	788.9	2,442.3	2,546.0	2,492.8	47.862		
11,800.0	11,107.6	11,074.3	10,404.6	29.4	27.8	73.93	888.9	2,442.3	2,547.2	2,492.1	46.299		
11,900.0	11,108.3	11,174.3	10,403.2	30.4	28.8	73.89	988.8	2,442.4	2,548.3	2,491.3	44.711		
12,000.0	11,108.9	11,274.3	10,401.8	31.5	29.9	73.85	1,088.8	2,442.4	2,549.5	2,490.4	43.125		
12,100.0	11,109.5	11,374.3	10,400.4	32.6	31.1	73.82	1,188.8	2,442.5	2,550.7	2,489.3	41.562		
12,200.0	11,110.1	11,474.2	10,399.0	33.8	32.3	73.78	1,288.7	2,442.5	2,551.9	2,488.1	40.039		
12,300.0	11,110.8	11,574.2	10,397.6	35.1	33.6	73.74	1,388.7	2,442.6	2,553.1	2,486.9	38.565		
12,400.0	11,111.4	11,674.2	10,396.2	36.4	35.0	73.70	1,488.7	2,442.6	2,554.2	2,485.5	37.148		
12,500.0	11,112.0	11,774.2	10,394.8	37.8	36.3	73.66	1,588.6	2,442.7	2,555.4	2,484.0	35.792		
12,600.0	11,112.6	11,874.2	10,393.4	39.1	37.8	73.62	1,688.6	2,442.7	2,556.6	2,482.5	34.499		
12,700.0	11,113.3	11,974.1	10,392.0	40.6	39.2	73.58	1,788.6	2,442.8	2,557.8	2,480.9	33.270		
12,800.0	11,113.9	12,074.1	10,390.6	42.0	40.7	73.54	1,888.5	2,442.8	2,559.0	2,479.3	32.103		
12,900.0	11,114.5	12,174.1	10,389.2	43.5	42.2	73.50	1,988.5	2,442.9	2,560.2	2,477.6	30.997		
13,000.0	11,115.2	12,274.1	10,387.8	45.0	43.7	73.46	2,088.5	2,442.9	2,561.4	2,475.8	29.950		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #6H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program:	0-MWD default												
Reference	Vertical	Measured	Vertical	Semi Major Axis	Offset	Highside	Offset Wellbore Centre	Distance	Distance	Separation	Warning		
Depth	Depth	Depth	Depth	Reference	Offset	Toolface	+N-S	+E-W	Between	Between	Factor		
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	Centres	Ellipses			
									(usft)	(usft)			
13,100.0	11,115.8	12,374.0	10,386.4	46.6	45.3	73.42	2,188.4	2,442.9	2,562.5	2,474.1	28.958		
13,200.0	11,116.4	12,474.0	10,385.0	48.1	46.9	73.38	2,288.4	2,443.0	2,563.7	2,472.2	28.020		
13,300.0	11,117.0	12,574.0	10,383.6	49.7	48.4	73.34	2,388.4	2,443.0	2,564.9	2,470.4	27.132		
13,400.0	11,117.7	12,674.0	10,382.2	51.3	50.1	73.30	2,488.3	2,443.1	2,566.1	2,468.5	26.291		
13,500.0	11,118.3	12,774.0	10,380.8	52.9	51.7	73.26	2,588.3	2,443.1	2,567.3	2,466.6	25.494		
13,600.0	11,118.9	12,873.9	10,379.4	54.5	53.3	73.22	2,688.3	2,443.2	2,568.5	2,464.7	24.739		
13,700.0	11,119.6	12,973.9	10,378.0	56.1	55.0	73.18	2,788.2	2,443.2	2,569.7	2,462.7	24.023		
13,800.0	11,120.2	13,073.9	10,376.6	57.8	56.6	73.14	2,888.2	2,443.3	2,570.9	2,460.8	23.344		
13,900.0	11,120.8	13,173.9	10,375.2	59.4	58.3	73.10	2,988.2	2,443.3	2,572.1	2,458.8	22.699		
14,000.0	11,121.4	13,273.8	10,373.8	61.1	60.0	73.07	3,088.1	2,443.4	2,573.3	2,456.8	22.086		
14,100.0	11,122.1	13,373.8	10,372.3	62.8	61.6	73.03	3,188.1	2,443.4	2,574.5	2,454.8	21.503		
14,200.0	11,122.7	13,473.8	10,370.9	64.4	63.3	72.99	3,288.1	2,443.5	2,575.7	2,452.8	20.948		
14,300.0	11,123.3	13,573.8	10,369.5	66.1	65.0	72.95	3,388.1	2,443.5	2,576.9	2,450.7	20.419		
14,400.0	11,123.9	13,673.7	10,368.1	67.8	66.7	72.91	3,488.0	2,443.6	2,578.1	2,448.7	19.915		
14,500.0	11,124.6	13,773.7	10,366.7	69.5	68.4	72.87	3,588.0	2,443.6	2,579.3	2,446.6	19.435		
14,600.0	11,125.2	13,873.7	10,365.3	71.2	70.2	72.83	3,688.0	2,443.7	2,580.5	2,444.6	18.975		
14,700.0	11,125.8	13,973.7	10,363.9	72.9	71.9	72.79	3,787.9	2,443.7	2,581.8	2,442.5	18.537		
14,800.0	11,126.5	14,073.7	10,362.5	74.6	73.6	72.75	3,887.9	2,443.8	2,583.0	2,440.4	18.117		
14,900.0	11,127.1	14,173.6	10,361.1	76.4	75.3	72.71	3,987.9	2,443.8	2,584.2	2,438.3	17.716		
15,000.0	11,127.7	14,273.6	10,359.7	78.1	77.1	72.68	4,087.8	2,443.9	2,585.4	2,436.2	17.331		
15,100.0	11,128.3	14,373.6	10,358.3	79.8	78.8	72.64	4,187.8	2,443.9	2,586.6	2,434.1	16.962		
15,200.0	11,129.0	14,473.6	10,356.9	81.6	80.6	72.60	4,287.8	2,444.0	2,587.8	2,432.0	16.609		
15,300.0	11,129.6	14,573.5	10,355.5	83.3	82.3	72.56	4,387.7	2,444.0	2,589.0	2,429.9	16.269		
15,400.0	11,130.2	14,673.5	10,354.1	85.0	84.0	72.52	4,487.7	2,444.1	2,590.3	2,427.8	15.943		
15,500.0	11,130.9	14,773.5	10,352.7	86.8	85.8	72.48	4,587.7	2,444.1	2,591.5	2,425.7	15.630		
15,600.0	11,131.5	14,873.5	10,351.3	88.5	87.6	72.44	4,687.6	2,444.2	2,592.7	2,423.6	15.328		
15,700.0	11,132.1	14,966.6	10,350.0	90.3	89.2	72.41	4,780.7	2,444.2	2,593.9	2,421.6	15.048		
15,800.0	11,132.7	14,966.6	10,350.0	92.0	89.2	72.41	4,780.7	2,444.2	2,597.3	2,423.3	14.922		
15,900.0	11,133.4	14,966.6	10,350.0	93.8	89.2	72.41	4,780.7	2,444.2	2,604.6	2,428.8	14.820		
16,000.0	11,134.0	14,966.6	10,350.0	95.6	89.2	72.41	4,780.7	2,444.2	2,615.6	2,438.2	14.741		
16,100.0	11,134.6	14,966.6	10,350.0	97.3	89.2	72.41	4,780.7	2,444.2	2,630.5	2,451.3	14.684		
16,200.0	11,135.2	14,966.6	10,350.0	99.1	89.2	72.41	4,780.7	2,444.2	2,649.0	2,468.1	14.648		
16,300.0	11,135.9	14,966.6	10,350.0	100.9	89.2	72.41	4,780.7	2,444.2	2,671.1	2,488.6	14.633 SF		
16,400.0	11,136.5	14,966.6	10,350.0	102.6	89.2	72.41	4,780.7	2,444.2	2,696.8	2,512.5	14.638		
16,500.0	11,137.1	14,966.6	10,350.0	104.4	89.2	72.41	4,780.7	2,444.2	2,725.8	2,539.9	14.660		
16,600.0	11,137.8	14,966.6	10,350.0	106.2	89.2	72.41	4,780.7	2,444.2	2,758.2	2,570.6	14.700		
16,700.0	11,138.4	14,966.6	10,350.0	107.9	89.2	72.41	4,780.7	2,444.2	2,793.9	2,604.5	14.755		
16,800.0	11,139.0	14,966.6	10,350.0	109.7	89.2	72.41	4,780.7	2,444.2	2,832.6	2,641.5	14.826		
16,900.0	11,139.6	14,966.6	10,350.0	111.5	89.2	72.41	4,780.7	2,444.2	2,874.2	2,681.4	14.911		
17,000.0	11,140.3	14,966.6	10,350.0	113.3	89.2	72.41	4,780.7	2,444.2	2,918.7	2,724.2	15.008		
17,100.0	11,140.9	14,966.6	10,350.0	115.1	89.2	72.41	4,780.7	2,444.2	2,965.9	2,769.7	15.118		
17,200.0	11,141.5	14,966.6	10,350.0	116.8	89.2	72.41	4,780.7	2,444.2	3,015.7	2,817.8	15.239		
17,300.0	11,142.2	14,966.6	10,350.0	118.6	89.2	72.41	4,780.7	2,444.2	3,067.9	2,868.3	15.369		
17,400.0	11,142.8	14,966.6	10,350.0	120.4	89.2	72.41	4,780.7	2,444.2	3,122.4	2,921.1	15.509		
17,500.0	11,143.4	14,966.6	10,350.0	122.2	89.2	72.41	4,780.7	2,444.2	3,179.2	2,976.2	15.658		
17,600.0	11,144.0	14,966.6	10,350.0	124.0	89.2	72.41	4,780.7	2,444.2	3,238.1	3,033.3	15.814		
17,700.0	11,144.7	14,966.6	10,350.0	125.8	89.2	72.41	4,780.7	2,444.2	3,298.9	3,092.4	15.977		
17,800.0	11,145.3	14,966.6	10,350.0	127.6	89.2	72.41	4,780.7	2,444.2	3,361.6	3,153.4	16.147		
17,900.0	11,145.9	14,966.6	10,350.0	129.3	89.2	72.41	4,780.7	2,444.2	3,426.1	3,216.2	16.321		
18,000.0	11,146.5	14,966.6	10,350.0	131.1	89.2	72.41	4,780.7	2,444.2	3,492.3	3,280.6	16.501		
18,100.0	11,147.2	14,966.6	10,350.0	132.9	89.2	72.41	4,780.7	2,444.2	3,560.0	3,346.7	16.686		
18,200.0	11,147.8	14,966.6	10,350.0	134.7	89.2	72.41	4,780.7	2,444.2	3,629.2	3,414.2	16.874		

