



HOBBS OCD

APR 21 2016

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COG Operating, LLC

Lea County, NM

Sec 27, T22S, R34E

Squints Federal Com #8H

Wellbore #1

Design #1

DDC Anticollision Report

08 June, 2015



APR 25 2016



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #8H
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 #8H	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	20,185.1	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	9,872.5	9,875.5	2,441.8	2,397.7	55.379	CC
Squints Federal Com #2H - Wellbore #1 - Design #1	10,025.0	10,025.4	2,441.9	2,397.2	54.558	ES
Squints Federal Com #2H - Wellbore #1 - Design #1	15,600.0	15,796.7	2,691.9	2,509.6	14.767	SF
Squints Federal Com #3H - Wellbore #1 - Design #1	9,872.5	9,872.5	1,289.8	1,245.8	29.258	CC
Squints Federal Com #3H - Wellbore #1 - Design #1	10,000.0	9,998.5	1,290.0	1,245.3	28.894	ES
Squints Federal Com #3H - Wellbore #1 - Design #1	20,185.1	21,062.7	1,570.0	1,250.7	4.917	SF
Squints Federal Com #4H - Wellbore #1 - Design #1	9,880.5	9,880.5	30.0	-14.1	0.680	Level 1, CC
Squints Federal Com #4H - Wellbore #1 - Design #1	9,900.0	9,900.0	30.0	-14.2	0.679	Level 1, ES, SF
Squints Federal Com #6H - Wellbore #1 - Design #1	9,872.5	9,874.5	2,412.0	2,367.9	54.706	CC
Squints Federal Com #6H - Wellbore #1 - Design #1	15,000.0	14,966.6	2,458.5	2,278.5	13.654	ES
Squints Federal Com #6H - Wellbore #1 - Design #1	15,500.0	14,966.6	2,528.0	2,339.0	13.382	SF
Squints Federal Com #7H - Wellbore #1 - Design #1	9,872.5	9,871.5	1,319.7	1,275.7	29.937	CC
Squints Federal Com #7H - Wellbore #1 - Design #1	20,185.1	20,216.3	1,320.1	952.2	3.588	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	19.8	2,441.7	2,441.8			
100.0	100.0	103.0	103.0	0.1	0.1	89.54	19.8	2,441.7	2,441.8	2,441.6	N/A	
200.0	200.0	203.0	203.0	0.3	0.3	89.54	19.8	2,441.7	2,441.8	2,441.2	3,993.989	
300.0	300.0	303.0	303.0	0.5	0.5	89.54	19.8	2,441.7	2,441.8	2,440.7	2,301.621	
400.0	400.0	403.0	403.0	0.8	0.8	89.54	19.8	2,441.7	2,441.8	2,440.3	1,616.615	
500.0	500.0	503.0	503.0	1.0	1.0	89.54	19.8	2,441.7	2,441.8	2,439.8	1,245.832	
600.0	600.0	603.0	603.0	1.2	1.2	89.54	19.8	2,441.7	2,441.8	2,439.4	1,013.400	
700.0	700.0	703.0	703.0	1.4	1.4	89.54	19.8	2,441.7	2,441.8	2,438.9	854.061	
800.0	800.0	803.0	803.0	1.7	1.7	89.54	19.8	2,441.7	2,441.8	2,438.5	738.020	
900.0	900.0	903.0	903.0	1.9	1.9	89.54	19.8	2,441.7	2,441.8	2,438.0	649.740	
1,000.0	1,000.0	1,003.0	1,003.0	2.1	2.1	89.54	19.8	2,441.7	2,441.8	2,437.6	580.323	
1,100.0	1,100.0	1,103.0	1,103.0	2.3	2.3	89.54	19.8	2,441.7	2,441.8	2,437.1	524.308	
1,200.0	1,200.0	1,203.0	1,203.0	2.5	2.6	89.54	19.8	2,441.7	2,441.8	2,436.7	478.154	
1,300.0	1,300.0	1,303.0	1,303.0	2.8	2.8	89.54	19.8	2,441.7	2,441.8	2,436.2	439.468	
1,400.0	1,400.0	1,403.0	1,403.0	3.0	3.0	89.54	19.8	2,441.7	2,441.8	2,435.8	406.574	

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 #8H
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Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #8H	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												Offset Well Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1													
Measured Depth (usft)	Reference Vertical Depth (usft)	Offset 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)	Distance Between Ellipses (usft)	Separation Factor	Warning
1,500.0	1,500.0	1,503.0	1,503.0	3.2	3.2	89.54	19.8	2,441.7	2,441.8	2,435.3	378.261		
1,600.0	1,600.0	1,603.0	1,603.0	3.4	3.5	89.54	19.8	2,441.7	2,441.8	2,434.9	353.635		
1,700.0	1,700.0	1,703.0	1,703.0	3.7	3.7	89.54	19.8	2,441.7	2,441.8	2,434.4	332.019		
1,800.0	1,800.0	1,803.0	1,803.0	3.9	3.9	89.54	19.8	2,441.7	2,441.8	2,434.0	312.893		
1,900.0	1,900.0	1,903.0	1,903.0	4.1	4.1	89.54	19.8	2,441.7	2,441.8	2,433.5	295.851		
2,000.0	2,000.0	2,003.0	2,003.0	4.3	4.4	89.54	19.8	2,441.7	2,441.8	2,433.1	280.570		
2,100.0	2,100.0	2,103.0	2,103.0	4.6	4.6	89.54	19.8	2,441.7	2,441.8	2,432.6	266.789		
2,200.0	2,200.0	2,203.0	2,203.0	4.8	4.8	89.54	19.8	2,441.7	2,441.8	2,432.2	254.299		
2,300.0	2,300.0	2,303.0	2,303.0	5.0	5.0	89.54	19.8	2,441.7	2,441.8	2,431.7	242.926		
2,400.0	2,400.0	2,403.0	2,403.0	5.2	5.3	89.54	19.8	2,441.7	2,441.8	2,431.3	232.527		
2,500.0	2,500.0	2,503.0	2,503.0	5.5	5.5	89.54	19.8	2,441.7	2,441.8	2,430.8	222.981		
2,600.0	2,600.0	2,603.0	2,603.0	5.7	5.7	89.54	19.8	2,441.7	2,441.8	2,430.4	214.189		
2,700.0	2,700.0	2,703.0	2,703.0	5.9	5.9	89.54	19.8	2,441.7	2,441.8	2,429.9	206.063		
2,800.0	2,800.0	2,803.0	2,803.0	6.1	6.2	89.54	19.8	2,441.7	2,441.8	2,429.5	198.532		
2,900.0	2,900.0	2,903.0	2,903.0	6.4	6.4	89.54	19.8	2,441.7	2,441.8	2,429.0	191.531		
3,000.0	3,000.0	3,003.0	3,003.0	6.6	6.6	89.54	19.8	2,441.7	2,441.8	2,428.6	185.008		
3,100.0	3,100.0	3,103.0	3,103.0	6.8	6.8	89.54	19.8	2,441.7	2,441.8	2,428.1	178.914		
3,200.0	3,200.0	3,203.0	3,203.0	7.0	7.1	89.54	19.8	2,441.7	2,441.8	2,427.7	173.209		
3,300.0	3,300.0	3,303.0	3,303.0	7.3	7.3	89.54	19.8	2,441.7	2,441.8	2,427.2	167.856		
3,400.0	3,400.0	3,403.0	3,403.0	7.5	7.5	89.54	19.8	2,441.7	2,441.8	2,426.8	162.825		
3,500.0	3,500.0	3,503.0	3,503.0	7.7	7.7	89.54	19.8	2,441.7	2,441.8	2,426.3	158.086		
3,600.0	3,600.0	3,603.0	3,603.0	7.9	8.0	89.54	19.8	2,441.7	2,441.8	2,425.9	153.615		
3,700.0	3,700.0	3,703.0	3,703.0	8.2	8.2	89.54	19.8	2,441.7	2,441.8	2,425.4	149.390		
3,800.0	3,800.0	3,803.0	3,803.0	8.4	8.4	89.54	19.8	2,441.7	2,441.8	2,425.0	145.392		
3,900.0	3,900.0	3,903.0	3,903.0	8.6	8.6	89.54	19.8	2,441.7	2,441.8	2,424.5	141.601		
4,000.0	4,000.0	4,003.0	4,003.0	8.8	8.9	89.54	19.8	2,441.7	2,441.8	2,424.1	138.004		
4,100.0	4,100.0	4,103.0	4,103.0	9.1	9.1	89.54	19.8	2,441.7	2,441.8	2,423.6	134.584		
4,200.0	4,200.0	4,203.0	4,203.0	9.3	9.3	89.54	19.8	2,441.7	2,441.8	2,423.2	131.330		
4,300.0	4,300.0	4,303.0	4,303.0	9.5	9.5	89.54	19.8	2,441.7	2,441.8	2,422.7	128.230		
4,400.0	4,400.0	4,403.0	4,403.0	9.7	9.7	89.54	19.8	2,441.7	2,441.8	2,422.3	125.273		
4,500.0	4,500.0	4,503.0	4,503.0	10.0	10.0	89.54	19.8	2,441.7	2,441.8	2,421.8	122.449		
4,600.0	4,600.0	4,603.0	4,603.0	10.2	10.2	89.54	19.8	2,441.7	2,441.8	2,421.4	119.749		
4,700.0	4,700.0	4,703.0	4,703.0	10.4	10.4	89.54	19.8	2,441.7	2,441.8	2,420.9	117.166		
4,800.0	4,800.0	4,803.0	4,803.0	10.6	10.6	89.54	19.8	2,441.7	2,441.8	2,420.5	114.692		
4,900.0	4,900.0	4,903.0	4,903.0	10.9	10.9	89.54	19.8	2,441.7	2,441.8	2,420.0	112.321		
5,000.0	5,000.0	5,003.0	5,003.0	11.1	11.1	89.54	19.8	2,441.7	2,441.8	2,419.6	110.045		
5,100.0	5,100.0	5,103.0	5,103.0	11.3	11.3	89.54	19.8	2,441.7	2,441.8	2,419.1	107.860		
5,200.0	5,200.0	5,203.0	5,203.0	11.5	11.5	89.54	19.8	2,441.7	2,441.8	2,418.7	105.760		
5,300.0	5,300.0	5,303.0	5,303.0	11.8	11.8	89.54	19.8	2,441.7	2,441.8	2,418.2	103.740		
5,400.0	5,400.0	5,403.0	5,403.0	12.0	12.0	89.54	19.8	2,441.7	2,441.8	2,417.8	101.796		
5,500.0	5,500.0	5,503.0	5,503.0	12.2	12.2	89.54	19.8	2,441.7	2,441.8	2,417.3	99.923		
5,600.0	5,600.0	5,603.0	5,603.0	12.4	12.4	89.54	19.8	2,441.7	2,441.8	2,416.9	98.118		
5,700.0	5,700.0	5,703.0	5,703.0	12.7	12.7	89.54	19.8	2,441.7	2,441.8	2,416.4	96.377		
5,800.0	5,800.0	5,803.0	5,803.0	12.9	12.9	89.54	19.8	2,441.7	2,441.8	2,416.0	94.697		
5,900.0	5,900.0	5,903.0	5,903.0	13.1	13.1	89.54	19.8	2,441.7	2,441.8	2,415.5	93.074		
6,000.0	6,000.0	6,003.0	6,003.0	13.3	13.3	89.54	19.8	2,441.7	2,441.8	2,415.1	91.507		
6,100.0	6,100.0	6,103.0	6,103.0	13.6	13.6	89.54	19.8	2,441.7	2,441.8	2,414.6	89.991		
6,200.0	6,200.0	6,203.0	6,203.0	13.8	13.8	89.54	19.8	2,441.7	2,441.8	2,414.2	88.524		
6,300.0	6,300.0	6,303.0	6,303.0	14.0	14.0	89.54	19.8	2,441.7	2,441.8	2,413.7	87.104		
6,400.0	6,400.0	6,403.0	6,403.0	14.2	14.2	89.54	19.8	2,441.7	2,441.8	2,413.3	85.730		
6,500.0	6,500.0	6,503.0	6,503.0	14.5	14.5	89.54	19.8	2,441.7	2,441.8	2,412.8	84.398		
6,600.0	6,600.0	6,603.0	6,603.0	14.7	14.7	89.54	19.8	2,441.7	2,441.8	2,412.4	83.106		