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



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design											Offset Site Error:		0.0 usft
Survey Program: 0-MWD default											Offset Well Error:		0.0 usft
Reference	Vertical	Offset	Vertical	Semi Major Axis	Offset	Highside	Offset Wellbore Centre	Distance	Between	Between	Separation	Warning	
Measured	Depth	Measured	Depth	Reference		Toolface	+N/-S	+E/-W	Centres	Ellipses	Factor		
Depth	(usft)	Depth	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)			
18,300.0	11,148.4	14,966.6	10,350.0	136.5	89.2	72.41	4,780.7	2,444.2	3,699.9	3,483.1	17.066		
18,400.0	11,149.1	14,966.6	10,350.0	138.3	89.2	72.41	4,780.7	2,444.2	3,771.9	3,553.3	17.260		
18,500.0	11,149.7	14,966.6	10,350.0	140.1	89.2	72.41	4,780.7	2,444.2	3,845.1	3,624.8	17.457		
18,600.0	11,150.3	14,966.6	10,350.0	141.9	89.2	72.41	4,780.7	2,444.2	3,919.5	3,697.5	17.657		
18,700.0	11,150.9	14,966.6	10,350.0	143.7	89.2	72.41	4,780.7	2,444.2	3,995.0	3,771.3	17.858		
18,800.0	11,151.6	14,966.6	10,350.0	145.5	89.2	72.41	4,780.7	2,444.2	4,071.6	3,846.1	18.061		
18,900.0	11,152.2	14,966.6	10,350.0	147.3	89.2	72.41	4,780.7	2,444.2	4,149.2	3,922.0	18.265		
19,000.0	11,152.8	14,966.6	10,350.0	149.1	89.2	72.41	4,780.7	2,444.2	4,227.7	3,998.8	18.470		
19,100.0	11,153.4	14,966.6	10,350.0	150.9	89.2	72.41	4,780.7	2,444.2	4,307.1	4,076.5	18.676		
19,200.0	11,154.1	14,966.6	10,350.0	152.7	89.2	72.41	4,780.7	2,444.2	4,387.3	4,155.0	18.883		
19,300.0	11,154.7	14,966.6	10,350.0	154.5	89.2	72.41	4,780.7	2,444.2	4,468.4	4,234.3	19.089		
19,400.0	11,155.3	14,966.6	10,350.0	156.3	89.2	72.41	4,780.7	2,444.2	4,550.2	4,314.4	19.296		
19,500.0	11,156.0	14,966.6	10,350.0	158.1	89.2	72.41	4,780.7	2,444.2	4,632.7	4,395.1	19.503		
19,600.0	11,156.6	14,966.6	10,350.0	159.9	89.2	72.41	4,780.7	2,444.2	4,715.9	4,476.6	19.709		
19,700.0	11,157.2	14,966.6	10,350.0	161.7	89.2	72.41	4,780.7	2,444.2	4,799.7	4,558.7	19.916		
19,800.0	11,157.8	14,966.6	10,350.0	163.5	89.2	72.41	4,780.7	2,444.2	4,884.2	4,641.4	20.121		
19,900.0	11,158.5	14,966.6	10,350.0	165.3	89.2	72.41	4,780.7	2,444.2	4,969.2	4,724.7	20.327		
20,000.0	11,159.1	14,966.6	10,350.0	167.1	89.2	72.41	4,780.7	2,444.2	5,054.7	4,808.5	20.531		
20,100.0	11,159.7	14,966.6	10,350.0	168.9	89.2	72.41	4,780.7	2,444.2	5,140.8	4,892.9	20.735		
20,200.0	11,160.4	14,966.6	10,350.0	170.7	89.2	72.41	4,780.7	2,444.2	5,227.4	4,977.7	20.937		
20,300.0	11,161.0	14,966.6	10,350.0	172.5	89.2	72.41	4,780.7	2,444.2	5,314.5	5,063.1	21.139		
20,400.0	11,161.6	14,966.6	10,350.0	174.3	89.2	72.41	4,780.7	2,444.2	5,402.0	5,148.8	21.340		
20,500.0	11,162.2	14,966.6	10,350.0	176.1	89.2	72.41	4,780.7	2,444.2	5,489.9	5,235.0	21.540		
20,600.0	11,162.9	14,966.6	10,350.0	177.9	89.2	72.41	4,780.7	2,444.2	5,578.2	5,321.6	21.738		
20,700.0	11,163.5	14,966.6	10,350.0	179.7	89.2	72.41	4,780.7	2,444.2	5,667.0	5,408.6	21.936		
20,800.0	11,164.1	14,966.6	10,350.0	181.5	89.2	72.41	4,780.7	2,444.2	5,756.1	5,496.0	22.132		
20,900.0	11,164.7	14,966.6	10,350.0	183.3	89.2	72.41	4,780.7	2,444.2	5,845.5	5,583.7	22.327		
20,940.1	11,165.0	14,966.6	10,350.0	184.1	89.2	72.41	4,780.7	2,444.2	5,881.5	5,618.9	22.404		



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD-Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #7H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
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)	Between Ellipses (usft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	89.54	10.8	1,349.7	1,349.7				
100.0	100.0	99.0	99.0	0.1	0.1	89.54	10.8	1,349.7	1,349.7	1,349.6	8,746.769		
200.0	200.0	199.0	199.0	0.3	0.3	89.54	10.8	1,349.7	1,349.7	1,349.1	2,240.709		
300.0	300.0	299.0	299.0	0.5	0.5	89.54	10.8	1,349.7	1,349.7	1,348.7	1,283.141		
400.0	400.0	399.0	399.0	0.8	0.7	89.54	10.8	1,349.7	1,349.7	1,348.2	898.967		
500.0	500.0	499.0	499.0	1.0	1.0	89.54	10.8	1,349.7	1,349.7	1,347.8	691.832		
600.0	600.0	599.0	599.0	1.2	1.2	89.54	10.8	1,349.7	1,349.7	1,347.3	562.276		
700.0	700.0	699.0	699.0	1.4	1.4	89.54	10.8	1,349.7	1,349.7	1,346.9	473.589		
800.0	800.0	799.0	799.0	1.7	1.6	89.54	10.8	1,349.7	1,349.7	1,346.4	409.067		
900.0	900.0	899.0	899.0	1.9	1.9	89.54	10.8	1,349.7	1,349.7	1,346.0	360.018		
1,000.0	1,000.0	999.0	999.0	2.1	2.1	89.54	10.8	1,349.7	1,349.7	1,345.5	321.472		
1,100.0	1,100.0	1,099.0	1,099.0	2.3	2.3	89.54	10.8	1,349.7	1,349.7	1,345.1	290.382		
1,200.0	1,200.0	1,199.0	1,199.0	2.5	2.5	89.54	10.8	1,349.7	1,349.7	1,344.6	264.775		
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	89.54	10.8	1,349.7	1,349.7	1,344.2	243.319		
1,400.0	1,400.0	1,399.0	1,399.0	3.0	3.0	89.54	10.8	1,349.7	1,349.7	1,343.7	225.079		
1,500.0	1,500.0	1,499.0	1,499.0	3.2	3.2	89.54	10.8	1,349.7	1,349.7	1,343.3	209.383		
1,600.0	1,600.0	1,599.0	1,599.0	3.4	3.4	89.54	10.8	1,349.7	1,349.7	1,342.8	195.733		
1,700.0	1,700.0	1,699.0	1,699.0	3.7	3.7	89.54	10.8	1,349.7	1,349.7	1,342.4	183.755		
1,800.0	1,800.0	1,799.0	1,799.0	3.9	3.9	89.54	10.8	1,349.7	1,349.7	1,341.9	173.158		
1,900.0	1,900.0	1,899.0	1,899.0	4.1	4.1	89.54	10.8	1,349.7	1,349.7	1,341.5	163.716		
2,000.0	2,000.0	1,999.0	1,999.0	4.3	4.3	89.54	10.8	1,349.7	1,349.7	1,341.0	155.251		
2,100.0	2,100.0	2,099.0	2,099.0	4.6	4.6	89.54	10.8	1,349.7	1,349.7	1,340.6	147.618		
2,200.0	2,200.0	2,199.0	2,199.0	4.8	4.8	89.54	10.8	1,349.7	1,349.7	1,340.2	140.701		
2,300.0	2,300.0	2,299.0	2,299.0	5.0	5.0	89.54	10.8	1,349.7	1,349.7	1,339.7	134.402		
2,400.0	2,400.0	2,399.0	2,399.0	5.2	5.2	89.54	10.8	1,349.7	1,349.7	1,339.3	128.644		
2,500.0	2,500.0	2,499.0	2,499.0	5.5	5.5	89.54	10.8	1,349.7	1,349.7	1,338.8	123.359		
2,600.0	2,600.0	2,599.0	2,599.0	5.7	5.7	89.54	10.8	1,349.7	1,349.7	1,338.4	118.491		
2,700.0	2,700.0	2,699.0	2,699.0	5.9	5.9	89.54	10.8	1,349.7	1,349.7	1,337.9	113.992		
2,800.0	2,800.0	2,799.0	2,799.0	6.1	6.1	89.54	10.8	1,349.7	1,349.7	1,337.5	109.823		
2,900.0	2,900.0	2,899.0	2,899.0	6.4	6.4	89.54	10.8	1,349.7	1,349.7	1,337.0	105.947		
3,000.0	3,000.0	2,999.0	2,999.0	6.6	6.6	89.54	10.8	1,349.7	1,349.7	1,336.6	102.336		
3,100.0	3,100.0	3,099.0	3,099.0	6.8	6.8	89.54	10.8	1,349.7	1,349.7	1,336.1	98.963		
3,200.0	3,200.0	3,199.0	3,199.0	7.0	7.0	89.54	10.8	1,349.7	1,349.7	1,335.7	95.806		
3,300.0	3,300.0	3,299.0	3,299.0	7.3	7.3	89.54	10.8	1,349.7	1,349.7	1,335.2	92.843		
3,400.0	3,400.0	3,399.0	3,399.0	7.5	7.5	89.54	10.8	1,349.7	1,349.7	1,334.8	90.059		
3,500.0	3,500.0	3,499.0	3,499.0	7.7	7.7	89.54	10.8	1,349.7	1,349.7	1,334.3	87.436		
3,600.0	3,600.0	3,599.0	3,599.0	7.9	7.9	89.54	10.8	1,349.7	1,349.7	1,333.9	84.962		
3,700.0	3,700.0	3,699.0	3,699.0	8.2	8.2	89.54	10.8	1,349.7	1,349.7	1,333.4	82.624		
3,800.0	3,800.0	3,799.0	3,799.0	8.4	8.4	89.54	10.8	1,349.7	1,349.7	1,333.0	80.411		
3,900.0	3,900.0	3,899.0	3,899.0	8.6	8.6	89.54	10.8	1,349.7	1,349.7	1,332.5	78.314		
4,000.0	4,000.0	3,999.0	3,999.0	8.8	8.8	89.54	10.8	1,349.7	1,349.7	1,332.1	76.323		
4,100.0	4,100.0	4,099.0	4,099.0	9.1	9.1	89.54	10.8	1,349.7	1,349.7	1,331.6	74.431		
4,200.0	4,200.0	4,199.0	4,199.0	9.3	9.3	89.54	10.8	1,349.7	1,349.7	1,331.2	72.631		
4,300.0	4,300.0	4,299.0	4,299.0	9.5	9.5	89.54	10.8	1,349.7	1,349.7	1,330.7	70.915		
4,400.0	4,400.0	4,399.0	4,399.0	9.7	9.7	89.54	10.8	1,349.7	1,349.7	1,330.3	69.279		
4,500.0	4,500.0	4,499.0	4,499.0	10.0	10.0	89.54	10.8	1,349.7	1,349.7	1,329.8	67.717		
4,600.0	4,600.0	4,599.0	4,599.0	10.2	10.2	89.54	10.8	1,349.7	1,349.7	1,329.4	66.223		
4,700.0	4,700.0	4,699.0	4,699.0	10.4	10.4	89.54	10.8	1,349.7	1,349.7	1,328.9	64.794		
4,800.0	4,800.0	4,799.0	4,799.0	10.6	10.6	89.54	10.8	1,349.7	1,349.7	1,328.5	63.425		
4,900.0	4,900.0	4,899.0	4,899.0	10.9	10.9	89.54	10.8	1,349.7	1,349.7	1,328.0	62.113		
5,000.0	5,000.0	4,999.0	4,999.0	11.1	11.1	89.54	10.8	1,349.7	1,349.7	1,327.6	60.854		
5,100.0	5,100.0	5,099.0	5,099.0	11.3	11.3	89.54	10.8	1,349.7	1,349.7	1,327.1	59.645		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #7H - Wellbore #1 - Design #1											Offset Site Error:	0.0 usft
Survey Program: 0-MWD default											Offset Well Error:	0.0 usft
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)	Between Ellipses (usft)	Separation Factor	Warning
5,200.0	5,200.0	5,199.0	5,199.0	11.5	11.5	89.54	10.8	1,349.7	1,349.7	1,326.7	58.484	
5,300.0	5,300.0	5,299.0	5,299.0	11.8	11.8	89.54	10.8	1,349.7	1,349.7	1,326.2	57.366	
5,400.0	5,400.0	5,399.0	5,399.0	12.0	12.0	89.54	10.8	1,349.7	1,349.7	1,325.8	56.291	
5,500.0	5,500.0	5,499.0	5,499.0	12.2	12.2	89.54	10.8	1,349.7	1,349.7	1,325.3	55.255	
5,600.0	5,600.0	5,599.0	5,599.0	12.4	12.4	89.54	10.8	1,349.7	1,349.7	1,324.9	54.256	
5,700.0	5,700.0	5,699.0	5,699.0	12.7	12.7	89.54	10.8	1,349.7	1,349.7	1,324.4	53.293	
5,800.0	5,800.0	5,799.0	5,799.0	12.9	12.9	89.54	10.8	1,349.7	1,349.7	1,324.0	52.364	
5,900.0	5,900.0	5,899.0	5,899.0	13.1	13.1	89.54	10.8	1,349.7	1,349.7	1,323.5	51.466	
6,000.0	6,000.0	5,999.0	5,999.0	13.3	13.3	89.54	10.8	1,349.7	1,349.7	1,323.1	50.599	
6,100.0	6,100.0	6,099.0	6,099.0	13.6	13.6	89.54	10.8	1,349.7	1,349.7	1,322.6	49.761	
6,200.0	6,200.0	6,199.0	6,199.0	13.8	13.8	89.54	10.8	1,349.7	1,349.7	1,322.2	48.949	
6,300.0	6,300.0	6,299.0	6,299.0	14.0	14.0	89.54	10.8	1,349.7	1,349.7	1,321.7	48.164	
6,400.0	6,400.0	6,399.0	6,399.0	14.2	14.2	89.54	10.8	1,349.7	1,349.7	1,321.3	47.404	
6,500.0	6,500.0	6,499.0	6,499.0	14.5	14.5	89.54	10.8	1,349.7	1,349.7	1,320.8	46.667	
6,600.0	6,600.0	6,599.0	6,599.0	14.7	14.7	89.54	10.8	1,349.7	1,349.7	1,320.4	45.953	
6,700.0	6,700.0	6,699.0	6,699.0	14.9	14.9	89.54	10.8	1,349.7	1,349.7	1,319.9	45.260	
6,800.0	6,800.0	6,799.0	6,799.0	15.1	15.1	89.54	10.8	1,349.7	1,349.7	1,319.5	44.588	
6,900.0	6,900.0	6,899.0	6,899.0	15.4	15.4	89.54	10.8	1,349.7	1,349.7	1,319.0	43.935	
7,000.0	7,000.0	6,999.0	6,999.0	15.6	15.6	89.54	10.8	1,349.7	1,349.7	1,318.6	43.302	
7,100.0	7,100.0	7,099.0	7,099.0	15.8	15.8	89.54	10.8	1,349.7	1,349.7	1,318.1	42.686	
7,200.0	7,200.0	7,199.0	7,199.0	16.0	16.0	89.54	10.8	1,349.7	1,349.7	1,317.7	42.088	
7,300.0	7,300.0	7,299.0	7,299.0	16.3	16.3	89.54	10.8	1,349.7	1,349.7	1,317.2	41.506	
7,400.0	7,400.0	7,399.0	7,399.0	16.5	16.5	89.54	10.8	1,349.7	1,349.7	1,316.8	40.940	
7,500.0	7,500.0	7,499.0	7,499.0	16.7	16.7	89.54	10.8	1,349.7	1,349.7	1,316.3	40.389	
7,600.0	7,600.0	7,599.0	7,599.0	16.9	16.9	89.54	10.8	1,349.7	1,349.7	1,315.9	39.853	
7,700.0	7,700.0	7,699.0	7,699.0	17.2	17.2	89.54	10.8	1,349.7	1,349.7	1,315.4	39.331	
7,800.0	7,800.0	7,799.0	7,799.0	17.4	17.4	89.54	10.8	1,349.7	1,349.7	1,315.0	38.823	
7,900.0	7,900.0	7,899.0	7,899.0	17.6	17.6	89.54	10.8	1,349.7	1,349.7	1,314.5	38.327	
8,000.0	8,000.0	7,999.0	7,999.0	17.8	17.8	89.54	10.8	1,349.7	1,349.7	1,314.1	37.844	
8,100.0	8,100.0	8,099.0	8,099.0	18.1	18.1	89.54	10.8	1,349.7	1,349.7	1,313.6	37.373	
8,200.0	8,200.0	8,199.0	8,199.0	18.3	18.3	89.54	10.8	1,349.7	1,349.7	1,313.2	36.914	
8,300.0	8,300.0	8,299.0	8,299.0	18.5	18.5	89.54	10.8	1,349.7	1,349.7	1,312.7	36.465	
8,400.0	8,400.0	8,399.0	8,399.0	18.7	18.7	89.54	10.8	1,349.7	1,349.7	1,312.3	36.028	
8,500.0	8,500.0	8,499.0	8,499.0	19.0	19.0	89.54	10.8	1,349.7	1,349.7	1,311.8	35.601	
8,600.0	8,600.0	8,599.0	8,599.0	19.2	19.2	89.54	10.8	1,349.7	1,349.7	1,311.4	35.183	
8,700.0	8,700.0	8,699.0	8,699.0	19.4	19.4	89.54	10.8	1,349.7	1,349.7	1,310.9	34.776	
8,800.0	8,800.0	8,799.0	8,799.0	19.6	19.6	89.54	10.8	1,349.7	1,349.7	1,310.5	34.378	
8,900.0	8,900.0	8,899.0	8,899.0	19.9	19.9	89.54	10.8	1,349.7	1,349.7	1,310.0	33.989	
9,000.0	9,000.0	8,999.0	8,999.0	20.1	20.1	89.54	10.8	1,349.7	1,349.7	1,309.6	33.608	
9,100.0	9,100.0	9,099.0	9,099.0	20.3	20.3	89.54	10.8	1,349.7	1,349.7	1,309.1	33.236	
9,200.0	9,200.0	9,199.0	9,199.0	20.5	20.5	89.54	10.8	1,349.7	1,349.7	1,308.7	32.872	
9,300.0	9,300.0	9,299.0	9,299.0	20.8	20.8	89.54	10.8	1,349.7	1,349.7	1,308.2	32.516	
9,400.0	9,400.0	9,399.0	9,399.0	21.0	21.0	89.54	10.8	1,349.7	1,349.7	1,307.8	32.168	
9,500.0	9,500.0	9,499.0	9,499.0	21.2	21.2	89.54	10.8	1,349.7	1,349.7	1,307.3	31.827	
9,600.0	9,600.0	9,599.0	9,599.0	21.4	21.4	89.54	10.8	1,349.7	1,349.7	1,306.9	31.493	
9,700.0	9,700.0	9,699.0	9,699.0	21.7	21.7	89.54	10.8	1,349.7	1,349.7	1,306.4	31.166	
9,800.0	9,800.0	9,799.0	9,799.0	21.9	21.9	89.54	10.8	1,349.7	1,349.7	1,306.0	30.846	
9,900.0	9,900.0	9,899.0	9,899.0	22.1	22.1	89.54	10.8	1,349.7	1,349.7	1,305.5	30.532	
9,936.9	9,936.9	9,935.9	9,935.9	22.2	22.2	89.49	12.0	1,349.7	1,349.7	1,305.4	30.419	CC
10,000.0	10,000.0	9,997.9	9,997.3	22.3	22.3	89.14	20.3	1,349.6	1,349.8	1,305.1	30.230	
10,100.0	10,100.0	10,089.3	10,084.6	22.6	22.5	88.01	46.9	1,349.4	1,350.3	1,305.2	29.960	
10,200.0	10,200.0	10,168.4	10,154.8	22.8	22.7	86.48	82.9	1,349.1	1,352.3	1,306.9	29.742	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squirts Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squirts Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27, T22S, R34E - Squirts Federal Com #7H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
10,300.0	10,300.0	10,234.0	10,208.0	23.0	22.8	84.86	121.3	1,348.7	1,357.2	1,311.4	29.602		
10,400.0	10,400.0	10,287.4	10,247.1	23.2	23.0	83.33	157.7	1,348.4	1,366.1	1,319.9	29.560		
10,500.0	10,500.0	10,330.8	10,275.6	23.5	23.1	81.96	190.3	1,348.1	1,379.7	1,333.1	29.631		
10,600.0	10,600.0	10,366.1	10,296.6	23.7	23.2	80.78	218.7	1,347.9	1,398.6	1,351.7	29.823		
10,627.5	10,627.5	10,375.0	10,301.6	23.7	23.2	80.48	226.1	1,347.8	1,404.7	1,357.7	29.897		
10,650.0	10,650.0	10,381.6	10,305.1	23.8	23.3	79.95	231.6	1,347.7	1,410.0	1,362.9	29.974		
10,675.0	10,674.9	10,389.5	10,309.3	23.8	23.3	78.96	238.3	1,347.7	1,415.9	1,368.8	30.059		
10,700.0	10,699.7	10,400.0	10,314.7	23.9	23.3	77.90	247.4	1,347.6	1,422.0	1,374.8	30.139		
10,725.0	10,724.3	10,400.0	10,314.7	24.0	23.3	77.16	247.4	1,347.6	1,428.1	1,380.9	30.250		
10,750.0	10,748.7	10,414.2	10,321.7	24.0	23.4	75.99	259.7	1,347.5	1,434.2	1,386.9	30.339		
10,775.0	10,772.7	10,425.0	10,326.8	24.1	23.4	74.95	269.3	1,347.4	1,440.4	1,393.1	30.447		
10,800.0	10,796.3	10,425.0	10,326.8	24.1	23.4	74.22	269.3	1,347.4	1,446.5	1,399.2	30.588		
10,825.0	10,819.4	10,440.4	10,333.6	24.2	23.5	73.10	283.0	1,347.3	1,452.5	1,405.2	30.711		
10,850.0	10,842.0	10,450.0	10,337.7	24.2	23.5	72.16	291.8	1,347.2	1,458.5	1,411.2	30.860		
10,875.0	10,864.1	10,458.4	10,341.0	24.3	23.5	71.27	299.4	1,347.1	1,464.4	1,417.2	31.024		
10,900.0	10,885.4	10,467.5	10,344.6	24.3	23.6	70.40	307.9	1,347.1	1,470.1	1,423.0	31.203		
10,925.0	10,906.1	10,475.0	10,347.3	24.4	23.6	69.59	314.8	1,347.0	1,475.7	1,428.7	31.399		
10,950.0	10,926.0	10,486.1	10,351.3	24.4	23.7	68.75	325.2	1,346.9	1,481.1	1,434.2	31.603		
10,975.0	10,945.1	10,500.0	10,355.8	24.5	23.7	67.90	338.3	1,346.8	1,486.3	1,439.6	31.819		
11,000.0	10,963.3	10,500.0	10,355.8	24.6	23.7	67.33	338.3	1,346.8	1,491.3	1,444.8	32.062		
11,025.0	10,980.6	10,514.5	10,360.2	24.6	23.8	66.56	352.2	1,346.7	1,496.1	1,449.7	32.295		
11,050.0	10,997.0	10,525.0	10,363.0	24.7	23.8	65.90	362.3	1,346.6	1,500.6	1,454.5	32.541		
11,075.0	11,012.3	10,533.8	10,365.3	24.8	23.9	65.31	370.8	1,346.5	1,504.8	1,458.9	32.791		
11,100.0	11,026.6	10,550.0	10,369.0	24.8	24.0	64.67	386.5	1,346.4	1,508.8	1,463.1	33.032		
11,125.0	11,039.7	10,550.0	10,369.0	24.9	24.0	64.27	386.5	1,346.4	1,512.5	1,467.0	33.284		
11,150.0	11,051.8	10,563.0	10,371.6	25.0	24.0	63.77	399.3	1,346.3	1,515.8	1,470.6	33.509		
11,175.0	11,062.7	10,575.0	10,373.7	25.1	24.1	63.33	411.1	1,346.2	1,518.8	1,473.8	33.719		
11,200.0	11,072.3	10,582.6	10,374.9	25.2	24.1	62.98	418.6	1,346.1	1,521.5	1,476.6	33.913		
11,225.0	11,080.8	10,592.5	10,376.2	25.3	24.2	62.66	428.4	1,346.0	1,523.9	1,479.1	34.075		
11,250.0	11,088.0	10,600.0	10,377.1	25.4	24.2	62.40	435.9	1,345.9	1,525.9	1,481.3	34.210		
11,275.0	11,094.0	10,612.3	10,378.3	25.5	24.3	62.16	448.1	1,345.8	1,527.5	1,483.0	34.294		
11,300.0	11,098.7	10,625.0	10,379.2	25.6	24.4	61.98	460.8	1,345.7	1,528.8	1,484.3	34.333		
11,325.0	11,102.1	10,625.0	10,379.2	25.8	24.4	61.88	460.8	1,345.7	1,529.7	1,485.2	34.367		
11,350.0	11,104.2	10,642.0	10,379.8	25.9	24.5	61.79	477.8	1,345.6	1,530.2	1,485.6	34.294		
11,374.5	11,105.0	10,651.8	10,380.0	26.0	24.5	61.77	487.5	1,345.5	1,530.4	1,485.7	34.199		
11,375.4	11,105.0	10,652.1	10,380.0	26.0	24.5	61.77	487.9	1,345.5	1,530.4	1,485.7	34.194		
11,400.0	11,105.1	10,671.6	10,379.9	26.2	24.6	61.76	507.4	1,345.3	1,530.5	1,485.5	34.017		
11,500.0	11,105.7	10,771.6	10,379.2	26.8	25.3	61.71	607.3	1,344.4	1,530.8	1,484.6	33.145		
11,600.0	11,106.4	10,871.6	10,378.6	27.6	26.1	61.66	707.3	1,343.5	1,531.2	1,483.6	32.189		
11,700.0	11,107.0	10,971.6	10,378.0	28.4	27.0	61.62	807.3	1,342.6	1,531.5	1,482.4	31.174		
11,800.0	11,107.6	11,071.6	10,377.3	29.4	28.0	61.57	907.3	1,341.8	1,531.8	1,481.0	30.124		
11,900.0	11,108.3	11,171.6	10,376.7	30.4	29.1	61.52	1,007.3	1,340.9	1,532.2	1,479.4	29.063		
12,000.0	11,108.9	11,271.6	10,376.1	31.5	30.2	61.48	1,107.3	1,340.0	1,532.5	1,477.8	28.008		
12,100.0	11,109.5	11,371.6	10,375.5	32.6	31.4	61.43	1,207.3	1,339.1	1,532.8	1,476.0	26.971		
12,200.0	11,110.1	11,471.6	10,374.8	33.8	32.6	61.38	1,307.3	1,338.2	1,533.2	1,474.1	25.963		
12,300.0	11,110.8	11,571.5	10,374.2	35.1	33.9	61.34	1,407.2	1,337.3	1,533.5	1,472.2	24.991		
12,400.0	11,111.4	11,671.5	10,373.6	36.4	35.3	61.29	1,507.2	1,336.4	1,533.9	1,470.1	24.059		
12,500.0	11,112.0	11,771.5	10,373.0	37.8	36.7	61.25	1,607.2	1,335.6	1,534.2	1,468.0	23.169		
12,600.0	11,112.6	11,871.5	10,372.3	39.1	38.1	61.20	1,707.2	1,334.7	1,534.5	1,465.8	22.321		
12,700.0	11,113.3	11,971.5	10,371.7	40.6	39.6	61.15	1,807.2	1,333.8	1,534.9	1,463.6	21.517		
12,800.0	11,113.9	12,071.5	10,371.1	42.0	41.1	61.11	1,907.2	1,332.9	1,535.2	1,461.3	20.755		
12,900.0	11,114.5	12,171.5	10,370.4	43.5	42.6	61.06	2,007.2	1,332.0	1,535.6	1,458.9	20.033		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #7H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
13,000.0	11,115.2	12,271.5	10,369.8	45.0	44.1	61.01	2,107.1	1,331.1	1,535.9	1,456.6	19.350		
13,100.0	11,115.8	12,371.5	10,369.2	46.6	45.7	60.97	2,207.1	1,330.2	1,536.3	1,454.1	18.705		
13,200.0	11,116.4	12,471.5	10,368.6	48.1	47.3	60.92	2,307.1	1,329.3	1,536.6	1,451.7	18.094		
13,300.0	11,117.0	12,571.5	10,367.9	49.7	48.9	60.87	2,407.1	1,328.5	1,537.0	1,449.2	17.517		
13,400.0	11,117.7	12,671.5	10,367.3	51.3	50.5	60.83	2,507.1	1,327.6	1,537.3	1,446.7	16.970		
13,500.0	11,118.3	12,771.4	10,366.7	52.9	52.1	60.78	2,607.1	1,326.7	1,537.7	1,444.2	16.453		
13,600.0	11,118.9	12,871.4	10,366.1	54.5	53.8	60.74	2,707.1	1,325.8	1,538.0	1,441.7	15.963		
13,700.0	11,119.6	12,971.4	10,365.4	56.1	55.4	60.69	2,807.0	1,324.9	1,538.4	1,439.1	15.499		
13,800.0	11,120.2	13,071.4	10,364.8	57.8	57.1	60.64	2,907.0	1,324.0	1,538.8	1,436.6	15.059		
13,900.0	11,120.8	13,171.4	10,364.2	59.4	58.8	60.60	3,007.0	1,323.1	1,539.1	1,434.0	14.641		
14,000.0	11,121.4	13,271.4	10,363.6	61.1	60.4	60.55	3,107.0	1,322.3	1,539.5	1,431.4	14.244		
14,100.0	11,122.1	13,371.4	10,362.9	62.8	62.1	60.51	3,207.0	1,321.4	1,539.8	1,428.8	13.866		
14,200.0	11,122.7	13,471.4	10,362.3	64.4	63.8	60.46	3,307.0	1,320.5	1,540.2	1,426.2	13.507		
14,300.0	11,123.3	13,571.4	10,361.7	66.1	65.5	60.41	3,407.0	1,319.6	1,540.5	1,423.5	13.165		
14,400.0	11,123.9	13,671.4	10,361.0	67.8	67.2	60.37	3,506.9	1,318.7	1,540.9	1,420.9	12.839		
14,500.0	11,124.6	13,771.4	10,360.4	69.5	68.9	60.32	3,606.9	1,317.8	1,541.3	1,418.2	12.528		
14,600.0	11,125.2	13,871.4	10,359.8	71.2	70.7	60.28	3,706.9	1,316.9	1,541.6	1,415.6	12.231		
14,700.0	11,125.8	13,971.3	10,359.2	72.9	72.4	60.23	3,806.9	1,316.1	1,542.0	1,412.9	11.948		
14,800.0	11,126.5	14,071.3	10,358.5	74.6	74.1	60.18	3,906.9	1,315.2	1,542.4	1,410.3	11.676		
14,900.0	11,127.1	14,171.3	10,357.9	76.4	75.9	60.14	4,006.9	1,314.3	1,542.7	1,407.6	11.417		
15,000.0	11,127.7	14,271.3	10,357.3	78.1	77.6	60.09	4,106.9	1,313.4	1,543.1	1,404.9	11.168		
15,100.0	11,128.3	14,371.3	10,356.7	79.8	79.3	60.05	4,206.8	1,312.5	1,543.5	1,402.3	10.930		
15,200.0	11,129.0	14,471.3	10,356.0	81.6	81.1	60.00	4,306.8	1,311.6	1,543.8	1,399.6	10.702		
15,300.0	11,129.6	14,571.3	10,355.4	83.3	82.8	59.95	4,406.8	1,310.7	1,544.2	1,396.9	10.483		
15,400.0	11,130.2	14,671.3	10,354.8	85.0	84.6	59.91	4,506.8	1,309.9	1,544.6	1,394.2	10.272		
15,500.0	11,130.9	14,771.3	10,354.1	86.8	86.3	59.86	4,606.8	1,309.0	1,545.0	1,391.5	10.070		
15,600.0	11,131.5	14,871.3	10,353.5	88.5	88.1	59.82	4,706.8	1,308.1	1,545.3	1,388.8	9.875		
15,700.0	11,132.1	14,971.3	10,352.9	90.3	89.9	59.77	4,806.8	1,307.2	1,545.7	1,386.2	9.688		
15,800.0	11,132.7	15,071.3	10,352.3	92.0	91.6	59.73	4,906.7	1,306.3	1,546.1	1,383.5	9.507		
15,900.0	11,133.4	15,171.2	10,351.6	93.8	93.4	59.68	5,006.7	1,305.4	1,546.5	1,380.8	9.333		
16,000.0	11,134.0	15,271.2	10,351.0	95.6	95.2	59.63	5,106.7	1,304.5	1,546.8	1,378.1	9.166		
16,100.0	11,134.6	15,371.2	10,350.4	97.3	96.9	59.59	5,206.7	1,303.6	1,547.2	1,375.4	9.004		
16,200.0	11,135.2	15,471.2	10,349.8	99.1	98.7	59.54	5,306.7	1,302.8	1,547.6	1,372.7	8.848		
16,300.0	11,135.9	15,571.2	10,349.1	100.9	100.5	59.50	5,406.7	1,301.9	1,548.0	1,370.0	8.698		
16,400.0	11,136.5	15,671.2	10,348.5	102.6	102.3	59.45	5,506.7	1,301.0	1,548.4	1,367.3	8.552		
16,500.0	11,137.1	15,771.2	10,347.9	104.4	104.0	59.41	5,606.6	1,300.1	1,548.7	1,364.6	8.411		
16,600.0	11,137.8	15,871.2	10,347.3	106.2	105.8	59.36	5,706.6	1,299.2	1,549.1	1,361.9	8.275		
16,700.0	11,138.4	15,971.2	10,346.6	107.9	107.6	59.31	5,806.6	1,298.3	1,549.5	1,359.2	8.143		
16,800.0	11,139.0	16,071.2	10,346.0	109.7	109.4	59.27	5,906.6	1,297.4	1,549.9	1,356.5	8.016		
16,900.0	11,139.6	16,171.2	10,345.4	111.5	111.2	59.22	6,006.6	1,296.6	1,550.3	1,353.9	7.892		
17,000.0	11,140.3	16,271.2	10,344.7	113.3	112.9	59.18	6,106.6	1,295.7	1,550.7	1,351.2	7.772		
17,100.0	11,140.9	16,371.1	10,344.1	115.1	114.7	59.13	6,206.6	1,294.8	1,551.1	1,348.5	7.656		
17,200.0	11,141.5	16,471.1	10,343.5	116.8	116.5	59.09	6,306.5	1,293.9	1,551.4	1,345.8	7.544		
17,300.0	11,142.2	16,571.1	10,342.9	118.6	118.3	59.04	6,406.5	1,293.0	1,551.8	1,343.1	7.434		
17,400.0	11,142.8	16,671.1	10,342.2	120.4	120.1	59.00	6,506.5	1,292.1	1,552.2	1,340.4	7.328		
17,500.0	11,143.4	16,771.1	10,341.6	122.2	121.9	58.95	6,606.5	1,291.2	1,552.6	1,337.7	7.225		
17,600.0	11,144.0	16,871.1	10,341.0	124.0	123.7	58.91	6,706.5	1,290.4	1,553.0	1,335.1	7.125		
17,700.0	11,144.7	16,971.1	10,340.4	125.8	125.5	58.86	6,806.5	1,289.5	1,553.4	1,332.4	7.028		
17,800.0	11,145.3	17,071.1	10,339.7	127.6	127.3	58.82	6,906.5	1,288.6	1,553.8	1,329.7	6.933		
17,900.0	11,145.9	17,171.1	10,339.1	129.3	129.1	58.77	7,006.4	1,287.7	1,554.2	1,327.0	6.841		
18,000.0	11,146.5	17,271.1	10,338.5	131.1	130.9	58.73	7,106.4	1,286.8	1,554.6	1,324.4	6.752		
18,100.0	11,147.2	17,371.1	10,337.8	132.9	132.6	58.68	7,206.4	1,285.9	1,555.0	1,321.7	6.665		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design:	Sec 27, T22S, R34E - Squints Federal Com #7H - Wellbore #1 - Design #1										Offset Site Error:	0.0 usft
Survey Program:	0-MWD default										Offset Well Error:	0.0 usft
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)	Between Ellipses (usft)	Separation Factor	Warning
18,200.0	11,147.8	17,471.1	10,337.2	134.7	134.4	58.64	7,306.4	1,285.0	1,555.4	1,319.0	6.580	
18,300.0	11,148.4	17,571.0	10,336.6	136.5	136.2	58.59	7,406.4	1,284.2	1,555.8	1,316.3	6.497	
18,400.0	11,149.1	17,671.0	10,336.0	138.3	138.0	58.54	7,506.4	1,283.3	1,556.2	1,313.7	6.417	
18,500.0	11,149.7	17,771.0	10,335.3	140.1	139.8	58.50	7,606.4	1,282.4	1,556.6	1,311.0	6.338	
18,600.0	11,150.3	17,871.0	10,334.7	141.9	141.6	58.45	7,706.3	1,281.5	1,557.0	1,308.4	6.262	
18,700.0	11,150.9	17,971.0	10,334.1	143.7	143.4	58.41	7,806.3	1,280.6	1,557.4	1,305.7	6.187	
18,800.0	11,151.6	18,071.0	10,333.5	145.5	145.2	58.36	7,906.3	1,279.7	1,557.8	1,303.0	6.115	
18,900.0	11,152.2	18,171.0	10,332.8	147.3	147.0	58.32	8,006.3	1,278.8	1,558.2	1,300.4	6.044	
19,000.0	11,152.8	18,271.0	10,332.2	149.1	148.8	58.27	8,106.3	1,277.9	1,558.6	1,297.7	5.974	
19,100.0	11,153.4	18,371.0	10,331.6	150.9	150.6	58.23	8,206.3	1,277.1	1,559.0	1,295.1	5.907	
19,200.0	11,154.1	18,471.0	10,330.9	152.7	152.4	58.18	8,306.3	1,276.2	1,559.4	1,292.4	5.841	
19,300.0	11,154.7	18,571.0	10,330.3	154.5	154.2	58.14	8,406.2	1,275.3	1,559.9	1,289.8	5.776	
19,400.0	11,155.3	18,671.0	10,329.7	156.3	156.0	58.09	8,506.2	1,274.4	1,560.3	1,287.2	5.713	
19,500.0	11,156.0	18,770.9	10,329.1	158.1	157.9	58.05	8,606.2	1,273.5	1,560.7	1,284.5	5.651	
19,600.0	11,156.6	18,870.9	10,328.4	159.9	159.7	58.01	8,706.2	1,272.6	1,561.1	1,281.9	5.591	
19,700.0	11,157.2	18,970.9	10,327.8	161.7	161.5	57.96	8,806.2	1,271.7	1,561.5	1,279.3	5.532	
19,800.0	11,157.8	19,070.9	10,327.2	163.5	163.3	57.92	8,906.2	1,270.9	1,561.9	1,276.6	5.475	
19,900.0	11,158.5	19,170.9	10,326.6	165.3	165.1	57.87	9,006.2	1,270.0	1,562.3	1,274.0	5.418	
20,000.0	11,159.1	19,270.9	10,325.9	167.1	166.9	57.83	9,106.1	1,269.1	1,562.8	1,271.4	5.363	
20,100.0	11,159.7	19,370.9	10,325.3	168.9	168.7	57.78	9,206.1	1,268.2	1,563.2	1,268.7	5.309	
20,200.0	11,160.4	19,470.9	10,324.7	170.7	170.5	57.74	9,306.1	1,267.3	1,563.6	1,266.1	5.256	
20,300.0	11,161.0	19,570.9	10,324.1	172.5	172.3	57.69	9,406.1	1,266.4	1,564.0	1,263.5	5.205	
20,400.0	11,161.6	19,670.9	10,323.4	174.3	174.1	57.65	9,506.1	1,265.5	1,564.4	1,260.9	5.154	
20,500.0	11,162.2	19,770.9	10,322.8	176.1	175.9	57.60	9,606.1	1,264.7	1,564.8	1,258.3	5.104	
20,600.0	11,162.9	19,870.9	10,322.2	177.9	177.7	57.56	9,706.1	1,263.8	1,565.3	1,255.7	5.056	
20,700.0	11,163.5	19,970.8	10,321.5	179.7	179.5	57.51	9,806.0	1,262.9	1,565.7	1,253.1	5.008	
20,800.0	11,164.1	20,070.8	10,320.9	181.5	181.3	57.47	9,906.0	1,262.0	1,566.1	1,250.5	4.962	
20,900.0	11,164.7	20,170.8	10,320.3	183.3	183.2	57.42	10,006.0	1,261.1	1,566.5	1,247.9	4.916	
20,940.1	11,165.0	20,210.9	10,320.0	184.1	183.9	57.41	10,046.1	1,260.8	1,566.7	1,246.8	4.898	ES, SF