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



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Anticollision Report



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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 #8H	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 +N/-S (usft)	Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
6,700.0	6,700.0	6,703.0	6,703.0	14.9	14.9	89.54	19.8	2,441.7	2,441.8	2,411.9	81.854		
6,800.0	6,800.0	6,803.0	6,803.0	15.1	15.1	89.54	19.8	2,441.7	2,441.8	2,411.5	80.639		
6,900.0	6,900.0	6,903.0	6,903.0	15.4	15.4	89.54	19.8	2,441.7	2,441.8	2,411.1	79.459		
7,000.0	7,000.0	7,003.0	7,003.0	15.6	15.6	89.54	19.8	2,441.7	2,441.8	2,410.6	78.314		
7,100.0	7,100.0	7,103.0	7,103.0	15.8	15.8	89.54	19.8	2,441.7	2,441.8	2,410.2	77.200		
7,200.0	7,200.0	7,203.0	7,203.0	16.0	16.0	89.54	19.8	2,441.7	2,441.8	2,409.7	76.119		
7,300.0	7,300.0	7,303.0	7,303.0	16.3	16.3	89.54	19.8	2,441.7	2,441.8	2,409.3	75.067		
7,400.0	7,400.0	7,403.0	7,403.0	16.5	16.5	89.54	19.8	2,441.7	2,441.8	2,408.8	74.043		
7,500.0	7,500.0	7,503.0	7,503.0	16.7	16.7	89.54	19.8	2,441.7	2,441.8	2,408.4	73.048		
7,600.0	7,600.0	7,603.0	7,603.0	16.9	16.9	89.54	19.8	2,441.7	2,441.8	2,407.9	72.078		
7,700.0	7,700.0	7,703.0	7,703.0	17.2	17.2	89.54	19.8	2,441.7	2,441.8	2,407.5	71.134		
7,800.0	7,800.0	7,803.0	7,803.0	17.4	17.4	89.54	19.8	2,441.7	2,441.8	2,407.0	70.215		
7,900.0	7,900.0	7,903.0	7,903.0	17.6	17.6	89.54	19.8	2,441.7	2,441.8	2,406.6	69.319		
8,000.0	8,000.0	8,003.0	8,003.0	17.8	17.8	89.54	19.8	2,441.7	2,441.8	2,406.1	68.445		
8,100.0	8,100.0	8,103.0	8,103.0	18.1	18.1	89.54	19.8	2,441.7	2,441.8	2,405.7	67.594		
8,200.0	8,200.0	8,203.0	8,203.0	18.3	18.3	89.54	19.8	2,441.7	2,441.8	2,405.2	66.763		
8,300.0	8,300.0	8,303.0	8,303.0	18.5	18.5	89.54	19.8	2,441.7	2,441.8	2,404.8	65.952		
8,400.0	8,400.0	8,403.0	8,403.0	18.7	18.7	89.54	19.8	2,441.7	2,441.8	2,404.3	65.161		
8,500.0	8,500.0	8,503.0	8,503.0	19.0	19.0	89.54	19.8	2,441.7	2,441.8	2,403.9	64.389		
8,600.0	8,600.0	8,603.0	8,603.0	19.2	19.2	89.54	19.8	2,441.7	2,441.8	2,403.4	63.634		
8,700.0	8,700.0	8,703.0	8,703.0	19.4	19.4	89.54	19.8	2,441.7	2,441.8	2,403.0	62.897		
8,800.0	8,800.0	8,803.0	8,803.0	19.6	19.6	89.54	19.8	2,441.7	2,441.8	2,402.5	62.178		
8,900.0	8,900.0	8,903.0	8,903.0	19.9	19.9	89.54	19.8	2,441.7	2,441.8	2,402.1	61.474		
9,000.0	9,000.0	9,003.0	9,003.0	20.1	20.1	89.54	19.8	2,441.7	2,441.8	2,401.6	60.786		
9,100.0	9,100.0	9,103.0	9,103.0	20.3	20.3	89.54	19.8	2,441.7	2,441.8	2,401.2	60.113		
9,200.0	9,200.0	9,203.0	9,203.0	20.5	20.5	89.54	19.8	2,441.7	2,441.8	2,400.7	59.455		
9,300.0	9,300.0	9,303.0	9,303.0	20.8	20.8	89.54	19.8	2,441.7	2,441.8	2,400.3	58.811		
9,400.0	9,400.0	9,403.0	9,403.0	21.0	21.0	89.54	19.8	2,441.7	2,441.8	2,399.8	58.182		
9,500.0	9,500.0	9,503.0	9,503.0	21.2	21.2	89.54	19.8	2,441.7	2,441.8	2,399.4	57.565		
9,600.0	9,600.0	9,603.0	9,603.0	21.4	21.4	89.54	19.8	2,441.7	2,441.8	2,398.9	56.961		
9,700.0	9,700.0	9,703.0	9,703.0	21.7	21.7	89.54	19.8	2,441.7	2,441.8	2,398.5	56.370		
9,800.0	9,800.0	9,803.0	9,803.0	21.9	21.9	89.54	19.8	2,441.7	2,441.8	2,398.0	55.791		
9,872.5	9,872.5	9,875.5	9,875.5	22.0	22.0	89.54	19.8	2,441.7	2,441.8	2,397.7	55.379	CC	
9,875.0	9,875.0	9,878.0	9,878.0	22.0	22.1	90.04	19.8	2,441.7	2,441.8	2,397.7	55.365		
9,900.0	9,900.0	9,903.0	9,903.0	22.1	22.1	90.06	19.8	2,441.7	2,441.8	2,397.6	55.225		
9,925.0	9,924.9	9,927.9	9,927.9	22.2	22.2	90.11	19.8	2,441.7	2,441.8	2,397.5	55.086		
9,950.0	9,949.7	9,952.7	9,952.7	22.2	22.2	90.19	19.8	2,441.7	2,441.8	2,397.4	54.950		
9,975.0	9,974.2	9,977.2	9,977.2	22.3	22.3	90.29	19.8	2,441.7	2,441.8	2,397.3	54.817		
10,000.0	9,998.5	10,001.5	10,001.5	22.3	22.3	90.43	19.8	2,441.7	2,441.9	2,397.2	54.686		
10,025.0	10,022.4	10,025.4	10,025.4	22.4	22.4	90.58	19.8	2,441.7	2,441.9	2,397.2	54.558	ES	
10,050.0	10,045.9	10,048.9	10,048.9	22.4	22.4	90.75	19.8	2,441.7	2,442.0	2,397.2	54.434		
10,075.0	10,069.0	10,072.0	10,072.0	22.5	22.5	90.95	19.8	2,441.7	2,442.2	2,397.2	54.312		
10,100.0	10,091.5	10,094.5	10,094.5	22.5	22.5	91.15	19.8	2,441.7	2,442.4	2,397.3	54.194		
10,125.0	10,113.4	10,116.4	10,116.4	22.6	22.6	91.36	19.8	2,441.7	2,442.7	2,397.5	54.079		
10,150.0	10,134.6	10,137.6	10,137.6	22.6	22.6	91.57	19.8	2,441.7	2,443.1	2,397.8	53.967		
10,175.0	10,155.2	10,158.2	10,158.2	22.7	22.7	91.79	19.8	2,441.7	2,443.6	2,398.2	53.860		
10,200.0	10,174.9	10,177.9	10,177.9	22.8	22.7	91.99	19.8	2,441.7	2,444.3	2,398.8	53.756		
10,225.0	10,193.8	10,196.8	10,196.8	22.8	22.8	92.19	19.8	2,441.7	2,445.0	2,399.5	53.655		
10,250.0	10,211.9	10,214.9	10,214.9	22.9	22.8	92.37	19.8	2,441.7	2,446.0	2,400.3	53.558		
10,275.0	10,229.0	10,232.0	10,232.0	22.9	22.9	92.52	19.8	2,441.7	2,447.1	2,401.4	53.463		
10,300.0	10,245.1	10,248.1	10,248.1	23.0	22.9	92.65	19.8	2,441.7	2,448.5	2,402.6	53.371		
10,325.0	10,260.2	10,263.2	10,263.2	23.1	22.9	92.75	19.8	2,441.7	2,450.0	2,404.0	53.282		

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 #8H
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 #8H	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:
Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1												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
10,350.0	10,274.3	10,277.3	10,277.3	23.2	23.0	92.80	19.8	2,441.7	2,451.8	2,405.7	53.193	
10,375.0	10,287.2	10,290.2	10,290.2	23.3	23.0	92.82	19.8	2,441.7	2,453.8	2,407.6	53.106	
10,400.0	10,299.1	10,302.1	10,302.1	23.4	23.0	92.79	19.8	2,441.7	2,456.1	2,409.8	53.019	
10,425.0	10,309.7	10,312.7	10,312.7	23.5	23.0	92.71	19.8	2,441.7	2,458.6	2,412.2	52.933	
10,450.0	10,319.1	10,322.1	10,322.1	23.6	23.1	92.57	19.8	2,441.7	2,461.5	2,414.9	52.846	
10,475.0	10,327.4	10,330.4	10,330.4	23.7	23.1	92.38	19.8	2,441.7	2,464.5	2,417.8	52.759	
10,500.0	10,334.3	10,337.3	10,337.3	23.8	23.1	92.13	19.8	2,441.7	2,467.9	2,421.1	52.673	
10,525.0	10,340.0	10,343.0	10,343.0	23.9	23.1	91.82	19.8	2,441.7	2,471.6	2,424.6	52.588	
10,550.0	10,344.5	10,347.5	10,347.5	24.1	23.1	91.44	19.8	2,441.7	2,475.5	2,428.3	52.506	
10,575.0	10,347.6	10,350.6	10,350.6	24.2	23.1	91.01	19.8	2,441.7	2,479.7	2,432.4	52.427	
10,600.0	10,349.4	10,352.4	10,352.4	24.3	23.1	90.50	19.8	2,441.7	2,484.2	2,436.7	52.353	
10,625.0	10,350.0	10,353.0	10,353.0	24.5	23.1	89.94	19.8	2,441.7	2,488.9	2,441.3	52.286	
10,700.0	10,349.6	10,352.6	10,352.6	25.0	23.1	89.93	19.8	2,441.7	2,504.5	2,456.4	52.084	
10,800.0	10,349.0	10,352.0	10,352.0	25.7	23.1	89.92	19.8	2,441.7	2,528.6	2,479.8	51.783	
10,900.0	10,348.5	10,351.5	10,351.5	26.6	23.1	89.91	19.8	2,441.7	2,556.4	2,506.7	51.457	
11,000.0	10,348.0	10,351.0	10,351.0	27.5	23.1	89.89	19.8	2,441.7	2,587.8	2,537.1	51.116	
11,100.0	10,347.5	11,996.8	11,233.3	28.5	30.2	109.86	981.4	2,436.1	2,599.3	2,543.8	46.853	
11,200.0	10,347.0	12,096.8	11,231.9	29.6	31.3	109.84	1,081.4	2,435.6	2,599.3	2,541.7	45.168	
11,300.0	10,346.4	12,196.8	11,230.5	30.8	32.4	109.81	1,181.4	2,435.0	2,599.3	2,539.5	43.505	
11,400.0	10,345.9	12,296.8	11,229.1	32.1	33.6	109.79	1,281.4	2,434.4	2,599.3	2,537.2	41.881	
11,500.0	10,345.4	12,396.8	11,227.7	33.3	34.8	109.77	1,381.4	2,433.8	2,599.3	2,534.8	40.309	
11,600.0	10,344.9	12,496.8	11,226.3	34.7	36.1	109.75	1,481.4	2,433.3	2,599.3	2,532.3	38.796	
11,700.0	10,344.3	12,596.8	11,224.9	36.1	37.4	109.73	1,581.3	2,432.7	2,599.3	2,529.7	37.349	
11,800.0	10,343.8	12,696.8	11,223.5	37.5	38.8	109.71	1,681.3	2,432.1	2,599.3	2,527.0	35.968	
11,900.0	10,343.3	12,796.8	11,222.1	38.9	40.2	109.69	1,781.3	2,431.5	2,599.2	2,524.2	34.655	
12,000.0	10,342.8	12,896.8	11,220.7	40.4	41.7	109.67	1,881.3	2,430.9	2,599.2	2,521.4	33.409	
12,100.0	10,342.3	12,996.8	11,219.3	41.9	43.1	109.65	1,981.3	2,430.4	2,599.2	2,518.6	32.229	
12,200.0	10,341.7	13,096.8	11,217.9	43.5	44.6	109.63	2,081.3	2,429.8	2,599.2	2,515.7	31.111	
12,300.0	10,341.2	13,196.8	11,216.5	45.0	46.1	109.61	2,181.2	2,429.2	2,599.2	2,512.7	30.053	
12,400.0	10,340.7	13,296.8	11,215.1	46.6	47.7	109.59	2,281.2	2,428.6	2,599.2	2,509.8	29.051	
12,500.0	10,340.2	13,396.8	11,213.7	48.2	49.2	109.57	2,381.2	2,428.1	2,599.2	2,506.7	28.104	
12,600.0	10,339.6	13,496.8	11,212.3	49.8	50.8	109.55	2,481.2	2,427.5	2,599.2	2,503.7	27.207	
12,700.0	10,339.1	13,596.8	11,210.9	51.4	52.4	109.53	2,581.2	2,426.9	2,599.2	2,500.6	26.358	
12,800.0	10,338.6	13,696.8	11,209.5	53.1	54.0	109.51	2,681.2	2,426.3	2,599.2	2,497.5	25.554	
12,900.0	10,338.1	13,796.8	11,208.1	54.7	55.6	109.49	2,781.1	2,425.7	2,599.2	2,494.4	24.791	
13,000.0	10,337.5	13,896.7	11,206.7	56.4	57.3	109.46	2,881.1	2,425.2	2,599.2	2,491.2	24.068	
13,100.0	10,337.0	13,996.7	11,205.3	58.0	58.9	109.44	2,981.1	2,424.6	2,599.2	2,488.1	23.381	
13,131.8	10,336.9	14,028.5	11,204.8	58.6	59.4	109.44	3,012.9	2,424.4	2,599.2	2,487.0	23.170	
13,200.0	10,336.5	14,096.7	11,203.8	59.7	60.6	109.42	3,081.1	2,424.0	2,599.2	2,484.9	22.729	
13,300.0	10,336.0	14,196.7	11,202.4	61.4	62.2	109.40	3,181.1	2,423.4	2,599.2	2,481.7	22.109	
13,400.0	10,335.5	14,296.7	11,201.0	63.1	63.9	109.38	3,281.1	2,422.9	2,599.2	2,478.4	21.519	
13,500.0	10,334.9	14,396.7	11,199.6	64.8	65.6	109.36	3,381.1	2,422.3	2,599.2	2,475.2	20.957	
13,600.0	10,334.4	14,496.7	11,198.2	66.5	67.3	109.34	3,481.0	2,421.7	2,599.2	2,471.9	20.422	
13,700.0	10,333.9	14,596.7	11,196.8	68.2	69.0	109.32	3,581.0	2,421.1	2,599.2	2,468.7	19.911	
13,800.0	10,333.4	14,696.7	11,195.4	69.9	70.7	109.30	3,681.0	2,420.6	2,599.2	2,465.4	19.423	
13,900.0	10,332.8	14,796.7	11,194.0	71.7	72.4	109.28	3,781.0	2,420.0	2,599.2	2,462.1	18.958	
14,000.0	10,332.3	14,896.7	11,192.6	73.4	74.1	109.26	3,881.0	2,419.4	2,599.2	2,458.8	18.512	
14,100.0	10,331.8	14,996.7	11,191.2	75.1	75.8	109.24	3,981.0	2,418.8	2,599.2	2,455.5	18.086	
14,200.0	10,331.3	15,096.7	11,189.8	76.9	77.5	109.22	4,080.9	2,418.2	2,599.2	2,452.2	17.678	
14,300.0	10,330.8	15,196.7	11,188.4	78.6	79.3	109.20	4,180.9	2,417.7	2,599.2	2,448.9	17.287	
14,400.0	10,330.2	15,296.7	11,187.0	80.3	81.0	109.18	4,280.9	2,417.1	2,599.3	2,445.6	16.912	
14,500.0	10,329.7	15,396.7	11,185.6	82.1	82.7	109.16	4,380.9	2,416.5	2,599.3	2,442.2	16.552	