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #8H - Wellbore #1 - Design #1													Offset Well Error:	0.0 usft
Survey Program: 0-MWD default														
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	89.62	0.2	30.0	30.0					
100.0	100.0	100.0	100.0	0.1	0.1	89.62	0.2	30.0	30.0	29.8	193.442			
200.0	200.0	200.0	200.0	0.3	0.3	89.62	0.2	30.0	30.0	29.4	49.619			
300.0	300.0	300.0	300.0	0.5	0.5	89.62	0.2	30.0	30.0	28.9	28.460			
400.0	400.0	400.0	400.0	0.8	0.8	89.62	0.2	30.0	30.0	28.5	19.951			
500.0	500.0	500.0	500.0	1.0	1.0	89.62	0.2	30.0	30.0	28.0	15.360			
600.0	600.0	600.0	600.0	1.2	1.2	89.62	0.2	30.0	30.0	27.6	12.486			
700.0	700.0	700.0	700.0	1.4	1.4	89.62	0.2	30.0	30.0	27.1	10.518			
800.0	800.0	800.0	800.0	1.7	1.7	89.62	0.2	30.0	30.0	26.7	9.086			
900.0	900.0	900.0	900.0	1.9	1.9	89.62	0.2	30.0	30.0	26.2	7.997			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	89.62	0.2	30.0	30.0	25.8	7.142			
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	89.62	0.2	30.0	30.0	25.4	6.451			
1,200.0	1,200.0	1,200.0	1,200.0	2.5	2.5	89.62	0.2	30.0	30.0	24.9	5.883			
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	89.62	0.2	30.0	30.0	24.5	5.406			
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	89.62	0.2	30.0	30.0	24.0	5.001			
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	89.62	0.2	30.0	30.0	23.6	4.652			
1,600.0	1,600.0	1,600.0	1,600.0	3.4	3.4	89.62	0.2	30.0	30.0	23.1	4.349			
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	89.62	0.2	30.0	30.0	22.7	4.083			
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	89.62	0.2	30.0	30.0	22.2	3.848			
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	89.62	0.2	30.0	30.0	21.8	3.638			
2,000.0	2,000.0	2,000.0	2,000.0	4.3	4.3	89.62	0.2	30.0	30.0	21.3	3.450			
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	89.62	0.2	30.0	30.0	20.9	3.280			
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	89.62	0.2	30.0	30.0	20.4	3.127			
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	89.62	0.2	30.0	30.0	20.0	2.987			
2,400.0	2,400.0	2,400.0	2,400.0	5.2	5.2	89.62	0.2	30.0	30.0	19.5	2.859			
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	89.62	0.2	30.0	30.0	19.1	2.741			
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	89.62	0.2	30.0	30.0	18.6	2.633			
2,700.0	2,700.0	2,700.0	2,700.0	5.9	5.9	89.62	0.2	30.0	30.0	18.2	2.533			
2,800.0	2,800.0	2,800.0	2,800.0	6.1	6.1	89.62	0.2	30.0	30.0	17.7	2.441			
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	89.62	0.2	30.0	30.0	17.3	2.354			
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	89.62	0.2	30.0	30.0	16.8	2.274			
3,100.0	3,100.0	3,100.0	3,100.0	6.8	6.8	89.62	0.2	30.0	30.0	16.4	2.199			
3,200.0	3,200.0	3,200.0	3,200.0	7.0	7.0	89.62	0.2	30.0	30.0	15.9	2.129			
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	89.62	0.2	30.0	30.0	15.5	2.063			
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	89.62	0.2	30.0	30.0	15.0	2.001			
3,500.0	3,500.0	3,500.0	3,500.0	7.7	7.7	89.62	0.2	30.0	30.0	14.6	1.943			
3,600.0	3,600.0	3,600.0	3,600.0	7.9	7.9	89.62	0.2	30.0	30.0	14.1	1.888			
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	89.62	0.2	30.0	30.0	13.7	1.836			
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	89.62	0.2	30.0	30.0	13.2	1.787			
3,900.0	3,900.0	3,900.0	3,900.0	8.6	8.6	89.62	0.2	30.0	30.0	12.8	1.740			
4,000.0	4,000.0	4,000.0	4,000.0	8.8	8.8	89.62	0.2	30.0	30.0	12.3	1.696			
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	89.62	0.2	30.0	30.0	11.9	1.654			
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	89.62	0.2	30.0	30.0	11.4	1.614			
4,300.0	4,300.0	4,300.0	4,300.0	9.5	9.5	89.62	0.2	30.0	30.0	11.0	1.576			
4,400.0	4,400.0	4,400.0	4,400.0	9.7	9.7	89.62	0.2	30.0	30.0	10.5	1.540			
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	89.62	0.2	30.0	30.0	10.1	1.505			
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	89.62	0.2	30.0	30.0	9.6	1.472 Level 3			
4,700.0	4,700.0	4,700.0	4,700.0	10.4	10.4	89.62	0.2	30.0	30.0	9.2	1.440 Level 3			
4,800.0	4,800.0	4,800.0	4,800.0	10.6	10.6	89.62	0.2	30.0	30.0	8.7	1.410 Level 3			
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	89.62	0.2	30.0	30.0	8.3	1.380 Level 3			
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	89.62	0.2	30.0	30.0	7.8	1.352 Level 3			
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	89.62	0.2	30.0	30.0	7.4	1.326 Level 3			