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 #8H
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 #8H	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	Offset	Semi Major Axis		Highside		Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Tooface (")	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
14,600.0	10,329.2	15,496.7	11,184.2	83.8	84.5	109.14	4,480.9	2,415.9	2,599.3	2,438.9		16.207
14,700.0	10,328.7	15,596.7	11,182.8	85.6	86.2	109.11	4,580.9	2,415.4	2,599.3	2,435.5		15.875
14,800.0	10,328.1	15,696.7	11,181.4	87.4	88.0	109.09	4,680.8	2,414.8	2,599.3	2,432.2		15.555
14,900.0	10,327.6	15,796.7	11,180.0	89.1	89.7	109.07	4,780.8	2,414.2	2,599.3	2,428.8		15.248
15,000.0	10,327.1	15,796.7	11,180.0	90.9	89.7	109.07	4,780.9	2,414.2	2,601.2	2,429.1		15.110
15,100.0	10,326.6	15,796.7	11,180.0	92.7	89.7	109.07	4,780.9	2,414.2	2,607.0	2,433.1		14.997
15,200.0	10,326.1	15,796.7	11,180.0	94.4	89.7	109.07	4,780.9	2,414.2	2,616.5	2,441.0		14.907
15,300.0	10,325.5	15,796.7	11,180.0	96.2	89.7	109.07	4,780.9	2,414.2	2,629.9	2,452.7		14.840
15,400.0	10,325.0	15,796.7	11,180.0	98.0	89.7	109.07	4,780.9	2,414.2	2,646.9	2,468.0		14.795
15,500.0	10,324.5	15,796.7	11,180.0	99.7	89.7	109.07	4,780.9	2,414.2	2,667.6	2,487.0		14.771
15,600.0	10,324.0	15,796.7	11,180.0	101.5	89.7	109.07	4,780.9	2,414.2	2,691.9	2,509.6		14.767 SF
15,700.0	10,323.4	15,796.7	11,180.0	103.3	89.7	109.07	4,780.9	2,414.2	2,719.6	2,535.6		14.782
15,800.0	10,322.9	15,796.7	11,180.0	105.1	89.7	109.07	4,780.9	2,414.2	2,750.7	2,565.0		14.814
15,900.0	10,322.4	15,796.7	11,180.0	106.8	89.7	109.07	4,780.9	2,414.2	2,785.0	2,597.6		14.863
16,000.0	10,321.9	15,796.7	11,180.0	108.6	89.7	109.07	4,780.9	2,414.2	2,822.5	2,633.4		14.927
16,100.0	10,321.3	15,796.7	11,180.0	110.4	89.7	109.07	4,780.9	2,414.2	2,862.9	2,672.2		15.006
16,200.0	10,320.8	15,796.7	11,180.0	112.2	89.7	109.07	4,780.9	2,414.2	2,906.3	2,713.8		15.098
16,300.0	10,320.3	15,796.7	11,180.0	114.0	89.7	109.07	4,780.9	2,414.2	2,952.4	2,758.2		15.203
16,400.0	10,319.8	15,796.7	11,180.0	115.8	89.7	109.07	4,780.9	2,414.2	3,001.1	2,805.2		15.319
16,500.0	10,319.3	15,796.7	11,180.0	117.6	89.7	109.07	4,780.9	2,414.2	3,052.3	2,854.7		15.446
16,600.0	10,318.7	15,796.7	11,180.0	119.3	89.7	109.07	4,780.9	2,414.2	3,105.9	2,906.6		15.583
16,700.0	10,318.2	15,796.7	11,180.0	121.1	89.7	109.07	4,780.9	2,414.2	3,161.7	2,960.7		15.728
16,800.0	10,317.7	15,796.7	11,180.0	122.9	89.7	109.07	4,780.9	2,414.2	3,219.7	3,017.0		15.882
16,900.0	10,317.2	15,796.7	11,180.0	124.7	89.7	109.07	4,780.9	2,414.2	3,279.7	3,075.3		16.042
17,000.0	10,316.6	15,796.7	11,180.0	126.5	89.7	109.07	4,780.9	2,414.2	3,341.6	3,135.5		16.209
17,100.0	10,316.1	15,796.7	11,180.0	128.3	89.7	109.07	4,780.9	2,414.2	3,405.4	3,197.5		16.383
17,200.0	10,315.6	15,796.7	11,180.0	130.1	89.7	109.07	4,780.9	2,414.2	3,470.8	3,261.2		16.561
17,300.0	10,315.1	15,796.7	11,180.0	131.9	89.7	109.07	4,780.9	2,414.2	3,537.9	3,326.6		16.744
17,400.0	10,314.6	15,796.7	11,180.0	133.7	89.7	109.07	4,780.9	2,414.2	3,606.5	3,393.5		16.931
17,500.0	10,314.0	15,796.7	11,180.0	135.5	89.7	109.07	4,780.9	2,414.2	3,676.5	3,461.8		17.122
17,600.0	10,313.5	15,796.7	11,180.0	137.3	89.7	109.07	4,780.9	2,414.2	3,747.9	3,531.4		17.316
17,700.0	10,313.0	15,796.7	11,180.0	139.1	89.7	109.07	4,780.9	2,414.2	3,820.6	3,602.4		17.513
17,800.0	10,312.5	15,796.7	11,180.0	140.9	89.7	109.07	4,780.9	2,414.2	3,894.4	3,674.6		17.712
17,900.0	10,311.9	15,796.7	11,180.0	142.7	89.7	109.07	4,780.9	2,414.2	3,969.5	3,747.9		17.914
18,000.0	10,311.4	15,796.7	11,180.0	144.5	89.7	109.07	4,780.9	2,414.2	4,045.6	3,822.3		18.117
18,100.0	10,310.9	15,796.7	11,180.0	146.3	89.7	109.07	4,780.9	2,414.2	4,122.7	3,897.7		18.321
18,200.0	10,310.4	15,796.7	11,180.0	148.1	89.7	109.07	4,780.9	2,414.2	4,200.8	3,974.1		18.527
18,300.0	10,309.9	15,796.7	11,180.0	149.9	89.7	109.07	4,780.9	2,414.2	4,279.8	4,051.3		18.733
18,400.0	10,309.3	15,796.7	11,180.0	151.7	89.7	109.07	4,780.9	2,414.2	4,359.7	4,129.5		18.940
18,500.0	10,308.8	15,796.7	11,180.0	153.5	89.7	109.07	4,780.9	2,414.2	4,440.4	4,208.5		19.147
18,600.0	10,308.3	15,796.7	11,180.0	155.3	89.7	109.07	4,780.9	2,414.2	4,521.8	4,288.2		19.355
18,700.0	10,307.8	15,796.7	11,180.0	157.1	89.7	109.07	4,780.9	2,414.2	4,604.0	4,368.7		19.562
18,800.0	10,307.2	15,796.7	11,180.0	158.9	89.7	109.07	4,780.9	2,414.2	4,686.9	4,449.8		19.770
18,900.0	10,306.7	15,796.7	11,180.0	160.7	89.7	109.07	4,780.9	2,414.2	4,770.4	4,531.6		19.977
19,000.0	10,306.2	15,796.7	11,180.0	162.5	89.7	109.07	4,780.9	2,414.2	4,854.6	4,614.1		20.184
19,100.0	10,305.7	15,796.7	11,180.0	164.3	89.7	109.07	4,780.9	2,414.2	4,939.3	4,697.1		20.390
19,200.0	10,305.1	15,796.7	11,180.0	166.1	89.7	109.07	4,780.9	2,414.2	5,024.6	4,780.7		20.596
19,300.0	10,304.6	15,796.7	11,180.0	167.9	89.7	109.07	4,780.9	2,414.2	5,110.5	4,864.8		20.801
19,400.0	10,304.1	15,796.7	11,180.0	169.7	89.7	109.07	4,780.9	2,414.2	5,196.8	4,949.4		21.005
19,500.0	10,303.6	15,796.7	11,180.0	171.6	89.7	109.07	4,780.9	2,414.2	5,283.6	5,034.5		21.208
19,600.0	10,303.1	15,796.7	11,180.0	173.4	89.7	109.07	4,780.9	2,414.2	5,370.9	5,120.1		21.410
19,700.0	10,302.5	15,796.7	11,180.0	175.2	89.7	109.07	4,780.9	2,414.2	5,458.7	5,206.1		21.611

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 #8H
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 #8H	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 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	
19,800.0	10,302.0	15,796.7	11,180.0	177.0	89.7	109.07	4,780.9	2,414.2	5,546.8	5,292.5	21.811		
19,900.0	10,301.5	15,796.7	11,180.0	178.8	89.7	109.07	4,780.9	2,414.2	5,635.3	5,379.3	22.010		
20,000.0	10,301.0	15,796.7	11,180.0	180.6	89.7	109.07	4,780.9	2,414.2	5,724.2	5,466.5	22.207		
20,100.0	10,300.4	15,796.7	11,180.0	182.4	89.7	109.07	4,780.9	2,414.2	5,813.5	5,554.0	22.404		
20,185.1	10,300.0	15,796.7	11,180.0	183.9	89.7	109.07	4,780.9	2,414.2	5,889.7	5,628.8	22.570		



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #8H
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 #8H	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:	
Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1											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)	Wellbore Centre +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	10.4	1,289.8	1,289.8			
100.0	100.0	100.0	100.0	0.1	0.1	89.54	10.4	1,289.8	1,289.8	1,289.7	8,316.797	
200.0	200.0	200.0	200.0	0.3	0.3	89.54	10.4	1,289.8	1,289.8	1,289.2	2,133.307	
300.0	300.0	300.0	300.0	0.5	0.5	89.54	10.4	1,289.8	1,289.8	1,288.8	1,223.581	
400.0	400.0	400.0	400.0	0.8	0.8	89.54	10.4	1,289.8	1,289.8	1,288.3	857.787	
500.0	500.0	500.0	500.0	1.0	1.0	89.54	10.4	1,289.8	1,289.8	1,287.9	660.368	
600.0	600.0	600.0	600.0	1.2	1.2	89.54	10.4	1,289.8	1,289.8	1,287.4	536.819	
700.0	700.0	700.0	700.0	1.4	1.4	89.54	10.4	1,289.8	1,289.8	1,287.0	452.214	
800.0	800.0	800.0	800.0	1.7	1.7	89.54	10.4	1,289.8	1,289.8	1,286.5	390.647	
900.0	900.0	900.0	900.0	1.9	1.9	89.54	10.4	1,289.8	1,289.8	1,286.1	343.835	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	89.54	10.4	1,289.8	1,289.8	1,285.6	307.041	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	89.54	10.4	1,289.8	1,289.8	1,285.2	277.361	
1,200.0	1,200.0	1,200.0	1,200.0	2.5	2.5	89.54	10.4	1,289.8	1,289.8	1,284.7	252.913	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	89.54	10.4	1,289.8	1,289.8	1,284.3	232.426	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	89.54	10.4	1,289.8	1,289.8	1,283.8	215.009	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	89.54	10.4	1,289.8	1,289.8	1,283.4	200.021	
1,600.0	1,600.0	1,600.0	1,600.0	3.4	3.4	89.54	10.4	1,289.8	1,289.8	1,282.9	186.986	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	89.54	10.4	1,289.8	1,289.8	1,282.5	175.546	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	89.54	10.4	1,289.8	1,289.8	1,282.0	165.425	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	89.54	10.4	1,289.8	1,289.8	1,281.6	156.408	
2,000.0	2,000.0	2,000.0	2,000.0	4.3	4.3	89.54	10.4	1,289.8	1,289.8	1,281.1	148.323	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	89.54	10.4	1,289.8	1,289.8	1,280.7	141.032	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	89.54	10.4	1,289.8	1,289.8	1,280.2	134.425	
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	89.54	10.4	1,289.8	1,289.8	1,279.8	128.409	
2,400.0	2,400.0	2,400.0	2,400.0	5.2	5.2	89.54	10.4	1,289.8	1,289.8	1,279.3	122.909	
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	89.54	10.4	1,289.8	1,289.8	1,278.9	117.860	
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	89.54	10.4	1,289.8	1,289.8	1,278.4	113.210	
2,700.0	2,700.0	2,700.0	2,700.0	5.9	5.9	89.54	10.4	1,289.8	1,289.8	1,278.0	108.912	
2,800.0	2,800.0	2,800.0	2,800.0	6.1	6.1	89.54	10.4	1,289.8	1,289.8	1,277.5	104.930	
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	89.54	10.4	1,289.8	1,289.8	1,277.1	101.228	
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	89.54	10.4	1,289.8	1,289.8	1,276.7	97.778	
3,100.0	3,100.0	3,100.0	3,100.0	6.8	6.8	89.54	10.4	1,289.8	1,289.8	1,276.2	94.556	
3,200.0	3,200.0	3,200.0	3,200.0	7.0	7.0	89.54	10.4	1,289.8	1,289.8	1,275.8	91.539	
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	89.54	10.4	1,289.8	1,289.8	1,275.3	88.709	
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	89.54	10.4	1,289.8	1,289.8	1,274.9	86.049	
3,500.0	3,500.0	3,500.0	3,500.0	7.7	7.7	89.54	10.4	1,289.8	1,289.8	1,274.4	83.543	
3,600.0	3,600.0	3,600.0	3,600.0	7.9	7.9	89.54	10.4	1,289.8	1,289.8	1,274.0	81.180	
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	89.54	10.4	1,289.8	1,289.8	1,273.5	78.946	
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	89.54	10.4	1,289.8	1,289.8	1,273.1	76.832	
3,900.0	3,900.0	3,900.0	3,900.0	8.6	8.6	89.54	10.4	1,289.8	1,289.8	1,272.6	74.829	
4,000.0	4,000.0	4,000.0	4,000.0	8.8	8.8	89.54	10.4	1,289.8	1,289.8	1,272.2	72.927	
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	89.54	10.4	1,289.8	1,289.8	1,271.7	71.119	
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	89.54	10.4	1,289.8	1,289.8	1,271.3	69.399	
4,300.0	4,300.0	4,300.0	4,300.0	9.5	9.5	89.54	10.4	1,289.8	1,289.8	1,270.8	67.760	
4,400.0	4,400.0	4,400.0	4,400.0	9.7	9.7	89.54	10.4	1,289.8	1,289.8	1,270.4	66.197	
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	89.54	10.4	1,289.8	1,289.8	1,269.9	64.704	
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	89.54	10.4	1,289.8	1,289.8	1,269.5	63.277	
4,700.0	4,700.0	4,700.0	4,700.0	10.4	10.4	89.54	10.4	1,289.8	1,289.8	1,269.0	61.912	
4,800.0	4,800.0	4,800.0	4,800.0	10.6	10.6	89.54	10.4	1,289.8	1,289.8	1,268.6	60.604	
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	89.54	10.4	1,289.8	1,289.8	1,268.1	59.350	
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	89.54	10.4	1,289.8	1,289.8	1,267.7	58.148	
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	89.54	10.4	1,289.8	1,289.8	1,267.2	56.993	