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27, T22S, R34E - Squints Federal Com #8H - Wellbore #1 - Design #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD default													Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Tooface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning		
5,200.0	5,200.0	5,200.0	5,200.0	11.5	11.5	89.62	0.2	30.0	30.0	6.9	1.300	Level 3		
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	89.62	0.2	30.0	30.0	6.5	1.275	Level 3		
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	89.62	0.2	30.0	30.0	6.0	1.251	Level 3		
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	89.62	0.2	30.0	30.0	5.6	1.228	Level 2		
5,600.0	5,600.0	5,600.0	5,600.0	12.4	12.4	89.62	0.2	30.0	30.0	5.1	1.206	Level 2		
5,700.0	5,700.0	5,700.0	5,700.0	12.7	12.7	89.62	0.2	30.0	30.0	4.7	1.184	Level 2		
5,800.0	5,800.0	5,800.0	5,800.0	12.9	12.9	89.62	0.2	30.0	30.0	4.2	1.164	Level 2		
5,900.0	5,900.0	5,900.0	5,900.0	13.1	13.1	89.62	0.2	30.0	30.0	3.8	1.144	Level 2		
6,000.0	6,000.0	6,000.0	6,000.0	13.3	13.3	89.62	0.2	30.0	30.0	3.3	1.125	Level 2		
6,100.0	6,100.0	6,100.0	6,100.0	13.6	13.6	89.62	0.2	30.0	30.0	2.9	1.106	Level 2		
6,200.0	6,200.0	6,200.0	6,200.0	13.8	13.8	89.62	0.2	30.0	30.0	2.4	1.088	Level 2		
6,300.0	6,300.0	6,300.0	6,300.0	14.0	14.0	89.62	0.2	30.0	30.0	2.0	1.070	Level 2		
6,400.0	6,400.0	6,400.0	6,400.0	14.2	14.2	89.62	0.2	30.0	30.0	1.5	1.054	Level 2		
6,500.0	6,500.0	6,500.0	6,500.0	14.5	14.5	89.62	0.2	30.0	30.0	1.1	1.037	Level 2		
6,600.0	6,600.0	6,600.0	6,600.0	14.7	14.7	89.62	0.2	30.0	30.0	0.6	1.021	Level 2		
6,700.0	6,700.0	6,700.0	6,700.0	14.9	14.9	89.62	0.2	30.0	30.0	0.2	1.006	Level 2		
6,800.0	6,800.0	6,800.0	6,800.0	15.1	15.1	89.62	0.2	30.0	30.0	-0.3	0.991	Level 1		
6,900.0	6,900.0	6,900.0	6,900.0	15.4	15.4	89.62	0.2	30.0	30.0	-0.7	0.976	Level 1		
7,000.0	7,000.0	7,000.0	7,000.0	15.6	15.6	89.62	0.2	30.0	30.0	-1.2	0.962	Level 1		
7,100.0	7,100.0	7,100.0	7,100.0	15.8	15.8	89.62	0.2	30.0	30.0	-1.6	0.949	Level 1		
7,200.0	7,200.0	7,200.0	7,200.0	16.0	16.0	89.62	0.2	30.0	30.0	-2.1	0.935	Level 1		
7,300.0	7,300.0	7,300.0	7,300.0	16.3	16.3	89.62	0.2	30.0	30.0	-2.5	0.922	Level 1		
7,400.0	7,400.0	7,400.0	7,400.0	16.5	16.5	89.62	0.2	30.0	30.0	-3.0	0.910	Level 1		
7,500.0	7,500.0	7,500.0	7,500.0	16.7	16.7	89.62	0.2	30.0	30.0	-3.4	0.898	Level 1		
7,600.0	7,600.0	7,600.0	7,600.0	16.9	16.9	89.62	0.2	30.0	30.0	-3.9	0.886	Level 1		
7,700.0	7,700.0	7,700.0	7,700.0	17.2	17.2	89.62	0.2	30.0	30.0	-4.3	0.874	Level 1		
7,800.0	7,800.0	7,800.0	7,800.0	17.4	17.4	89.62	0.2	30.0	30.0	-4.8	0.863	Level 1		
7,900.0	7,900.0	7,900.0	7,900.0	17.6	17.6	89.62	0.2	30.0	30.0	-5.2	0.852	Level 1		
8,000.0	8,000.0	8,000.0	8,000.0	17.8	17.8	89.62	0.2	30.0	30.0	-5.7	0.841	Level 1		
8,100.0	8,100.0	8,100.0	8,100.0	18.1	18.1	89.62	0.2	30.0	30.0	-6.1	0.831	Level 1		
8,200.0	8,200.0	8,200.0	8,200.0	18.3	18.3	89.62	0.2	30.0	30.0	-6.6	0.820	Level 1		
8,300.0	8,300.0	8,300.0	8,300.0	18.5	18.5	89.62	0.2	30.0	30.0	-7.0	0.810	Level 1		
8,400.0	8,400.0	8,400.0	8,400.0	18.7	18.7	89.62	0.2	30.0	30.0	-7.5	0.801	Level 1		
8,500.0	8,500.0	8,500.0	8,500.0	19.0	19.0	89.62	0.2	30.0	30.0	-7.9	0.791	Level 1		
8,600.0	8,600.0	8,600.0	8,600.0	19.2	19.2	89.62	0.2	30.0	30.0	-8.4	0.782	Level 1		
8,700.0	8,700.0	8,700.0	8,700.0	19.4	19.4	89.62	0.2	30.0	30.0	-8.8	0.773	Level 1		
8,800.0	8,800.0	8,800.0	8,800.0	19.6	19.6	89.62	0.2	30.0	30.0	-9.3	0.764	Level 1		
8,900.0	8,900.0	8,900.0	8,900.0	19.9	19.9	89.62	0.2	30.0	30.0	-9.7	0.755	Level 1		
9,000.0	9,000.0	9,000.0	9,000.0	20.1	20.1	89.62	0.2	30.0	30.0	-10.2	0.747	Level 1		
9,100.0	9,100.0	9,100.0	9,100.0	20.3	20.3	89.62	0.2	30.0	30.0	-10.6	0.739	Level 1		
9,200.0	9,200.0	9,200.0	9,200.0	20.5	20.5	89.62	0.2	30.0	30.0	-11.1	0.731	Level 1		
9,300.0	9,300.0	9,300.0	9,300.0	20.8	20.8	89.62	0.2	30.0	30.0	-11.5	0.723	Level 1		
9,400.0	9,400.0	9,400.0	9,400.0	21.0	21.0	89.62	0.2	30.0	30.0	-12.0	0.715	Level 1		
9,500.0	9,500.0	9,500.0	9,500.0	21.2	21.2	89.62	0.2	30.0	30.0	-12.4	0.707	Level 1		
9,600.0	9,600.0	9,600.0	9,600.0	21.4	21.4	89.62	0.2	30.0	30.0	-12.9	0.700	Level 1		
9,700.0	9,700.0	9,700.0	9,700.0	21.7	21.7	89.62	0.2	30.0	30.0	-13.3	0.693	Level 1		
9,800.0	9,800.0	9,800.0	9,800.0	21.9	21.9	89.62	0.2	30.0	30.0	-13.8	0.686	Level 1		
9,861.9	9,861.9	9,861.9	9,861.9	22.0	22.0	89.62	0.2	30.0	30.0	-14.0	0.681	Level 1, CC		
9,900.0	9,900.0	9,900.0	9,900.0	22.1	22.1	88.11	1.0	30.0	30.0	-14.2	0.679	Level 1, ES, SF		
10,000.0	10,000.0	9,997.1	9,995.7	22.3	22.3	61.27	16.4	29.9	34.3	-10.3	0.769	Level 1		
10,100.0	10,100.0	10,084.8	10,077.9	22.6	22.5	32.39	46.6	29.6	59.5	14.4	1.321	Level 3		
10,200.0	10,200.0	10,159.6	10,142.6	22.8	22.7	19.22	83.9	29.3	105.8	60.4	2.330			