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 #8H
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 #8H	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)	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	89.54	10.4	1,289.8	1,289.8	1,266.8	55.883		
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	89.54	10.4	1,289.8	1,289.8	1,266.3	54.815		
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	89.54	10.4	1,289.8	1,289.8	1,265.9	53.788		
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	89.54	10.4	1,289.8	1,289.8	1,265.4	52.798		
5,600.0	5,600.0	5,600.0	5,600.0	12.4	12.4	89.54	10.4	1,289.8	1,289.8	1,265.0	51.844		
5,700.0	5,700.0	5,700.0	5,700.0	12.7	12.7	89.54	10.4	1,289.8	1,289.8	1,264.5	50.924		
5,800.0	5,800.0	5,800.0	5,800.0	12.9	12.9	89.54	10.4	1,289.8	1,289.8	1,264.1	50.036		
5,900.0	5,900.0	5,900.0	5,900.0	13.1	13.1	89.54	10.4	1,289.8	1,289.8	1,263.6	49.178		
6,000.0	6,000.0	6,000.0	6,000.0	13.3	13.3	89.54	10.4	1,289.8	1,289.8	1,263.2	48.349		
6,100.0	6,100.0	6,100.0	6,100.0	13.6	13.6	89.54	10.4	1,289.8	1,289.8	1,262.7	47.548		
6,200.0	6,200.0	6,200.0	6,200.0	13.8	13.8	89.54	10.4	1,289.8	1,289.8	1,262.3	46.773		
6,300.0	6,300.0	6,300.0	6,300.0	14.0	14.0	89.54	10.4	1,289.8	1,289.8	1,261.8	46.023		
6,400.0	6,400.0	6,400.0	6,400.0	14.2	14.2	89.54	10.4	1,289.8	1,289.8	1,261.4	45.296		
6,500.0	6,500.0	6,500.0	6,500.0	14.5	14.5	89.54	10.4	1,289.8	1,289.8	1,260.9	44.592		
6,600.0	6,600.0	6,600.0	6,600.0	14.7	14.7	89.54	10.4	1,289.8	1,289.8	1,260.5	43.910		
6,700.0	6,700.0	6,700.0	6,700.0	14.9	14.9	89.54	10.4	1,289.8	1,289.8	1,260.0	43.248		
6,800.0	6,800.0	6,800.0	6,800.0	15.1	15.1	89.54	10.4	1,289.8	1,289.8	1,259.6	42.606		
6,900.0	6,900.0	6,900.0	6,900.0	15.4	15.4	89.54	10.4	1,289.8	1,289.8	1,259.1	41.983		
7,000.0	7,000.0	7,000.0	7,000.0	15.6	15.6	89.54	10.4	1,289.8	1,289.8	1,258.7	41.377		
7,100.0	7,100.0	7,100.0	7,100.0	15.8	15.8	89.54	10.4	1,289.8	1,289.8	1,258.2	40.789		
7,200.0	7,200.0	7,200.0	7,200.0	16.0	16.0	89.54	10.4	1,289.8	1,289.8	1,257.8	40.217		
7,300.0	7,300.0	7,300.0	7,300.0	16.3	16.3	89.54	10.4	1,289.8	1,289.8	1,257.3	39.661		
7,400.0	7,400.0	7,400.0	7,400.0	16.5	16.5	89.54	10.4	1,289.8	1,289.8	1,256.9	39.121		
7,500.0	7,500.0	7,500.0	7,500.0	16.7	16.7	89.54	10.4	1,289.8	1,289.8	1,256.4	38.594		
7,600.0	7,600.0	7,600.0	7,600.0	16.9	16.9	89.54	10.4	1,289.8	1,289.8	1,256.0	38.082		
7,700.0	7,700.0	7,700.0	7,700.0	17.2	17.2	89.54	10.4	1,289.8	1,289.8	1,255.5	37.583		
7,800.0	7,800.0	7,800.0	7,800.0	17.4	17.4	89.54	10.4	1,289.8	1,289.8	1,255.1	37.097		
7,900.0	7,900.0	7,900.0	7,900.0	17.6	17.6	89.54	10.4	1,289.8	1,289.8	1,254.6	36.624		
8,000.0	8,000.0	8,000.0	8,000.0	17.8	17.8	89.54	10.4	1,289.8	1,289.8	1,254.2	36.162		
8,100.0	8,100.0	8,100.0	8,100.0	18.1	18.1	89.54	10.4	1,289.8	1,289.8	1,253.7	35.712		
8,200.0	8,200.0	8,200.0	8,200.0	18.3	18.3	89.54	10.4	1,289.8	1,289.8	1,253.3	35.273		
8,300.0	8,300.0	8,300.0	8,300.0	18.5	18.5	89.54	10.4	1,289.8	1,289.8	1,252.8	34.845		
8,400.0	8,400.0	8,400.0	8,400.0	18.7	18.7	89.54	10.4	1,289.8	1,289.8	1,252.4	34.427		
8,500.0	8,500.0	8,500.0	8,500.0	19.0	19.0	89.54	10.4	1,289.8	1,289.8	1,251.9	34.019		
8,600.0	8,600.0	8,600.0	8,600.0	19.2	19.2	89.54	10.4	1,289.8	1,289.8	1,251.5	33.620		
8,700.0	8,700.0	8,700.0	8,700.0	19.4	19.4	89.54	10.4	1,289.8	1,289.8	1,251.0	33.231		
8,800.0	8,800.0	8,800.0	8,800.0	19.6	19.6	89.54	10.4	1,289.8	1,289.8	1,250.6	32.850		
8,900.0	8,900.0	8,900.0	8,900.0	19.9	19.9	89.54	10.4	1,289.8	1,289.8	1,250.1	32.478		
9,000.0	9,000.0	9,000.0	9,000.0	20.1	20.1	89.54	10.4	1,289.8	1,289.8	1,249.7	32.115		
9,100.0	9,100.0	9,100.0	9,100.0	20.3	20.3	89.54	10.4	1,289.8	1,289.8	1,249.2	31.759		
9,200.0	9,200.0	9,200.0	9,200.0	20.5	20.5	89.54	10.4	1,289.8	1,289.8	1,248.8	31.412		
9,300.0	9,300.0	9,300.0	9,300.0	20.8	20.8	89.54	10.4	1,289.8	1,289.8	1,248.3	31.072		
9,400.0	9,400.0	9,400.0	9,400.0	21.0	21.0	89.54	10.4	1,289.8	1,289.8	1,247.9	30.739		
9,500.0	9,500.0	9,500.0	9,500.0	21.2	21.2	89.54	10.4	1,289.8	1,289.8	1,247.4	30.413		
9,600.0	9,600.0	9,600.0	9,600.0	21.4	21.4	89.54	10.4	1,289.8	1,289.8	1,247.0	30.094		
9,700.0	9,700.0	9,700.0	9,700.0	21.7	21.7	89.54	10.4	1,289.8	1,289.8	1,246.5	29.782		
9,800.0	9,800.0	9,800.0	9,800.0	21.9	21.9	89.54	10.4	1,289.8	1,289.8	1,246.1	29.476		
9,872.5	9,872.5	9,872.5	9,872.5	22.0	22.0	89.54	10.4	1,289.8	1,289.8	1,245.8	29.256 CC		
9,875.0	9,875.0	9,875.0	9,875.0	22.0	22.0	90.05	10.4	1,289.8	1,289.8	1,245.7	29.250		
9,900.0	9,900.0	9,900.0	9,900.0	22.1	22.1	90.08	10.4	1,289.8	1,289.8	1,245.6	29.176		
9,925.0	9,924.9	9,924.9	9,924.9	22.2	22.2	90.17	10.4	1,289.8	1,289.8	1,245.5	29.103		
9,950.0	9,949.7	9,949.7	9,949.7	22.2	22.2	90.32	10.4	1,289.8	1,289.8	1,245.4	29.032		

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 #8H
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 #8H	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)	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
9,975.0	9,974.2	9,974.2	9,974.2	22.3	22.3	90.52	10.4	1,289.8	1,289.9	1,245.4	28.962	
10,000.0	9,998.5	9,998.5	9,998.5	22.3	22.3	90.77	10.4	1,289.8	1,290.0	1,245.3	28.894	ES
10,025.0	10,022.4	10,022.4	10,022.4	22.4	22.4	91.06	10.4	1,289.8	1,290.1	1,245.3	28.828	
10,050.0	10,045.9	10,045.9	10,045.9	22.4	22.4	91.39	10.4	1,289.8	1,290.3	1,245.4	28.766	
10,075.0	10,069.0	10,069.0	10,069.0	22.5	22.5	91.75	10.4	1,289.8	1,290.6	1,245.6	28.707	
10,100.0	10,091.5	10,091.5	10,091.5	22.5	22.5	92.14	10.4	1,289.8	1,291.0	1,245.9	28.652	
10,125.0	10,113.4	10,113.4	10,113.4	22.6	22.6	92.54	10.4	1,289.8	1,291.5	1,246.4	28.603	
10,150.0	10,134.6	10,134.6	10,134.6	22.6	22.6	92.95	10.4	1,289.8	1,292.3	1,247.0	28.558	
10,175.0	10,155.2	10,155.2	10,155.2	22.7	22.7	93.35	10.4	1,289.8	1,293.2	1,247.9	28.521	
10,200.0	10,174.9	10,174.9	10,174.9	22.8	22.7	93.74	10.4	1,289.8	1,294.4	1,249.0	28.490	
10,225.0	10,193.8	10,193.8	10,193.8	22.8	22.8	94.11	10.4	1,289.8	1,295.9	1,250.4	28.466	
10,250.0	10,211.9	10,211.9	10,211.9	22.9	22.8	94.45	10.4	1,289.8	1,297.7	1,252.1	28.449	
10,275.0	10,229.0	10,229.0	10,229.0	22.9	22.8	94.74	10.4	1,289.8	1,299.8	1,254.1	28.440	
10,300.0	10,245.1	10,245.1	10,245.1	23.0	22.9	94.99	10.4	1,289.8	1,302.3	1,256.5	28.438	
10,325.0	10,260.2	10,260.2	10,260.2	23.1	22.9	95.17	10.4	1,289.8	1,305.2	1,259.4	28.443	
10,350.0	10,274.3	10,274.3	10,274.3	23.2	22.9	95.28	10.4	1,289.8	1,308.6	1,262.6	28.454	
10,375.0	10,287.2	10,287.2	10,287.2	23.3	23.0	95.31	10.4	1,289.8	1,312.3	1,266.2	28.471	
10,400.0	10,299.1	10,299.1	10,299.1	23.4	23.0	95.25	10.4	1,289.8	1,316.6	1,270.4	28.492	
10,425.0	10,309.7	10,309.7	10,309.7	23.5	23.0	95.10	10.4	1,289.8	1,321.3	1,275.0	28.517	
10,450.0	10,319.1	10,319.1	10,319.1	23.6	23.0	94.85	10.4	1,289.8	1,326.5	1,280.0	28.546	
10,475.0	10,327.4	10,327.4	10,327.4	23.7	23.1	94.49	10.4	1,289.8	1,332.2	1,285.6	28.579	
10,500.0	10,334.3	10,334.3	10,334.3	23.8	23.1	94.02	10.4	1,289.8	1,338.4	1,291.7	28.617	
10,525.0	10,340.0	10,340.0	10,340.0	23.9	23.1	93.43	10.4	1,289.8	1,345.1	1,298.2	28.660	
10,550.0	10,344.5	10,344.5	10,344.5	24.1	23.1	92.73	10.4	1,289.8	1,352.3	1,305.2	28.709	
10,575.0	10,347.6	10,347.6	10,347.6	24.2	23.1	91.90	10.4	1,289.8	1,360.0	1,312.7	28.768	
10,600.0	10,349.4	10,349.4	10,349.4	24.3	23.1	90.95	10.4	1,289.8	1,368.1	1,320.6	28.839	
10,625.0	10,350.0	10,350.0	10,350.0	24.5	23.1	89.89	10.4	1,289.8	1,376.6	1,329.0	28.924	
10,700.0	10,349.6	10,349.6	10,349.6	25.0	23.1	89.87	10.4	1,289.8	1,404.6	1,356.5	29.214	
10,800.0	10,349.0	10,349.0	10,349.0	25.7	23.1	89.85	10.4	1,289.8	1,447.1	1,398.3	29.639	
10,900.0	10,348.5	10,348.5	10,348.5	26.6	23.1	89.82	10.4	1,289.8	1,495.1	1,445.4	30.098	
11,000.0	10,348.0	10,348.0	10,348.0	27.5	23.1	89.80	10.4	1,289.8	1,548.1	1,497.4	30.583	
11,100.0	10,347.5	11,979.1	11,221.2	28.5	30.2	124.05	969.4	1,284.2	1,560.3	1,511.0	31.652	
11,200.0	10,347.0	12,079.1	11,220.4	29.6	31.2	124.04	1,069.4	1,283.6	1,560.4	1,509.2	30.485	
11,300.0	10,346.4	12,179.1	11,219.6	30.8	32.3	124.03	1,169.4	1,283.0	1,560.5	1,507.3	29.336	
11,400.0	10,345.9	12,279.1	11,218.9	32.1	33.5	124.01	1,269.4	1,282.4	1,560.6	1,505.3	28.216	
11,500.0	10,345.4	12,379.1	11,218.1	33.3	34.8	124.00	1,369.4	1,281.8	1,560.7	1,503.2	27.134	
11,600.0	10,344.9	12,479.1	11,217.3	34.7	36.0	123.98	1,469.4	1,281.2	1,560.8	1,501.0	26.096	
11,700.0	10,344.3	12,579.1	11,216.5	36.1	37.4	123.97	1,569.3	1,280.6	1,560.9	1,498.7	25.105	
11,800.0	10,343.8	12,679.0	11,215.7	37.5	38.7	123.96	1,669.3	1,280.0	1,561.0	1,496.4	24.161	
11,900.0	10,343.3	12,779.0	11,214.9	38.9	40.2	123.94	1,769.3	1,279.4	1,561.1	1,494.0	23.265	
12,000.0	10,342.8	12,879.0	11,214.2	40.4	41.6	123.93	1,869.3	1,278.9	1,561.2	1,491.6	22.416	
12,100.0	10,342.3	12,979.0	11,213.4	41.9	43.1	123.91	1,969.3	1,278.3	1,561.3	1,489.1	21.613	
12,200.0	10,341.7	13,079.0	11,212.6	43.5	44.6	123.90	2,069.3	1,277.7	1,561.4	1,486.6	20.853	
12,300.0	10,341.2	13,179.0	11,211.8	45.0	46.1	123.89	2,169.3	1,277.1	1,561.5	1,484.0	20.136	
12,400.0	10,340.7	13,279.0	11,211.0	46.6	47.6	123.87	2,269.3	1,276.5	1,561.6	1,481.4	19.457	
12,500.0	10,340.2	13,379.0	11,210.2	48.2	49.2	123.86	2,369.3	1,275.9	1,561.7	1,478.7	18.816	
12,600.0	10,339.6	13,479.0	11,209.5	49.8	50.7	123.84	2,469.3	1,275.3	1,561.8	1,476.1	18.210	
12,700.0	10,339.1	13,579.0	11,208.7	51.4	52.3	123.83	2,569.3	1,274.7	1,561.9	1,473.4	17.636	
12,800.0	10,338.6	13,679.0	11,207.9	53.1	54.0	123.81	2,669.3	1,274.2	1,562.1	1,470.7	17.093	
12,900.0	10,338.1	13,779.0	11,207.1	54.7	55.6	123.80	2,769.3	1,273.6	1,562.2	1,467.9	16.579	
13,000.0	10,337.5	13,879.0	11,206.3	56.4	57.2	123.79	2,869.3	1,273.0	1,562.3	1,465.2	16.092	
13,100.0	10,337.0	13,979.0	11,205.5	58.0	58.9	123.77	2,969.3	1,272.4	1,562.4	1,462.4	15.630	

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 #8H
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 #8H	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:
Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1												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
13,200.0	10,336.5	14,079.0	11,204.7	59.7	60.5	123.76	3,069.3	1,271.8	1,562.5	1,459.6	15.191	
13,300.0	10,336.0	14,179.0	11,204.0	61.4	62.2	123.74	3,169.3	1,271.2	1,562.6	1,456.8	14.774	
13,400.0	10,335.5	14,279.0	11,203.2	63.1	63.8	123.73	3,269.3	1,270.6	1,562.7	1,454.0	14.377	
13,500.0	10,334.9	14,379.0	11,202.4	64.8	65.5	123.72	3,369.2	1,270.0	1,562.8	1,451.2	14.000	
13,600.0	10,334.4	14,479.0	11,201.6	66.5	67.2	123.70	3,469.2	1,269.4	1,562.9	1,448.3	13.640	
13,700.0	10,333.9	14,579.0	11,200.8	68.2	68.9	123.69	3,569.2	1,268.9	1,563.0	1,445.4	13.297	
13,800.0	10,333.4	14,679.0	11,200.0	69.9	70.6	123.67	3,669.2	1,268.3	1,563.1	1,442.6	12.970	
13,900.0	10,332.8	14,779.0	11,199.3	71.7	72.3	123.66	3,769.2	1,267.7	1,563.2	1,439.7	12.658	
14,000.0	10,332.3	14,879.0	11,198.5	73.4	74.0	123.65	3,869.2	1,267.1	1,563.3	1,436.8	12.360	
14,100.0	10,331.8	14,979.0	11,197.7	75.1	75.7	123.63	3,969.2	1,266.5	1,563.4	1,433.9	12.074	
14,200.0	10,331.3	15,079.0	11,196.9	76.9	77.5	123.62	4,069.2	1,265.9	1,563.5	1,431.0	11.801	
14,300.0	10,330.8	15,179.0	11,196.1	78.6	79.2	123.60	4,169.2	1,265.3	1,563.6	1,428.1	11.539	
14,400.0	10,330.2	15,279.0	11,195.3	80.3	80.9	123.59	4,269.2	1,264.7	1,563.7	1,425.2	11.288	
14,500.0	10,329.7	15,379.0	11,194.6	82.1	82.7	123.58	4,369.2	1,264.1	1,563.8	1,422.3	11.047	
14,600.0	10,329.2	15,479.0	11,193.8	83.8	84.4	123.56	4,469.2	1,263.6	1,563.9	1,419.3	10.816	
14,700.0	10,328.7	15,579.0	11,193.0	85.6	86.1	123.55	4,569.2	1,263.0	1,564.0	1,416.4	10.594	
14,800.0	10,328.1	15,679.0	11,192.2	87.4	87.9	123.53	4,669.2	1,262.4	1,564.1	1,413.5	10.380	
14,900.0	10,327.6	15,779.0	11,191.4	89.1	89.6	123.52	4,769.2	1,261.8	1,564.3	1,410.5	10.175	
15,000.0	10,327.1	15,879.0	11,190.6	90.9	91.4	123.51	4,869.2	1,261.2	1,564.4	1,407.6	9.977	
15,100.0	10,326.6	15,979.0	11,189.9	92.7	93.2	123.49	4,969.2	1,260.6	1,564.5	1,404.6	9.786	
15,200.0	10,326.1	16,079.0	11,189.1	94.4	94.9	123.48	5,069.1	1,260.0	1,564.6	1,401.6	9.603	
15,300.0	10,325.5	16,179.0	11,188.3	96.2	96.7	123.46	5,169.1	1,259.4	1,564.7	1,398.7	9.426	
15,400.0	10,325.0	16,279.0	11,187.5	98.0	98.4	123.45	5,269.1	1,258.8	1,564.8	1,395.7	9.255	
15,500.0	10,324.5	16,379.0	11,186.7	99.7	100.2	123.44	5,369.1	1,258.3	1,564.9	1,392.7	9.090	
15,600.0	10,324.0	16,479.0	11,185.9	101.5	102.0	123.42	5,469.1	1,257.7	1,565.0	1,389.7	8.930	
15,700.0	10,323.4	16,579.0	11,185.1	103.3	103.7	123.41	5,569.1	1,257.1	1,565.1	1,386.8	8.776	
15,800.0	10,322.9	16,679.0	11,184.4	105.1	105.5	123.39	5,669.1	1,256.5	1,565.2	1,383.8	8.627	
15,900.0	10,322.4	16,779.0	11,183.6	106.8	107.3	123.38	5,769.1	1,255.9	1,565.3	1,380.8	8.483	
16,000.0	10,321.9	16,879.0	11,182.8	108.6	109.0	123.36	5,869.1	1,255.3	1,565.4	1,377.8	8.343	
16,100.0	10,321.3	16,979.0	11,182.0	110.4	110.8	123.35	5,969.1	1,254.7	1,565.5	1,374.8	8.208	
16,200.0	10,320.8	17,079.0	11,181.2	112.2	112.6	123.34	6,069.1	1,254.1	1,565.6	1,371.8	8.077	
16,300.0	10,320.3	17,179.0	11,180.4	114.0	114.4	123.32	6,169.1	1,253.6	1,565.7	1,368.8	7.950	
16,400.0	10,319.8	17,279.0	11,179.7	115.8	116.2	123.31	6,269.1	1,253.0	1,565.8	1,365.8	7.827	
16,500.0	10,319.3	17,379.0	11,178.9	117.6	117.9	123.29	6,369.1	1,252.4	1,566.0	1,362.8	7.708	
16,600.0	10,318.7	17,479.0	11,178.1	119.3	119.7	123.28	6,469.1	1,251.8	1,566.1	1,359.8	7.592	
16,700.0	10,318.2	17,579.0	11,177.3	121.1	121.5	123.27	6,569.1	1,251.2	1,566.2	1,356.8	7.479	
16,800.0	10,317.7	17,679.0	11,176.5	122.9	123.3	123.25	6,669.1	1,250.6	1,566.3	1,353.8	7.370	
16,900.0	10,317.2	17,779.0	11,175.7	124.7	125.1	123.24	6,769.1	1,250.0	1,566.4	1,350.7	7.264	
17,000.0	10,316.6	17,879.0	11,175.0	126.5	126.9	123.22	6,869.0	1,249.4	1,566.5	1,347.7	7.160	
17,100.0	10,316.1	17,979.0	11,174.2	128.3	128.7	123.21	6,969.0	1,248.8	1,566.6	1,344.7	7.060	
17,200.0	10,315.6	18,079.0	11,173.4	130.1	130.4	123.20	7,069.0	1,248.3	1,566.7	1,341.7	6.962	
17,300.0	10,315.1	18,179.0	11,172.6	131.9	132.2	123.18	7,169.0	1,247.7	1,566.8	1,338.6	6.867	
17,400.0	10,314.6	18,279.0	11,171.8	133.7	134.0	123.17	7,269.0	1,247.1	1,566.9	1,335.6	6.774	
17,500.0	10,314.0	18,379.0	11,171.0	135.5	135.8	123.15	7,369.0	1,246.5	1,567.0	1,332.6	6.684	
17,600.0	10,313.5	18,479.0	11,170.3	137.3	137.6	123.14	7,469.0	1,245.9	1,567.1	1,329.6	6.596	
17,700.0	10,313.0	18,579.0	11,169.5	139.1	139.4	123.13	7,569.0	1,245.3	1,567.2	1,326.5	6.511	
17,800.0	10,312.5	18,679.0	11,168.7	140.9	141.2	123.11	7,669.0	1,244.7	1,567.4	1,323.5	6.427	
17,900.0	10,311.9	18,779.0	11,167.9	142.7	143.0	123.10	7,769.0	1,244.1	1,567.5	1,320.4	6.346	
18,000.0	10,311.4	18,879.0	11,167.1	144.5	144.8	123.08	7,869.0	1,243.5	1,567.6	1,317.4	6.266	
18,100.0	10,310.9	18,979.0	11,166.3	146.3	146.6	123.07	7,969.0	1,243.0	1,567.7	1,314.4	6.189	
18,200.0	10,310.4	19,079.0	11,165.5	148.1	148.4	123.06	8,069.0	1,242.4	1,567.8	1,311.3	6.113	
18,300.0	10,309.9	19,179.0	11,164.8	149.9	150.2	123.04	8,169.0	1,241.8	1,567.9	1,308.3	6.039	