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #8H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
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)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
10,300.0	10,300.0	10,221.2	10,191.0	23.0	22.8	13.34	122.0	28.9	166.1	120.4	3.633		
10,400.0	10,400.0	10,275.0	10,229.0	23.2	22.9	10.13	160.0	28.6	235.9	189.9	5.127		
10,500.0	10,500.0	10,312.0	10,252.5	23.5	23.1	8.54	188.6	28.3	312.4	266.2	6.750		
10,600.0	10,600.0	10,350.0	10,274.3	23.7	23.2	7.28	219.7	28.0	393.9	347.3	8.463		
10,627.5	10,627.5	10,350.0	10,274.3	23.7	23.2	7.28	219.7	28.0	416.9	370.3	8.946		
10,650.0	10,650.0	10,359.8	10,279.5	23.8	23.2	6.84	228.0	28.0	435.7	389.0	9.342		
10,675.0	10,674.9	10,367.3	10,283.4	23.8	23.2	6.20	234.4	27.9	456.0	409.5	9.797		
10,700.0	10,699.7	10,375.0	10,287.2	23.9	23.3	5.67	241.1	27.9	475.8	429.5	10.270		
10,725.0	10,724.3	10,382.9	10,291.1	24.0	23.3	5.21	247.9	27.8	495.1	449.1	10.764		
10,750.0	10,748.7	10,390.9	10,294.9	24.0	23.3	4.82	255.0	27.7	513.8	468.3	11.282		
10,775.0	10,772.7	10,400.0	10,299.1	24.1	23.4	4.48	263.1	27.7	531.9	486.9	11.830		
10,800.0	10,796.3	10,407.5	10,302.4	24.1	23.4	4.20	269.8	27.6	549.4	505.1	12.412		
10,825.0	10,819.4	10,416.0	10,306.0	24.2	23.4	3.94	277.5	27.5	566.3	522.8	13.033		
10,850.0	10,842.0	10,425.0	10,309.7	24.2	23.5	3.72	285.7	27.5	582.5	540.0	13.699		
10,875.0	10,864.1	10,433.4	10,313.0	24.3	23.5	3.52	293.4	27.4	598.1	556.6	14.419		
10,900.0	10,885.4	10,442.2	10,316.3	24.3	23.5	3.35	301.6	27.3	613.0	572.6	15.201		
10,925.0	10,906.1	10,450.0	10,319.1	24.4	23.6	3.20	308.9	27.3	627.2	588.1	16.054		
10,950.0	10,926.0	10,460.2	10,322.6	24.4	23.6	3.06	318.5	27.2	640.7	603.0	16.990		
10,975.0	10,945.1	10,475.0	10,327.4	24.5	23.7	2.92	332.5	27.0	653.6	617.3	18.023		
11,000.0	10,963.3	10,475.0	10,327.4	24.6	23.7	2.84	332.5	27.0	665.6	630.9	19.179		
11,025.0	10,980.6	10,487.8	10,331.1	24.6	23.7	2.73	344.7	26.9	677.0	643.9	20.466		
11,050.0	10,997.0	10,500.0	10,334.3	24.7	23.8	2.64	356.5	26.8	687.6	656.2	21.918		
11,075.0	11,012.3	10,500.0	10,334.3	24.8	23.8	2.58	356.5	26.8	697.5	668.0	23.586		
11,100.0	11,026.6	10,515.9	10,338.1	24.8	23.9	2.50	371.9	26.7	706.6	678.9	25.475		
11,125.0	11,039.7	10,525.0	10,340.0	24.9	23.9	2.44	380.8	26.6	715.0	689.1	27.676		
11,150.0	11,051.8	10,534.9	10,341.9	25.0	24.0	2.39	390.5	26.5	722.6	698.7	30.249		
11,175.0	11,062.7	10,550.0	10,344.5	25.1	24.1	2.34	405.4	26.4	729.4	707.5	33.275		
11,200.0	11,072.3	10,550.0	10,344.5	25.2	24.1	2.31	405.4	26.4	735.4	715.5	36.938		
11,225.0	11,080.8	10,563.6	10,346.3	25.3	24.1	2.27	418.9	26.3	740.7	722.7	41.297		
11,250.0	11,088.0	10,575.0	10,347.6	25.4	24.2	2.24	430.2	26.2	745.2	729.2	46.588		
11,275.0	11,094.0	10,582.9	10,348.3	25.5	24.2	2.22	438.1	26.1	748.8	734.7	53.015		
11,300.0	11,098.7	10,600.0	10,349.4	25.6	24.3	2.19	455.2	26.0	751.8	739.4	60.489		
11,325.0	11,102.1	10,600.0	10,349.4	25.8	24.3	2.18	455.2	26.0	753.8	742.9	69.087		
11,350.0	11,104.2	10,611.9	10,349.8	25.9	24.4	2.17	467.0	25.9	755.1	745.3	77.029		
11,374.5	11,105.0	10,625.0	10,350.0	26.0	24.5	2.17	480.1	25.7	755.6	746.3	81.903		
11,375.3	11,105.0	10,625.0	10,350.0	26.0	24.5	2.17	480.1	25.7	755.6	746.3	81.873		
11,400.0	11,105.1	10,641.1	10,349.9	26.2	24.6	2.16	496.3	25.6	755.8	746.4	80.286		
11,500.0	11,105.7	10,741.1	10,349.4	26.8	25.3	2.14	596.2	24.7	756.9	746.5	72.831		
11,600.0	11,106.4	10,841.1	10,348.8	27.6	26.1	2.11	696.2	23.8	758.1	746.6	66.071		
11,700.0	11,107.0	10,941.1	10,348.3	28.4	26.9	2.09	796.2	22.9	759.2	746.6	60.095		
11,800.0	11,107.6	11,041.1	10,347.8	29.4	27.9	2.06	896.2	22.0	760.3	746.5	54.889		
11,900.0	11,108.3	11,141.1	10,347.3	30.4	29.0	2.03	996.2	21.2	761.5	746.4	50.376		
12,000.0	11,108.9	11,241.1	10,346.7	31.5	30.1	2.01	1,096.2	20.3	762.6	746.2	46.462		
12,100.0	11,109.5	11,341.1	10,346.2	32.6	31.3	1.98	1,196.2	19.4	763.8	746.0	43.056		
12,200.0	11,110.1	11,441.1	10,345.7	33.8	32.6	1.96	1,296.2	18.5	764.9	745.8	40.079		
12,300.0	11,110.8	11,541.1	10,345.2	35.1	33.9	1.93	1,396.2	17.6	766.0	745.6	37.463		
12,400.0	11,111.4	11,641.0	10,344.6	36.4	35.3	1.91	1,496.1	16.7	767.2	745.4	35.153		
12,500.0	11,112.0	11,741.0	10,344.1	37.8	36.7	1.88	1,596.1	15.8	768.3	745.1	33.100		
12,600.0	11,112.6	11,841.0	10,343.6	39.1	38.1	1.86	1,696.1	14.9	769.5	744.8	31.267		
12,700.0	11,113.3	11,941.0	10,343.1	40.6	39.5	1.83	1,796.1	14.0	770.6	744.6	29.623		
12,800.0	11,113.9	12,041.0	10,342.6	42.0	41.0	1.81	1,896.1	13.2	771.7	744.3	28.140		
12,900.0	11,114.5	12,141.0	10,342.0	43.5	42.6	1.78	1,996.1	12.3	772.9	744.0	26.797		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #8H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
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)	Separation Factor	Warning	
13,000.0	11,115.2	12,241.0	10,341.5	45.0	44.1	1.76	2,096.1	11.4	774.0	743.8	25.576		
13,100.0	11,115.8	12,341.0	10,341.0	46.6	45.7	1.73	2,196.1	10.5	775.2	743.5	24.461		
13,200.0	11,116.4	12,441.0	10,340.5	48.1	47.3	1.71	2,296.0	9.6	776.3	743.2	23.440		
13,300.0	11,117.0	12,541.0	10,339.9	49.7	48.9	1.68	2,396.0	8.7	777.4	742.9	22.501		
13,400.0	11,117.7	12,641.0	10,339.4	51.3	50.5	1.66	2,496.0	7.8	778.6	742.6	21.635		
13,500.0	11,118.3	12,741.0	10,338.9	52.9	52.1	1.63	2,596.0	6.9	779.7	742.3	20.835		
13,600.0	11,118.9	12,841.0	10,338.4	54.5	53.7	1.61	2,696.0	6.0	780.9	742.0	20.092		
13,700.0	11,119.6	12,941.0	10,337.9	56.1	55.4	1.59	2,796.0	5.2	782.0	741.7	19.402		
13,800.0	11,120.2	13,040.9	10,337.3	57.8	57.0	1.56	2,896.0	4.3	783.1	741.4	18.759		
13,900.0	11,120.8	13,140.9	10,336.8	59.4	58.7	1.54	2,996.0	3.4	784.3	741.1	18.158		
14,000.0	11,121.4	13,240.9	10,336.3	61.1	60.4	1.51	3,095.9	2.5	785.4	740.8	17.595		
14,100.0	11,122.1	13,340.9	10,335.8	62.8	62.1	1.49	3,195.9	1.6	786.6	740.5	17.067		
14,200.0	11,122.7	13,440.9	10,335.2	64.4	63.8	1.47	3,295.9	0.7	787.7	740.2	16.571		
14,300.0	11,123.3	13,540.9	10,334.7	66.1	65.5	1.44	3,395.9	-0.2	788.9	739.9	16.104		
14,400.0	11,123.9	13,640.9	10,334.2	67.8	67.2	1.42	3,495.9	-1.1	790.0	739.6	15.664		
14,500.0	11,124.6	13,740.9	10,333.7	69.5	68.9	1.39	3,595.9	-1.9	791.1	739.3	15.248		
14,600.0	11,125.2	13,840.9	10,333.2	71.2	70.6	1.37	3,695.9	-2.8	792.3	738.9	14.854		
14,700.0	11,125.8	13,940.9	10,332.6	72.9	72.4	1.35	3,795.9	-3.7	793.4	738.6	14.481		
14,800.0	11,126.5	14,040.9	10,332.1	74.6	74.1	1.32	3,895.8	-4.6	794.6	738.3	14.127		
14,900.0	11,127.1	14,140.9	10,331.6	76.4	75.8	1.30	3,995.8	-5.5	795.7	738.0	13.791		
15,000.0	11,127.7	14,240.9	10,331.1	78.1	77.6	1.28	4,095.8	-6.4	796.9	737.7	13.472		
15,100.0	11,128.3	14,340.9	10,330.5	79.8	79.3	1.25	4,195.8	-7.3	798.0	737.4	13.167		
15,200.0	11,129.0	14,440.8	10,330.0	81.6	81.1	1.23	4,295.8	-8.2	799.1	737.1	12.877		
15,300.0	11,129.6	14,540.8	10,329.5	83.3	82.8	1.21	4,395.8	-9.1	800.3	736.8	12.600		
15,400.0	11,130.2	14,640.8	10,329.0	85.0	84.6	1.18	4,495.8	-9.9	801.4	736.5	12.335		
15,500.0	11,130.9	14,740.8	10,328.4	86.8	86.3	1.16	4,595.8	-10.8	802.6	736.1	12.082		
15,600.0	11,131.5	14,840.8	10,327.9	88.5	88.1	1.14	4,695.7	-11.7	803.7	735.8	11.839		
15,700.0	11,132.1	14,940.8	10,327.4	90.3	89.8	1.12	4,795.7	-12.6	804.9	735.5	11.607		
15,800.0	11,132.7	15,040.8	10,326.9	92.0	91.6	1.09	4,895.7	-13.5	806.0	735.2	11.394		
15,900.0	11,133.4	15,140.8	10,326.4	93.8	93.4	1.07	4,995.7	-14.4	807.2	734.9	11.171		
16,000.0	11,134.0	15,240.8	10,325.8	95.6	95.1	1.05	5,095.7	-15.3	808.3	734.6	10.965		
16,100.0	11,134.6	15,340.8	10,325.3	97.3	96.9	1.02	5,195.7	-16.2	809.4	734.3	10.768		
16,200.0	11,135.2	15,440.8	10,324.8	99.1	98.7	1.00	5,295.7	-17.0	810.6	734.0	10.578		
16,300.0	11,135.9	15,540.8	10,324.3	100.9	100.5	0.98	5,395.7	-17.9	811.7	733.6	10.395		
16,400.0	11,136.5	15,640.8	10,323.7	102.6	102.2	0.96	5,495.6	-18.8	812.9	733.3	10.219		
16,500.0	11,137.1	15,740.8	10,323.2	104.4	104.0	0.93	5,595.6	-19.7	814.0	733.0	10.049		
16,600.0	11,137.8	15,840.7	10,322.7	106.2	105.8	0.91	5,695.6	-20.6	815.2	732.7	9.885		
16,700.0	11,138.4	15,940.7	10,322.2	107.9	107.6	0.89	5,795.6	-21.5	816.3	732.4	9.727		
16,800.0	11,139.0	16,040.7	10,321.7	109.7	109.4	0.87	5,895.6	-22.4	817.5	732.1	9.574		
16,900.0	11,139.6	16,140.7	10,321.1	111.5	111.1	0.85	5,995.6	-23.3	818.6	731.8	9.426		
17,000.0	11,140.3	16,240.7	10,320.6	113.3	112.9	0.82	6,095.6	-24.2	819.8	731.4	9.283		
17,100.0	11,140.9	16,340.7	10,320.1	115.1	114.7	0.80	6,195.6	-25.0	820.9	731.1	9.145		
17,200.0	11,141.5	16,440.7	10,319.6	116.8	116.5	0.78	6,295.5	-25.9	822.0	730.8	9.011		
17,300.0	11,142.2	16,540.7	10,319.0	118.6	118.3	0.76	6,395.5	-26.8	823.2	730.5	8.882		
17,400.0	11,142.8	16,640.7	10,318.5	120.4	120.1	0.74	6,495.5	-27.7	824.3	730.2	8.756		
17,500.0	11,143.4	16,740.7	10,318.0	122.2	121.9	0.71	6,595.5	-28.6	825.5	729.9	8.634		
17,600.0	11,144.0	16,840.7	10,317.5	124.0	123.7	0.69	6,695.5	-29.5	826.6	729.6	8.516		
17,700.0	11,144.7	16,940.7	10,317.0	125.8	125.4	0.67	6,795.5	-30.4	827.8	729.2	8.401		
17,800.0	11,145.3	17,040.7	10,316.4	127.6	127.2	0.65	6,895.5	-31.3	828.9	728.9	8.290		
17,900.0	11,145.9	17,140.7	10,315.9	129.3	129.0	0.63	6,995.5	-32.2	830.1	728.6	8.182		
18,000.0	11,146.5	17,240.7	10,315.4	131.1	130.8	0.61	7,095.4	-33.0	831.2	728.3	8.077		
18,100.0	11,147.2	17,340.6	10,314.9	132.9	132.6	0.59	7,195.4	-33.9	832.4	728.0	7.975		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