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 #8H
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 #8H	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
Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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	
18,400.0	10,309.3	19,279.0	11,164.0	151.7	152.0	123.03	8,269.0	1,241.2	1,568.0	1,305.2	5.967		
18,500.0	10,308.8	19,379.0	11,163.2	153.5	153.8	123.01	8,369.0	1,240.6	1,568.1	1,302.2	5.897		
18,600.0	10,308.3	19,479.0	11,162.4	155.3	155.6	123.00	8,469.0	1,240.0	1,568.2	1,299.1	5.828		
18,700.0	10,307.8	19,579.0	11,161.6	157.1	157.4	122.99	8,569.0	1,239.4	1,568.3	1,296.1	5.761		
18,800.0	10,307.2	19,679.0	11,160.8	158.9	159.2	122.97	8,668.9	1,238.8	1,568.4	1,293.0	5.695		
18,900.0	10,306.7	19,779.0	11,160.1	160.7	161.0	122.96	8,768.9	1,238.3	1,568.6	1,290.0	5.631		
19,000.0	10,306.2	19,879.0	11,159.3	162.5	162.8	122.94	8,868.9	1,237.7	1,568.7	1,286.9	5.568		
19,100.0	10,305.7	19,979.0	11,158.5	164.3	164.6	122.93	8,968.9	1,237.1	1,568.8	1,283.9	5.506		
19,200.0	10,305.1	20,079.0	11,157.7	166.1	166.4	122.92	9,068.9	1,236.5	1,568.9	1,280.8	5.446		
19,300.0	10,304.6	20,179.0	11,156.9	167.9	168.2	122.90	9,168.9	1,235.9	1,569.0	1,277.8	5.387		
19,400.0	10,304.1	20,279.0	11,156.1	169.7	170.0	122.89	9,268.9	1,235.3	1,569.1	1,274.7	5.330		
19,500.0	10,303.6	20,379.0	11,155.4	171.6	171.8	122.88	9,368.9	1,234.7	1,569.2	1,271.6	5.273		
19,600.0	10,303.1	20,479.0	11,154.6	173.4	173.6	122.86	9,468.9	1,234.1	1,569.3	1,268.6	5.218		
19,700.0	10,302.5	20,579.0	11,153.8	175.2	175.4	122.85	9,568.9	1,233.5	1,569.4	1,265.5	5.164		
19,800.0	10,302.0	20,679.0	11,153.0	177.0	177.2	122.83	9,668.9	1,233.0	1,569.5	1,262.4	5.111		
19,900.0	10,301.5	20,779.0	11,152.2	178.8	179.0	122.82	9,768.9	1,232.4	1,569.7	1,259.4	5.059		
20,000.0	10,301.0	20,879.0	11,151.4	180.6	180.8	122.81	9,868.9	1,231.8	1,569.8	1,256.3	5.008		
20,100.0	10,300.4	20,979.0	11,150.7	182.4	182.6	122.79	9,968.9	1,231.2	1,569.9	1,253.2	4.958		
20,185.1	10,300.0	21,062.7	11,150.0	183.9	184.1	122.78	10,052.6	1,230.7	1,570.0	1,250.7	4.917 SF		



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #8H
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 #8H	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 #4H - Wellbore #1 - Design #1											Offset Well Error:	0.0 usft
Survey Program: 0-MWD default												
Reference	Measured	Vertical	Measured	Vertical	Semi Major Axis	Offset	Highside	Offset Wellbore Centre	Distance	Distance	Separation	Warning
Depth	Depth	Depth	Depth	Depth	Reference	Offset	Tooface	+N/S	Between	Between	Factor	
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	Centres	Ellipses		
								(usft)	(usft)	(usft)		
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-90.38	-0.2	-30.0	30.0		
100.0	100.0	100.0	100.0	100.0	0.1	0.1	-90.38	-0.2	-30.0	30.0	29.8	193.442
200.0	200.0	200.0	200.0	200.0	0.3	0.3	-90.38	-0.2	-30.0	30.0	29.4	49.619
300.0	300.0	300.0	300.0	300.0	0.5	0.5	-90.38	-0.2	-30.0	30.0	28.9	28.460
400.0	400.0	400.0	400.0	400.0	0.8	0.8	-90.38	-0.2	-30.0	30.0	28.5	19.951
500.0	500.0	500.0	500.0	500.0	1.0	1.0	-90.38	-0.2	-30.0	30.0	28.0	15.360
600.0	600.0	600.0	600.0	600.0	1.2	1.2	-90.38	-0.2	-30.0	30.0	27.6	12.486
700.0	700.0	700.0	700.0	700.0	1.4	1.4	-90.38	-0.2	-30.0	30.0	27.1	10.518
800.0	800.0	800.0	800.0	800.0	1.7	1.7	-90.38	-0.2	-30.0	30.0	26.7	9.086
900.0	900.0	900.0	900.0	900.0	1.9	1.9	-90.38	-0.2	-30.0	30.0	26.2	7.997
1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.38	-0.2	-30.0	30.0	25.8	7.142
1,100.0	1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-90.38	-0.2	-30.0	30.0	25.4	6.451
1,200.0	1,200.0	1,200.0	1,200.0	1,200.0	2.5	2.5	-90.38	-0.2	-30.0	30.0	24.9	5.883
1,300.0	1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.38	-0.2	-30.0	30.0	24.5	5.406
1,400.0	1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.38	-0.2	-30.0	30.0	24.0	5.001
1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	-90.38	-0.2	-30.0	30.0	23.6	4.652
1,600.0	1,600.0	1,600.0	1,600.0	1,600.0	3.4	3.4	-90.38	-0.2	-30.0	30.0	23.1	4.349
1,700.0	1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-90.38	-0.2	-30.0	30.0	22.7	4.083
1,800.0	1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-90.38	-0.2	-30.0	30.0	22.2	3.848
1,900.0	1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	-90.38	-0.2	-30.0	30.0	21.8	3.638
2,000.0	2,000.0	2,000.0	2,000.0	2,000.0	4.3	4.3	-90.38	-0.2	-30.0	30.0	21.3	3.450
2,100.0	2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-90.38	-0.2	-30.0	30.0	20.9	3.280
2,200.0	2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-90.38	-0.2	-30.0	30.0	20.4	3.127
2,300.0	2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	-90.38	-0.2	-30.0	30.0	20.0	2.987
2,400.0	2,400.0	2,400.0	2,400.0	2,400.0	5.2	5.2	-90.38	-0.2	-30.0	30.0	19.5	2.859
2,500.0	2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-90.38	-0.2	-30.0	30.0	19.1	2.741
2,600.0	2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	-90.38	-0.2	-30.0	30.0	18.6	2.633
2,700.0	2,700.0	2,700.0	2,700.0	2,700.0	5.9	5.9	-90.38	-0.2	-30.0	30.0	18.2	2.533
2,800.0	2,800.0	2,800.0	2,800.0	2,800.0	6.1	6.1	-90.38	-0.2	-30.0	30.0	17.7	2.441
2,900.0	2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-90.38	-0.2	-30.0	30.0	17.3	2.354
3,000.0	3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-90.38	-0.2	-30.0	30.0	16.8	2.274
3,100.0	3,100.0	3,100.0	3,100.0	3,100.0	6.8	6.8	-90.38	-0.2	-30.0	30.0	16.4	2.199
3,200.0	3,200.0	3,200.0	3,200.0	3,200.0	7.0	7.0	-90.38	-0.2	-30.0	30.0	15.9	2.129
3,300.0	3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-90.38	-0.2	-30.0	30.0	15.5	2.063
3,400.0	3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-90.38	-0.2	-30.0	30.0	15.0	2.001
3,500.0	3,500.0	3,500.0	3,500.0	3,500.0	7.7	7.7	-90.38	-0.2	-30.0	30.0	14.6	1.943
3,600.0	3,600.0	3,600.0	3,600.0	3,600.0	7.9	7.9	-90.38	-0.2	-30.0	30.0	14.1	1.888
3,700.0	3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-90.38	-0.2	-30.0	30.0	13.7	1.836
3,800.0	3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-90.38	-0.2	-30.0	30.0	13.2	1.787
3,900.0	3,900.0	3,900.0	3,900.0	3,900.0	8.6	8.6	-90.38	-0.2	-30.0	30.0	12.8	1.740
4,000.0	4,000.0	4,000.0	4,000.0	4,000.0	8.8	8.8	-90.38	-0.2	-30.0	30.0	12.3	1.696
4,100.0	4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-90.38	-0.2	-30.0	30.0	11.9	1.654
4,200.0	4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-90.38	-0.2	-30.0	30.0	11.4	1.614
4,300.0	4,300.0	4,300.0	4,300.0	4,300.0	9.5	9.5	-90.38	-0.2	-30.0	30.0	11.0	1.576
4,400.0	4,400.0	4,400.0	4,400.0	4,400.0	9.7	9.7	-90.38	-0.2	-30.0	30.0	10.5	1.540
4,500.0	4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-90.38	-0.2	-30.0	30.0	10.1	1.505
4,600.0	4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	-90.38	-0.2	-30.0	30.0	9.6	1.472 Level 3
4,700.0	4,700.0	4,700.0	4,700.0	4,700.0	10.4	10.4	-90.38	-0.2	-30.0	30.0	9.2	1.440 Level 3
4,800.0	4,800.0	4,800.0	4,800.0	4,800.0	10.6	10.6	-90.38	-0.2	-30.0	30.0	8.7	1.410 Level 3
4,900.0	4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	-90.38	-0.2	-30.0	30.0	8.3	1.380 Level 3
5,000.0	5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	-90.38	-0.2	-30.0	30.0	7.8	1.352 Level 3
5,100.0	5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	-90.38	-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 Squires Federal Com #8H
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:	Squires Federal Com #8H	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:
Sec 27, T22S, R34E - Squires Federal Com #4H - Wellbore #1 - Design #1												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	5,200.0	5,200.0	11.5	11.5	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-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	-90.38	-0.2	-30.0	30.0	-13.8	0.686	Level 1
9,872.5	9,872.5	9,872.5	9,872.5	22.0	22.0	-90.38	-0.2	-30.0	30.0	-14.1	0.681	Level 1
9,875.0	9,875.0	9,875.0	9,875.0	22.0	22.0	-89.89	-0.2	-30.0	30.0	-14.1	0.680	Level 1
9,880.5	9,880.5	9,880.5	9,880.5	22.1	22.1	-90.00	-0.2	-30.0	30.0	-14.1	0.680	Level 1, CC
9,900.0	9,900.0	9,900.0	9,900.0	22.1	22.1	-91.38	-0.2	-30.0	30.0	-14.2	0.679	Level 1, ES, SF
9,925.0	9,924.9	9,924.9	9,924.9	22.2	22.2	-95.33	-0.2	-30.0	30.1	-14.2	0.680	Level 1