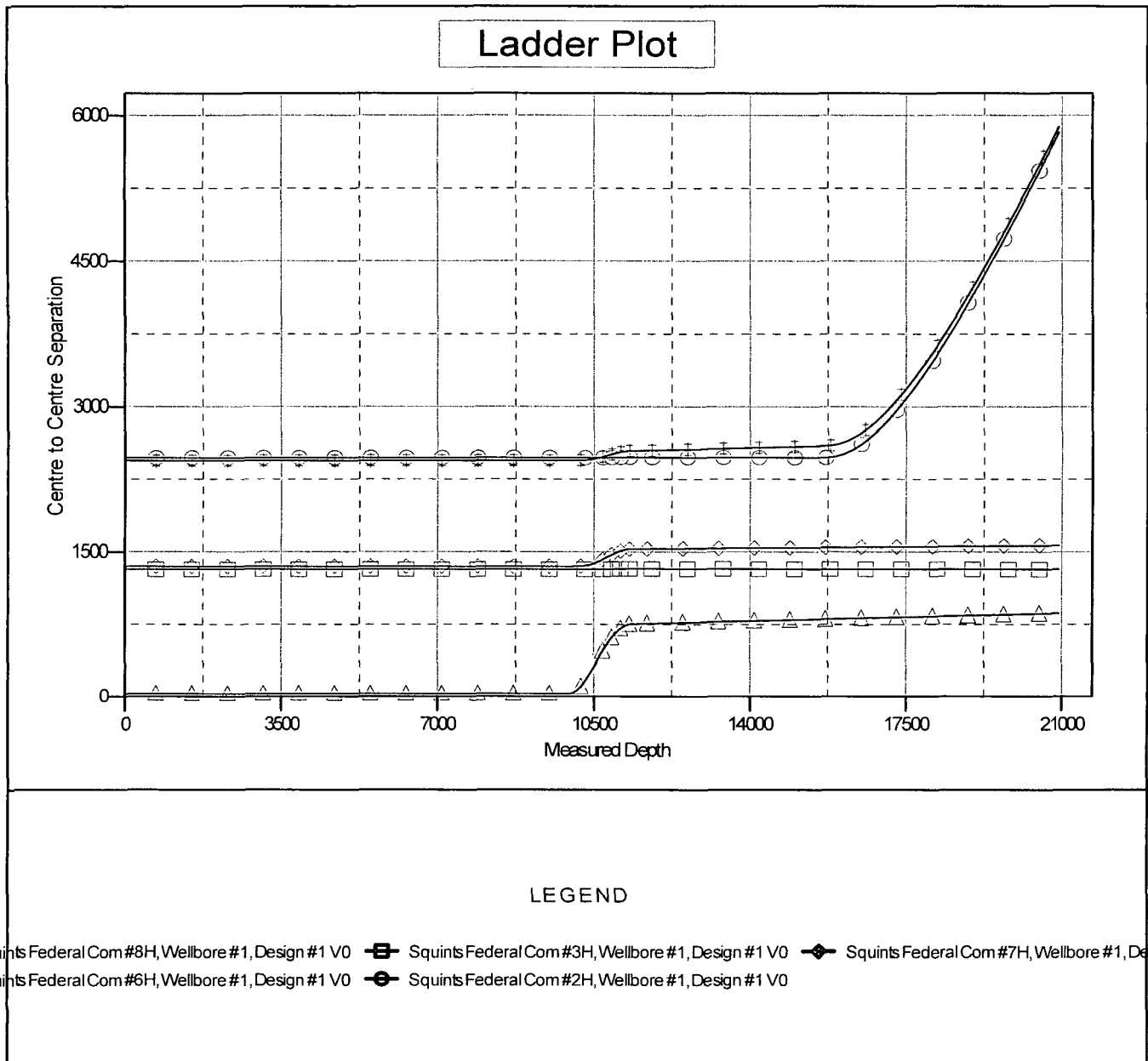
Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #8H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
Reference	Vertical	Measured	Vertical	Semi Major Axis	Offset	Highside	Offset Wellbore Centre	Distance	Between	Between	Separation	Warning	
Measured	Depth	Depth	Depth	Reference	Offset	Tooface	+N/-S	+E/-W	Centres	Ellipses	Factor		
Depth	(usft)	(usft)	(usft)	(usft)	(usft)	(")	(usft)	(usft)	(usft)	(usft)			
18,200.0	11,147.8	17,440.6	10,314.3	134.7	134.4	0.56	7,295.4	-34.8	833.5	727.7	7.876		
18,300.0	11,148.4	17,540.6	10,313.8	136.5	136.2	0.54	7,395.4	-35.7	834.7	727.4	7.779		
18,400.0	11,149.1	17,640.6	10,313.3	138.3	138.0	0.52	7,495.4	-36.6	835.8	727.0	7.685		
18,500.0	11,149.7	17,740.6	10,312.8	140.1	139.8	0.50	7,595.4	-37.5	837.0	726.7	7.594		
18,600.0	11,150.3	17,840.6	10,312.3	141.9	141.6	0.48	7,695.4	-38.4	838.1	726.4	7.504		
18,700.0	11,150.9	17,940.6	10,311.7	143.7	143.4	0.46	7,795.4	-39.3	839.2	726.1	7.418		
18,800.0	11,151.6	18,040.6	10,311.2	145.5	145.2	0.44	7,895.3	-40.1	840.4	725.8	7.333		
18,900.0	11,152.2	18,140.6	10,310.7	147.3	147.0	0.42	7,995.3	-41.0	841.5	725.5	7.250		
19,000.0	11,152.8	18,240.6	10,310.2	149.1	148.8	0.40	8,095.3	-41.9	842.7	725.2	7.170		
19,100.0	11,153.4	18,340.6	10,309.6	150.9	150.6	0.37	8,195.3	-42.8	843.8	724.8	7.092		
19,200.0	11,154.1	18,440.6	10,309.1	152.7	152.4	0.35	8,295.3	-43.7	845.0	724.5	7.015		
19,300.0	11,154.7	18,540.6	10,308.6	154.5	154.2	0.33	8,395.3	-44.6	846.1	724.2	6.940		
19,400.0	11,155.3	18,640.6	10,308.1	156.3	156.0	0.31	8,495.3	-45.5	847.3	723.9	6.867		
19,500.0	11,156.0	18,740.5	10,307.5	158.1	157.8	0.29	8,595.3	-46.4	848.4	723.6	6.796		
19,600.0	11,156.6	18,840.5	10,307.0	159.9	159.6	0.27	8,695.2	-47.3	849.6	723.3	6.726		
19,700.0	11,157.2	18,940.5	10,306.5	161.7	161.4	0.25	8,795.2	-48.1	850.7	723.0	6.658		
19,800.0	11,157.8	19,040.5	10,306.0	163.5	163.3	0.23	8,895.2	-49.0	851.9	722.6	6.592		
19,900.0	11,158.5	19,140.5	10,305.5	165.3	165.1	0.21	8,995.2	-49.9	853.0	722.3	6.527		
20,000.0	11,159.1	19,240.5	10,304.9	167.1	166.9	0.19	9,095.2	-50.8	854.2	722.0	6.463		
20,100.0	11,159.7	19,340.5	10,304.4	168.9	168.7	0.17	9,195.2	-51.7	855.3	721.7	6.401		
20,200.0	11,160.4	19,440.5	10,303.9	170.7	170.5	0.15	9,295.2	-52.6	856.5	721.4	6.340		
20,300.0	11,161.0	19,540.5	10,303.4	172.5	172.3	0.13	9,395.2	-53.5	857.6	721.1	6.281		
20,400.0	11,161.6	19,640.5	10,302.8	174.3	174.1	0.11	9,495.1	-54.4	858.8	720.8	6.222		
20,500.0	11,162.2	19,740.5	10,302.3	176.1	175.9	0.09	9,595.1	-55.3	859.9	720.4	6.165		
20,600.0	11,162.9	19,840.5	10,301.8	177.9	177.7	0.07	9,695.1	-56.1	861.1	720.1	6.109		
20,700.0	11,163.5	19,940.5	10,301.3	179.7	179.5	0.05	9,795.1	-57.0	862.2	719.8	6.055		
20,800.0	11,164.1	20,040.5	10,300.8	181.5	181.3	0.03	9,895.1	-57.9	863.4	719.5	6.001		
20,900.0	11,164.7	20,140.4	10,300.2	183.3	183.1	0.01	9,995.1	-58.8	864.5	719.2	5.948		
20,940.1	11,165.0	20,180.5	10,300.0	184.1	183.9	0.00	10,035.2	-59.2	865.0	719.1	5.928		

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

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squirts Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squirts Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 3436.0usft (Ensign #772)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

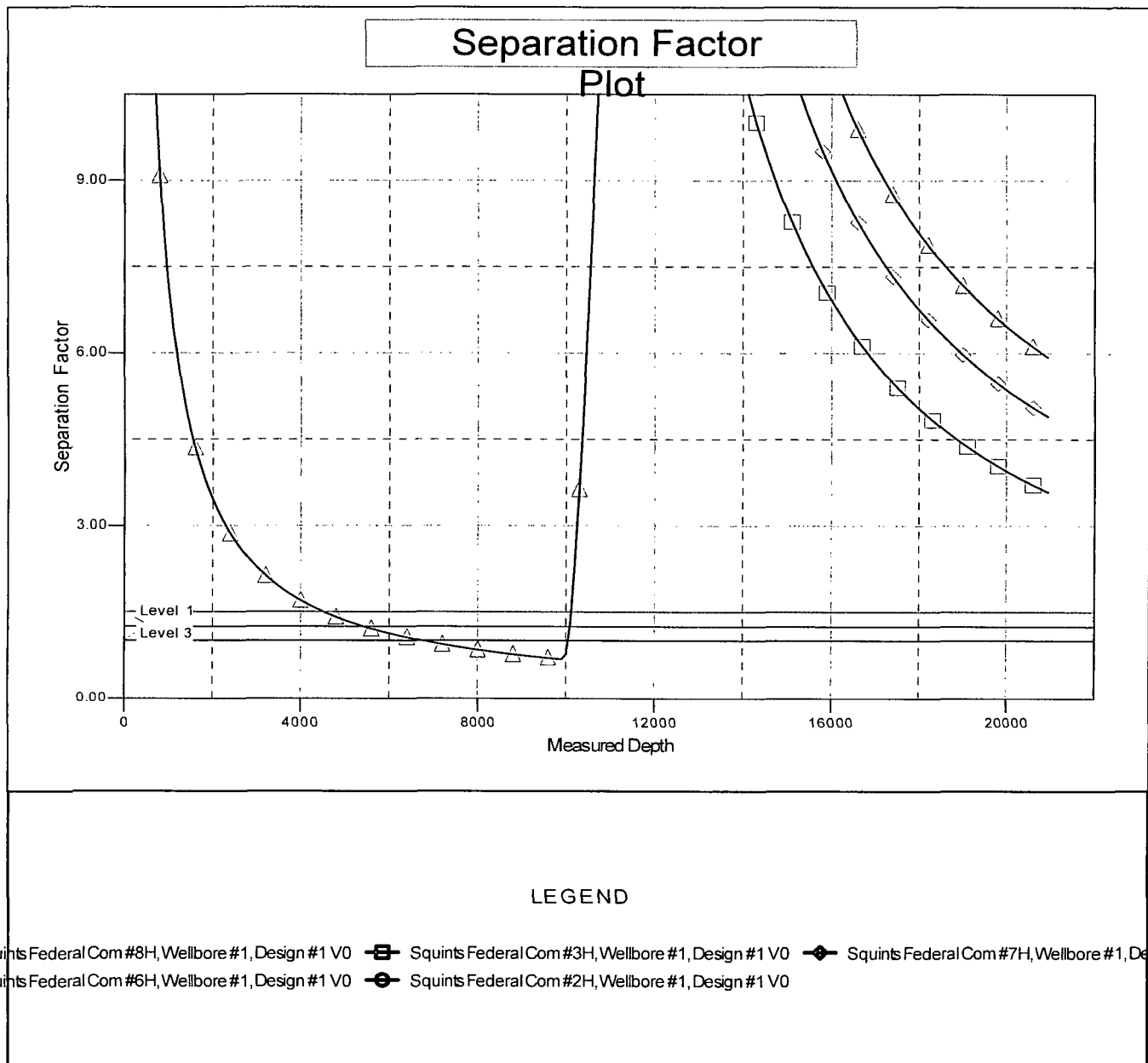
Coordinates are relative to: Squirts Federal Com #4H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.47°

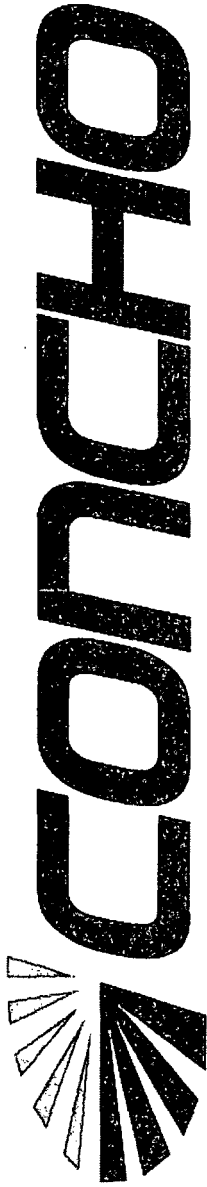


Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #4H
Project:	Lea County, NM	TVD Reference:	Well @ 3436.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3436.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

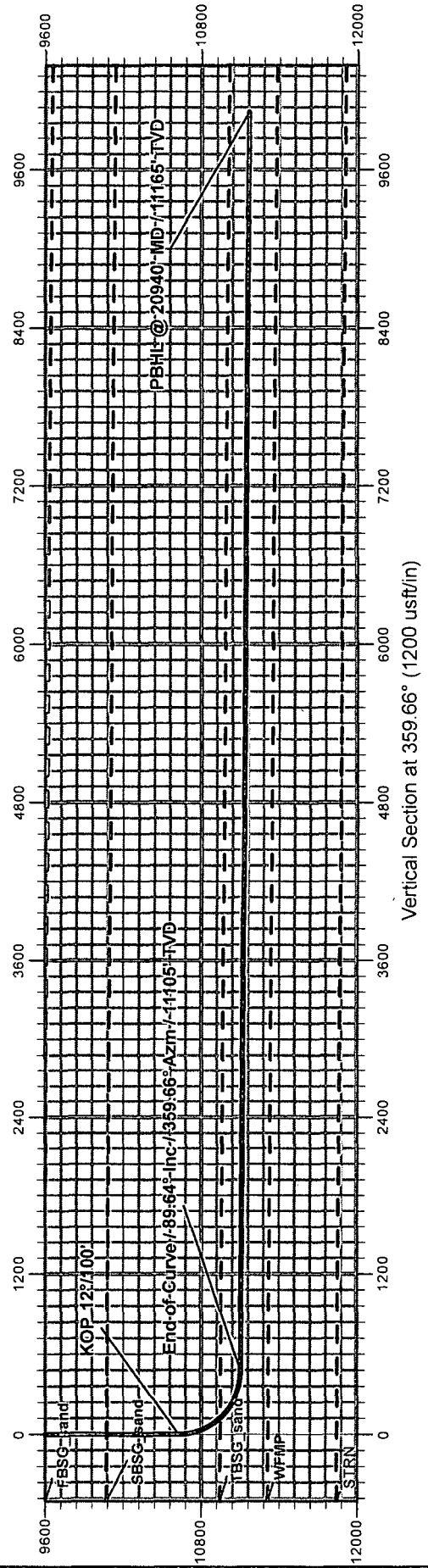
Reference Depths are relative to Well @ 3436.0usft (Ensign #772)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Squints Federal Com #4H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.47°

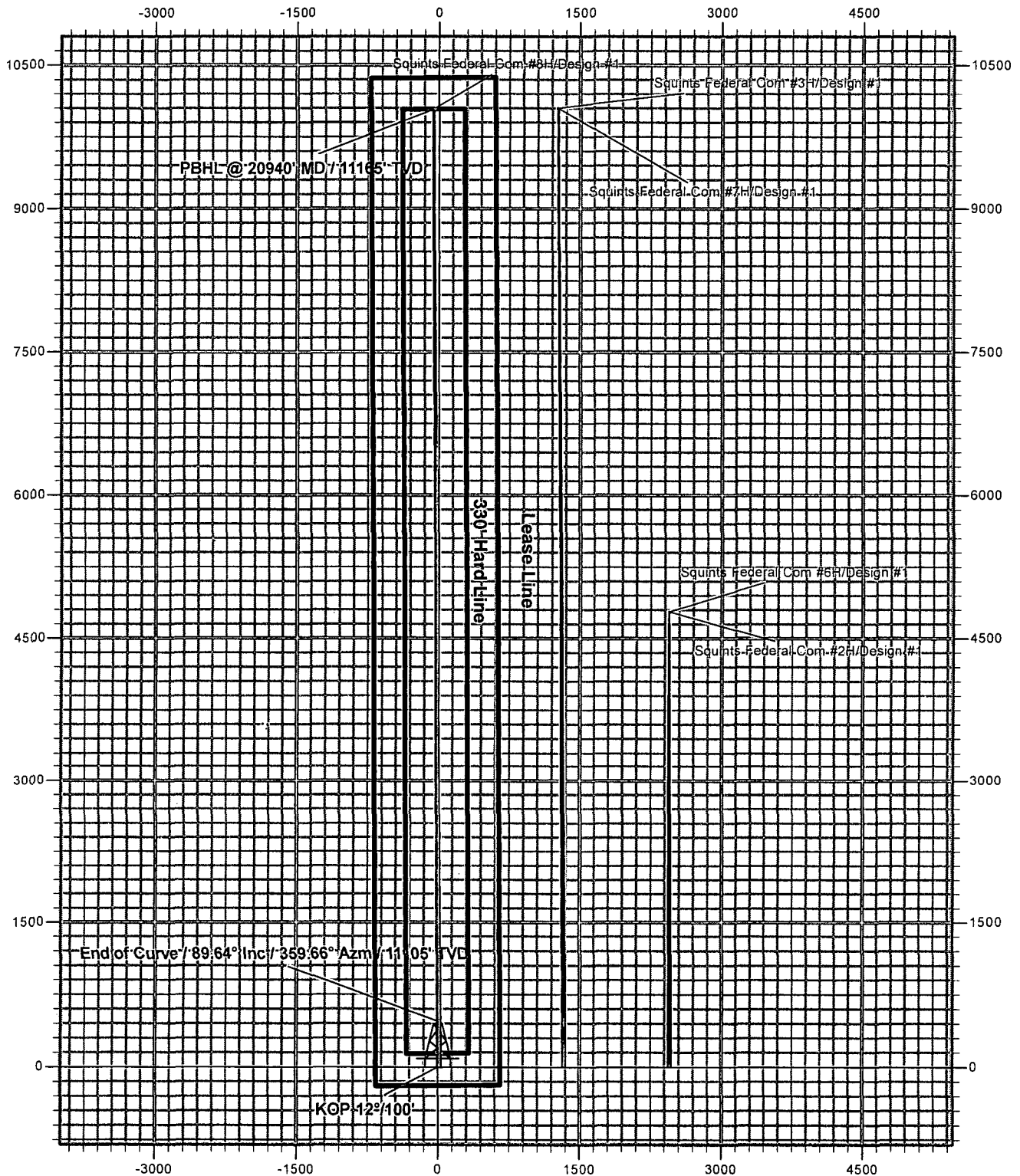




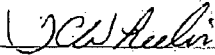
Lea County, NM
Sec 27, T22S, R34E
Squints Federal Com #4H
Design #1



Lea County, NM
 Sec 27, T22S, R34E
 Squints Federal Com #4H
 Design #1



TechnipTECHNIP Umbilicals Inc.
COFLEXIP® Products Division**CERTIFICATE OF CONFORMITY**

SUPPLIER	COFLEXIP® Products Division 16661 Jacintoport Blvd. Houston, Texas 77015	
CUSTOMER	OFS CANADA INC	
CUSTOMER PROJECT	OFS GLOBAL RIG 772 PROJECT 59	
CONTRACT NUMBER	OFS-012060-1	
COFLEXIP REFERENCE NUMBER	K12386	
COFLEXIP LINE DESCRIPTION	3" x 30' 10K CHOKE/KILL LINE	
COFLEXIP LINE SERIAL NUMBER	K12386-202	
WORKING / TEST PRESSURE (PSI)	10000 / 15000	
COFLEXIP ID (inches)/PART NUMBER	3 / 076 60414 13 13	
COFLEXIP STRUCTURE NUMBER	076 60414	
END FITTING REFERENCE NUMBER	EM 076 65000 13	EM 076 65000 13
END FITTING DESCRIPTION	4 1/16" 10K FLG BX 155 INC. 625 RG / 4 1/16" 10K FLG BX 155 INC. 625 RG	
IRC REFERENCE		
SAFE WORKING LOADS		
NOMINAL DAMAGING PULL (STRAIGHT LINE)		
MINIMUM BENDING RADIUS		
MAXIMUM DESIGN TEMPERATURE -4 Deg. F To 212 Deg. F/B		
<i>We certify that the supply detailed above was manufactured and inspected in accordance with the technical specifications specified within the contract referenced above and any specifications checked below. This document serves as a Declaration and Confirmation from the Manufacturer, TECHNIP Umbilicals Inc., Houston, Texas, that asbestos materials are not utilized in any part(s) or sub-part(s) or component(s) during the assembly process of any of our Coflexip ® flexible pipes.</i>		
Licence Number 16C-0001		(If Required)
TECHNIP QUALITY CONTROL		
 4/30/15 		
Name/ Date/ Stamp		

Technip

TECHNIP Umbilicals Inc.
COFLEXIP® Products Division

Quality Control Department

Control Report Dated 4/28/2015

COFLEXIP FLEXIBLE PIPE TEST CERTIFICATE

Customer OFS CANADA INC.

Job Number

K12387

Address

Line/Serial Number

K12387-202

Part Number

076 60414 13 13

Application 3" x 30' 10K CHOKE/KILL LINE

COFLEXIP certifies that the results of the test and controls performed on the above mentioned flexible pipe is as follows:

Internal Diameter	3	inches
Length	30.83	feet
Working Pressure	10000	psi
Test Pressure	15000	psi
As per attached recorder chart	24	hours
Test Duration		

[Signature]
TECHNIP
QUALITY CONTROL

THIRD PARTY INSPECTION FIRM OR CUSTOMER REPRESENTATIVE

DDAC 1124 Rev 2 18 Sept 09

Date Printed: 4/28/2015 1:49:43 PM

Test Configuration 12 Zone

Production Information Input

Customer ID
OFS CANADA INC.
Line S/N
K12386-202@K12387-202
Technician
ROY

QC Information Input

QC Insp
PAT
Witness?
Yes
Special Instructions
Third Party
BV
Test Procedure
SIC 01.60

Station Information

Pressure Transducer S/N
1211570
Stable Press
16500
Calib. Due
9/9/2015 8:29:12 AM
Temperature S/N
T33A
Test Press
15000
Pressure Range
0 - 30000

Station 04

Calibration

Rev Maximum
0.004000
Eng Minimum
0.000000
Rev Maximum
0.020000
Eng Maximum
30000.000000

CV Graph