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 Sights Federal Com #8H
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 #8H	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 #4H - 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)	Between Ellipses (usft)	Separation Factor	Warning	
9,950.0	9,949.7	9,949.7	9,949.7	22.2	22.2	-101.54	-0.2	-30.0	30.6	-13.8	0.690	Level 1	
9,975.0	9,974.2	9,974.2	9,974.2	22.3	22.3	-109.53	-0.2	-30.0	31.9	-12.5	0.718	Level 1	
10,000.0	9,998.5	9,998.5	9,998.5	22.3	22.3	-118.46	-0.2	-30.0	34.4	-9.9	0.777	Level 1	
10,025.0	10,022.4	10,022.4	10,022.4	22.4	22.4	-127.31	-0.2	-30.0	38.5	-5.5	0.875	Level 1	
10,050.0	10,045.9	10,045.9	10,045.9	22.4	22.4	-135.31	-0.2	-30.0	44.3	0.9	1.020	Level 2	
10,075.0	10,069.0	10,069.0	10,069.0	22.5	22.5	-142.07	-0.2	-30.0	51.8	9.2	1.216	Level 2	
10,100.0	10,091.5	10,091.5	10,091.5	22.5	22.5	-147.56	-0.2	-30.0	61.0	19.3	1.464	Level 3	
10,125.0	10,113.4	10,113.4	10,113.4	22.6	22.6	-151.93	-0.2	-30.0	71.7	31.1	1.767		
10,150.0	10,134.6	10,134.6	10,134.6	22.6	22.6	-155.38	-0.2	-30.0	83.9	44.5	2.128		
10,175.0	10,155.2	10,155.2	10,155.2	22.7	22.7	-158.10	-0.2	-30.0	97.3	59.2	2.552		
10,200.0	10,174.9	10,174.9	10,174.9	22.8	22.7	-160.24	-0.2	-30.0	112.0	75.2	3.044		
10,225.0	10,193.8	10,193.8	10,193.8	22.8	22.8	-161.92	-0.2	-30.0	127.8	92.5	3.614		
10,250.0	10,211.9	10,211.9	10,211.9	22.9	22.8	-163.23	-0.2	-30.0	144.7	110.8	4.273		
10,275.0	10,229.0	10,229.0	10,229.0	22.9	22.8	-164.24	-0.2	-30.0	162.6	130.3	5.032		
10,300.0	10,245.1	10,245.1	10,245.1	23.0	22.9	-164.98	-0.2	-30.0	181.4	150.7	5.908		
10,325.0	10,260.2	10,260.2	10,260.2	23.1	22.9	-165.50	-0.2	-30.0	201.0	172.0	6.920		
10,350.0	10,274.3	10,274.3	10,274.3	23.2	22.9	-165.80	-0.2	-30.0	221.5	194.1	8.088		
10,375.0	10,287.2	10,287.2	10,287.2	23.3	23.0	-165.89	-0.2	-30.0	242.7	217.0	9.433		
10,400.0	10,299.1	10,299.1	10,299.1	23.4	23.0	-165.75	-0.2	-30.0	264.6	240.5	10.970		
10,425.0	10,309.7	10,309.7	10,309.7	23.5	23.0	-165.35	-0.2	-30.0	287.1	264.4	12.696		
10,450.0	10,319.1	10,319.1	10,319.1	23.6	23.0	-164.62	-0.2	-30.0	310.1	288.8	14.562		
10,475.0	10,327.4	10,327.4	10,327.4	23.7	23.1	-163.46	-0.2	-30.0	333.6	313.3	16.421		
10,500.0	10,334.3	10,334.3	10,334.3	23.8	23.1	-161.64	-0.2	-30.0	357.5	337.6	17.955		
10,525.0	10,340.0	10,340.0	10,340.0	23.9	23.1	-158.76	-0.2	-30.0	381.8	361.3	18.631		
10,550.0	10,344.5	10,344.5	10,344.5	24.1	23.1	-153.92	-0.2	-30.0	406.3	383.5	17.833		
10,575.0	10,347.6	10,347.6	10,347.6	24.2	23.1	-144.91	-0.2	-30.0	431.0	402.8	15.291		
10,600.0	10,349.4	10,349.4	10,349.4	24.3	23.1	-125.54	-0.2	-30.0	455.9	416.9	11.683		
10,625.0	10,350.0	10,350.0	10,350.0	24.5	23.1	-85.22	-0.2	-30.0	480.8	433.1	10.078		
10,700.0	10,349.6	10,349.6	10,349.6	25.0	23.1	-84.48	-0.2	-30.0	555.7	507.5	11.531		
10,800.0	10,349.0	10,349.0	10,349.0	25.7	23.1	-83.49	-0.2	-30.0	655.6	606.7	13.400		
10,900.0	10,348.5	10,348.5	10,348.5	26.6	23.1	-82.51	-0.2	-30.0	755.5	705.7	15.189		
11,000.0	10,348.0	11,750.3	11,107.3	27.5	28.9	-177.93	850.0	-35.0	759.8	746.6	57.474		
11,100.0	10,347.5	11,850.2	11,107.9	28.5	29.9	-177.95	950.0	-35.6	761.0	746.5	52.598		
11,200.0	10,347.0	11,950.2	11,108.6	29.6	30.9	-177.98	1,050.0	-36.2	762.1	746.4	48.377		
11,300.0	10,346.4	12,050.2	11,109.2	30.8	32.0	-178.01	1,150.0	-36.8	763.2	746.2	44.715		
11,400.0	10,345.9	12,150.2	11,109.8	32.1	33.2	-178.03	1,250.0	-37.4	764.4	746.0	41.525		
11,500.0	10,345.4	12,250.2	11,110.5	33.3	34.5	-178.06	1,349.9	-38.0	765.5	745.8	38.731		
11,600.0	10,344.9	12,350.2	11,111.1	34.7	35.7	-178.08	1,449.9	-38.6	766.7	745.5	36.271		
11,700.0	10,344.3	12,450.2	11,111.7	36.1	37.1	-178.11	1,549.9	-39.1	767.8	745.3	34.092		
11,800.0	10,343.8	12,550.2	11,112.3	37.5	38.5	-178.13	1,649.9	-39.7	768.9	745.0	32.152		
11,900.0	10,343.3	12,650.2	11,113.0	38.9	39.9	-178.16	1,749.9	-40.3	770.1	744.8	30.416		
12,000.0	10,342.8	12,750.2	11,113.6	40.4	41.3	-178.18	1,849.9	-40.9	771.2	744.5	28.854		
12,100.0	10,342.3	12,850.2	11,114.2	41.9	42.8	-178.21	1,949.9	-41.5	772.4	744.2	27.444		
12,200.0	10,341.7	12,950.2	11,114.8	43.5	44.3	-178.23	2,049.9	-42.1	773.5	743.9	26.164		
12,300.0	10,341.2	13,050.2	11,115.5	45.0	45.8	-178.26	2,149.9	-42.7	774.6	743.7	24.998		
12,400.0	10,340.7	13,150.2	11,116.1	46.6	47.3	-178.28	2,249.8	-43.3	775.8	743.4	23.931		
12,500.0	10,340.2	13,250.1	11,116.7	48.2	48.9	-178.31	2,349.8	-43.9	776.9	743.1	22.953		
12,600.0	10,339.6	13,350.1	11,117.4	49.8	50.5	-178.33	2,449.8	-44.4	778.1	742.8	22.052		
12,700.0	10,339.1	13,450.1	11,118.0	51.4	52.1	-178.35	2,549.8	-45.0	779.2	742.5	21.220		
12,800.0	10,338.6	13,550.1	11,118.6	53.1	53.7	-178.38	2,649.8	-45.6	780.3	742.2	20.449		
12,900.0	10,338.1	13,650.1	11,119.2	54.7	55.3	-178.40	2,749.8	-46.2	781.5	741.9	19.734		
13,000.0	10,337.5	13,750.1	11,119.9	56.4	56.9	-178.43	2,849.8	-46.8	782.6	741.6	19.068		

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 #8H
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 #8H	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 #4H - Wellbore #1 - Design #1											Offset Site Error:	0.0 usft
Survey Program: 0-MWD default											Offset Well Error:	0.0 usft
Measured Depth (usft)	Reference Vertical Depth (usft)	Measured Depth (usft)	Vertical Offset (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
13,100.0	10,337.0	13,850.1	11,120.5	58.0	58.6	-178.45	2,949.8	-47.4	783.8	741.3	18.447	
13,200.0	10,336.5	13,950.1	11,121.1	59.7	60.3	-178.48	3,049.8	-48.0	784.9	741.0	17.865	
13,300.0	10,336.0	14,050.1	11,121.8	61.4	61.9	-178.50	3,149.8	-48.6	786.1	740.7	17.321	
13,400.0	10,335.5	14,150.1	11,122.4	63.1	63.6	-178.52	3,249.7	-49.2	787.2	740.4	16.810	
13,500.0	10,334.9	14,250.1	11,123.0	64.8	65.3	-178.55	3,349.7	-49.8	788.3	740.1	16.329	
13,600.0	10,334.4	14,350.1	11,123.6	66.5	67.0	-178.57	3,449.7	-50.3	789.5	739.8	15.876	
13,700.0	10,333.9	14,450.1	11,124.3	68.2	68.7	-178.59	3,549.7	-50.9	790.6	739.4	15.448	
13,800.0	10,333.4	14,550.1	11,124.9	69.9	70.4	-178.62	3,649.7	-51.5	791.8	739.1	15.043	
13,900.0	10,332.8	14,650.1	11,125.5	71.7	72.1	-178.64	3,749.7	-52.1	792.9	738.8	14.661	
14,000.0	10,332.3	14,750.0	11,126.1	73.4	73.8	-178.67	3,849.7	-52.7	794.1	738.5	14.298	
14,100.0	10,331.8	14,850.0	11,126.8	75.1	75.5	-178.69	3,949.7	-53.3	795.2	738.2	13.953	
14,200.0	10,331.3	14,950.0	11,127.4	76.9	77.2	-178.71	4,049.7	-53.9	796.3	737.9	13.625	
14,300.0	10,330.8	15,050.0	11,128.0	78.6	79.0	-178.74	4,149.6	-54.5	797.5	737.6	13.314	
14,400.0	10,330.2	15,150.0	11,128.7	80.3	80.7	-178.76	4,249.6	-55.1	798.6	737.3	13.016	
14,500.0	10,329.7	15,250.0	11,129.3	82.1	82.4	-178.78	4,349.6	-55.6	799.8	737.0	12.733	
14,600.0	10,329.2	15,350.0	11,129.9	83.8	84.2	-178.80	4,449.6	-56.2	800.9	736.6	12.462	
14,700.0	10,328.7	15,450.0	11,130.5	85.6	85.9	-178.83	4,549.6	-56.8	802.1	736.3	12.204	
14,800.0	10,328.1	15,550.0	11,131.2	87.4	87.7	-178.85	4,649.6	-57.4	803.2	736.0	11.956	
14,900.0	10,327.6	15,650.0	11,131.8	89.1	89.4	-178.87	4,749.6	-58.0	804.3	735.7	11.719	
15,000.0	10,327.1	15,750.0	11,132.4	90.9	91.2	-178.90	4,849.6	-58.6	805.5	735.4	11.492	
15,100.0	10,326.6	15,850.0	11,133.0	92.7	92.9	-178.92	4,949.6	-59.2	806.6	735.1	11.273	
15,200.0	10,326.1	15,950.0	11,133.7	94.4	94.7	-178.94	5,049.5	-59.8	807.8	734.8	11.064	
15,300.0	10,325.5	16,050.0	11,134.3	96.2	96.4	-178.96	5,149.5	-60.4	808.9	734.5	10.863	
15,400.0	10,325.0	16,149.9	11,134.9	98.0	98.2	-178.99	5,249.5	-61.0	810.1	734.1	10.669	
15,500.0	10,324.5	16,249.9	11,135.6	99.7	100.0	-179.01	5,349.5	-61.5	811.2	733.8	10.483	
15,600.0	10,324.0	16,349.9	11,136.2	101.5	101.7	-179.03	5,449.5	-62.1	812.4	733.5	10.303	
15,700.0	10,323.4	16,449.9	11,136.8	103.3	103.5	-179.05	5,549.5	-62.7	813.5	733.2	10.131	
15,800.0	10,322.9	16,549.9	11,137.4	105.1	105.3	-179.08	5,649.5	-63.3	814.6	732.9	9.964	
15,900.0	10,322.4	16,649.9	11,138.1	106.8	107.1	-179.10	5,749.5	-63.9	815.8	732.6	9.803	
16,000.0	10,321.9	16,749.9	11,138.7	108.6	108.8	-179.12	5,849.5	-64.5	816.9	732.3	9.647	
16,100.0	10,321.3	16,849.9	11,139.3	110.4	110.5	-179.14	5,949.4	-65.1	818.1	731.9	9.497	
16,200.0	10,320.8	16,949.9	11,140.0	112.2	112.4	-179.17	6,049.4	-65.7	819.2	731.6	9.352	
16,300.0	10,320.3	17,049.9	11,140.6	114.0	114.2	-179.19	6,149.4	-66.3	820.4	731.3	9.212	
16,400.0	10,319.8	17,149.9	11,141.2	115.8	115.9	-179.21	6,249.4	-66.9	821.5	731.0	9.076	
16,500.0	10,319.3	17,249.9	11,141.8	117.6	117.7	-179.23	6,349.4	-67.4	822.7	730.7	8.944	
16,600.0	10,318.7	17,349.9	11,142.5	119.3	119.5	-179.25	6,449.4	-68.0	823.8	730.4	8.816	
16,700.0	10,318.2	17,449.9	11,143.1	121.1	121.3	-179.28	6,549.4	-68.6	825.0	730.1	8.693	
16,800.0	10,317.7	17,549.8	11,143.7	122.9	123.1	-179.30	6,649.4	-69.2	826.1	729.7	8.573	
16,900.0	10,317.2	17,649.8	11,144.3	124.7	124.9	-179.32	6,749.4	-69.8	827.3	729.4	8.457	
17,000.0	10,316.6	17,749.8	11,145.0	126.5	126.7	-179.34	6,849.4	-70.4	828.4	729.1	8.344	
17,100.0	10,316.1	17,849.8	11,145.6	128.3	128.4	-179.36	6,949.3	-71.0	829.5	728.8	8.234	
17,200.0	10,315.6	17,949.8	11,146.2	130.1	130.2	-179.38	7,049.3	-71.6	830.7	728.5	8.128	
17,300.0	10,315.1	18,049.8	11,146.9	131.9	132.0	-179.41	7,149.3	-72.2	831.8	728.2	8.024	
17,400.0	10,314.6	18,149.8	11,147.5	133.7	133.8	-179.43	7,249.3	-72.7	833.0	727.9	7.924	
17,500.0	10,314.0	18,249.8	11,148.1	135.5	135.6	-179.45	7,349.3	-73.3	834.1	727.5	7.826	
17,600.0	10,313.5	18,349.8	11,148.7	137.3	137.4	-179.47	7,449.3	-73.9	835.3	727.2	7.730	
17,700.0	10,313.0	18,449.8	11,149.4	139.1	139.2	-179.49	7,549.3	-74.5	836.4	726.9	7.638	
17,800.0	10,312.5	18,549.8	11,150.0	140.9	141.0	-179.51	7,649.3	-75.1	837.6	726.6	7.547	
17,900.0	10,311.9	18,649.8	11,150.6	142.7	142.8	-179.53	7,749.3	-75.7	838.7	726.3	7.459	
18,000.0	10,311.4	18,749.8	11,151.3	144.5	144.6	-179.55	7,849.2	-76.3	839.9	726.0	7.374	
18,100.0	10,310.9	18,849.8	11,151.9	146.3	146.4	-179.57	7,949.2	-76.9	841.0	725.7	7.290	
18,200.0	10,310.4	18,949.7	11,152.5	148.1	148.2	-179.60	8,049.2	-77.5	842.2	725.3	7.209	

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 #8H
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 #8H	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 #4H - 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)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning	
18,300.0	10,309.9	19,049.7	11,153.1	149.9	150.0	-179.62	8,149.2	-78.1	843.3	725.0	7.129		
18,400.0	10,309.3	19,149.7	11,153.8	151.7	151.8	-179.64	8,249.2	-78.6	844.5	724.7	7.052		
18,500.0	10,308.8	19,249.7	11,154.4	153.5	153.6	-179.66	8,349.2	-79.2	845.6	724.4	6.976		
18,600.0	10,308.3	19,349.7	11,155.0	155.3	155.4	-179.68	8,449.2	-79.8	846.8	724.1	6.902		
18,700.0	10,307.8	19,449.7	11,155.6	157.1	157.2	-179.70	8,549.2	-80.4	847.9	723.8	6.830		
18,800.0	10,307.2	19,549.7	11,156.3	158.9	159.0	-179.72	8,649.2	-81.0	849.1	723.5	6.760		
18,900.0	10,306.7	19,649.7	11,156.9	160.7	160.8	-179.74	8,749.1	-81.6	850.2	723.1	6.691		
19,000.0	10,306.2	19,749.7	11,157.5	162.5	162.6	-179.76	8,849.1	-82.2	851.4	722.8	6.624		
19,100.0	10,305.7	19,849.7	11,158.2	164.3	164.4	-179.78	8,949.1	-82.8	852.5	722.5	6.558		
19,200.0	10,305.1	19,949.7	11,158.8	166.1	166.2	-179.80	9,049.1	-83.4	853.7	722.2	6.494		
19,300.0	10,304.6	20,049.7	11,159.4	167.9	168.0	-179.82	9,149.1	-83.9	854.8	721.9	6.431		
19,400.0	10,304.1	20,149.7	11,160.0	169.7	169.8	-179.84	9,249.1	-84.5	856.0	721.6	6.370		
19,500.0	10,303.6	20,249.7	11,160.7	171.6	171.6	-179.86	9,349.1	-85.1	857.1	721.3	6.309		
19,600.0	10,303.1	20,349.6	11,161.3	173.4	173.4	-179.88	9,449.1	-85.7	858.3	720.9	6.250		
19,700.0	10,302.5	20,449.6	11,161.9	175.2	175.2	-179.90	9,549.1	-86.3	859.4	720.6	6.193		
19,800.0	10,302.0	20,549.6	11,162.5	177.0	177.0	-179.92	9,649.0	-86.9	860.6	720.3	6.136		
19,900.0	10,301.5	20,649.6	11,163.2	178.8	178.8	-179.94	9,749.0	-87.5	861.7	720.0	6.081		
20,000.0	10,301.0	20,749.6	11,163.8	180.6	180.6	-179.96	9,849.0	-88.1	862.9	719.7	6.027		
20,100.0	10,300.4	20,849.6	11,164.4	182.4	182.4	-179.98	9,949.0	-88.7	864.0	719.4	5.974		
20,185.1	10,300.0	20,934.7	11,165.0	183.9	184.0	-180.00	10,034.1	-89.2	865.0	719.1	5.929		



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #8H
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 #8H	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)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	2.0	2.0	0.0	0.0	89.54	19.5	2,411.9	2,412.0			
100.0	100.0	102.0	102.0	0.1	0.1	89.54	19.5	2,411.9	2,412.0	2,411.8	N/A	
200.0	200.0	202.0	202.0	0.3	0.3	89.54	19.5	2,411.9	2,412.0	2,411.4	3,959.801	
300.0	300.0	302.0	302.0	0.5	0.5	89.54	19.5	2,411.9	2,412.0	2,410.9	2,278.357	
400.0	400.0	402.0	402.0	0.8	0.8	89.54	19.5	2,411.9	2,412.0	2,410.5	1,599.264	
500.0	500.0	502.0	502.0	1.0	1.0	89.54	19.5	2,411.9	2,412.0	2,410.0	1,232.039	
600.0	600.0	602.0	602.0	1.2	1.2	89.54	19.5	2,411.9	2,412.0	2,409.6	1,001.967	
700.0	700.0	702.0	702.0	1.4	1.4	89.54	19.5	2,411.9	2,412.0	2,409.1	844.301	
800.0	800.0	802.0	802.0	1.7	1.7	89.54	19.5	2,411.9	2,412.0	2,408.7	729.508	
900.0	900.0	902.0	902.0	1.9	1.9	89.54	19.5	2,411.9	2,412.0	2,408.2	642.194	
1,000.0	1,000.0	1,002.0	1,002.0	2.1	2.1	89.54	19.5	2,411.9	2,412.0	2,407.8	573.547	
1,100.0	1,100.0	1,102.0	1,102.0	2.3	2.3	89.54	19.5	2,411.9	2,412.0	2,407.3	518.159	
1,200.0	1,200.0	1,202.0	1,202.0	2.5	2.6	89.54	19.5	2,411.9	2,412.0	2,406.9	472.526	
1,300.0	1,300.0	1,302.0	1,302.0	2.8	2.8	89.54	19.5	2,411.9	2,412.0	2,406.4	434.280	
1,400.0	1,400.0	1,402.0	1,402.0	3.0	3.0	89.54	19.5	2,411.9	2,412.0	2,406.0	401.762	
1,500.0	1,500.0	1,502.0	1,502.0	3.2	3.2	89.54	19.5	2,411.9	2,412.0	2,405.5	373.774	
1,600.0	1,600.0	1,602.0	1,602.0	3.4	3.5	89.54	19.5	2,411.9	2,412.0	2,405.1	349.432	
1,700.0	1,700.0	1,702.0	1,702.0	3.7	3.7	89.54	19.5	2,411.9	2,412.0	2,404.6	328.067	
1,800.0	1,800.0	1,802.0	1,802.0	3.9	3.9	89.54	19.5	2,411.9	2,412.0	2,404.2	309.163	
1,900.0	1,900.0	1,902.0	1,902.0	4.1	4.1	89.54	19.5	2,411.9	2,412.0	2,403.7	292.320	
2,000.0	2,000.0	2,002.0	2,002.0	4.3	4.4	89.54	19.5	2,411.9	2,412.0	2,403.3	277.217	
2,100.0	2,100.0	2,102.0	2,102.0	4.6	4.6	89.54	19.5	2,411.9	2,412.0	2,402.8	263.598	
2,200.0	2,200.0	2,202.0	2,202.0	4.8	4.8	89.54	19.5	2,411.9	2,412.0	2,402.4	251.254	
2,300.0	2,300.0	2,302.0	2,302.0	5.0	5.0	89.54	19.5	2,411.9	2,412.0	2,401.9	240.015	
2,400.0	2,400.0	2,402.0	2,402.0	5.2	5.3	89.54	19.5	2,411.9	2,412.0	2,401.5	229.738	
2,500.0	2,500.0	2,502.0	2,502.0	5.5	5.5	89.54	19.5	2,411.9	2,412.0	2,401.0	220.305	
2,600.0	2,600.0	2,602.0	2,602.0	5.7	5.7	89.54	19.5	2,411.9	2,412.0	2,400.6	211.616	
2,700.0	2,700.0	2,702.0	2,702.0	5.9	5.9	89.54	19.5	2,411.9	2,412.0	2,400.1	203.587	
2,800.0	2,800.0	2,802.0	2,802.0	6.1	6.2	89.54	19.5	2,411.9	2,412.0	2,399.7	196.144	
2,900.0	2,900.0	2,902.0	2,902.0	6.4	6.4	89.54	19.5	2,411.9	2,412.0	2,399.2	189.227	
3,000.0	3,000.0	3,002.0	3,002.0	6.6	6.6	89.54	19.5	2,411.9	2,412.0	2,398.8	182.781	
3,100.0	3,100.0	3,102.0	3,102.0	6.8	6.8	89.54	19.5	2,411.9	2,412.0	2,398.3	176.759	
3,200.0	3,200.0	3,202.0	3,202.0	7.0	7.0	89.54	19.5	2,411.9	2,412.0	2,397.9	171.122	
3,300.0	3,300.0	3,302.0	3,302.0	7.3	7.3	89.54	19.5	2,411.9	2,412.0	2,397.4	165.833	
3,400.0	3,400.0	3,402.0	3,402.0	7.5	7.5	89.54	19.5	2,411.9	2,412.0	2,397.0	160.861	
3,500.0	3,500.0	3,502.0	3,502.0	7.7	7.7	89.54	19.5	2,411.9	2,412.0	2,396.5	156.179	
3,600.0	3,600.0	3,602.0	3,602.0	7.9	7.9	89.54	19.5	2,411.9	2,412.0	2,396.1	151.762	
3,700.0	3,700.0	3,702.0	3,702.0	8.2	8.2	89.54	19.5	2,411.9	2,412.0	2,395.6	147.587	
3,800.0	3,800.0	3,802.0	3,802.0	8.4	8.4	89.54	19.5	2,411.9	2,412.0	2,395.2	143.636	
3,900.0	3,900.0	3,902.0	3,902.0	8.6	8.6	89.54	19.5	2,411.9	2,412.0	2,394.7	139.891	
4,000.0	4,000.0	4,002.0	4,002.0	8.8	8.8	89.54	19.5	2,411.9	2,412.0	2,394.3	136.337	
4,100.0	4,100.0	4,102.0	4,102.0	9.1	9.1	89.54	19.5	2,411.9	2,412.0	2,393.8	132.958	
4,200.0	4,200.0	4,202.0	4,202.0	9.3	9.3	89.54	19.5	2,411.9	2,412.0	2,393.4	129.743	
4,300.0	4,300.0	4,302.0	4,302.0	9.5	9.5	89.54	19.5	2,411.9	2,412.0	2,392.9	126.680	
4,400.0	4,400.0	4,402.0	4,402.0	9.7	9.7	89.54	19.5	2,411.9	2,412.0	2,392.5	123.758	
4,500.0	4,500.0	4,502.0	4,502.0	10.0	10.0	89.54	19.5	2,411.9	2,412.0	2,392.0	120.968	
4,600.0	4,600.0	4,602.0	4,602.0	10.2	10.2	89.54	19.5	2,411.9	2,412.0	2,391.6	118.301	
4,700.0	4,700.0	4,702.0	4,702.0	10.4	10.4	89.54	19.5	2,411.9	2,412.0	2,391.1	115.749	
4,800.0	4,800.0	4,802.0	4,802.0	10.6	10.6	89.54	19.5	2,411.9	2,412.0	2,390.7	113.304	
4,900.0	4,900.0	4,902.0	4,902.0	10.9	10.9	89.54	19.5	2,411.9	2,412.0	2,390.2	110.961	
5,000.0	5,000.0	5,002.0	5,002.0	11.1	11.1	89.54	19.5	2,411.9	2,412.0	2,389.8	108.713	
5,100.0	5,100.0	5,102.0	5,102.0	11.3	11.3	89.54	19.5	2,411.9	2,412.0	2,389.3	106.554	

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 #8H
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 #8H	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)	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	19.5	2,411.9	2,412.0	2,388.9	104.479	
5,300.0	5,300.0	5,302.0	5,302.0	11.8	11.8	89.54	19.5	2,411.9	2,412.0	2,388.4	102.484	
5,400.0	5,400.0	5,402.0	5,402.0	12.0	12.0	89.54	19.5	2,411.9	2,412.0	2,388.0	100.563	
5,500.0	5,500.0	5,502.0	5,502.0	12.2	12.2	89.54	19.5	2,411.9	2,412.0	2,387.5	98.713	
5,600.0	5,600.0	5,602.0	5,602.0	12.4	12.4	89.54	19.5	2,411.9	2,412.0	2,387.1	96.929	
5,700.0	5,700.0	5,702.0	5,702.0	12.7	12.7	89.54	19.5	2,411.9	2,412.0	2,386.6	95.210	
5,800.0	5,800.0	5,802.0	5,802.0	12.9	12.9	89.54	19.5	2,411.9	2,412.0	2,386.2	93.550	
5,900.0	5,900.0	5,902.0	5,902.0	13.1	13.1	89.54	19.5	2,411.9	2,412.0	2,385.7	91.946	
6,000.0	6,000.0	6,002.0	6,002.0	13.3	13.3	89.54	19.5	2,411.9	2,412.0	2,385.3	90.397	
6,100.0	6,100.0	6,102.0	6,102.0	13.6	13.6	89.54	19.5	2,411.9	2,412.0	2,384.8	88.900	
6,200.0	6,200.0	6,202.0	6,202.0	13.8	13.8	89.54	19.5	2,411.9	2,412.0	2,384.4	87.451	
6,300.0	6,300.0	6,302.0	6,302.0	14.0	14.0	89.54	19.5	2,411.9	2,412.0	2,383.9	86.048	
6,400.0	6,400.0	6,402.0	6,402.0	14.2	14.2	89.54	19.5	2,411.9	2,412.0	2,383.5	84.690	
6,500.0	6,500.0	6,502.0	6,502.0	14.5	14.5	89.54	19.5	2,411.9	2,412.0	2,383.0	83.374	
6,600.0	6,600.0	6,602.0	6,602.0	14.7	14.7	89.54	19.5	2,411.9	2,412.0	2,382.6	82.098	
6,700.0	6,700.0	6,702.0	6,702.0	14.9	14.9	89.54	19.5	2,411.9	2,412.0	2,382.2	80.861	
6,800.0	6,800.0	6,802.0	6,802.0	15.1	15.1	89.54	19.5	2,411.9	2,412.0	2,381.7	79.660	
6,900.0	6,900.0	6,902.0	6,902.0	15.4	15.4	89.54	19.5	2,411.9	2,412.0	2,381.3	78.495	
7,000.0	7,000.0	7,002.0	7,002.0	15.6	15.6	89.54	19.5	2,411.9	2,412.0	2,380.8	77.363	
7,100.0	7,100.0	7,102.0	7,102.0	15.8	15.8	89.54	19.5	2,411.9	2,412.0	2,380.4	76.264	
7,200.0	7,200.0	7,202.0	7,202.0	16.0	16.0	89.54	19.5	2,411.9	2,412.0	2,379.9	75.195	
7,300.0	7,300.0	7,302.0	7,302.0	16.3	16.3	89.54	19.5	2,411.9	2,412.0	2,379.5	74.156	
7,400.0	7,400.0	7,402.0	7,402.0	16.5	16.5	89.54	19.5	2,411.9	2,412.0	2,379.0	73.145	
7,500.0	7,500.0	7,502.0	7,502.0	16.7	16.7	89.54	19.5	2,411.9	2,412.0	2,378.6	72.161	
7,600.0	7,600.0	7,602.0	7,602.0	16.9	16.9	89.54	19.5	2,411.9	2,412.0	2,378.1	71.203	
7,700.0	7,700.0	7,702.0	7,702.0	17.2	17.2	89.54	19.5	2,411.9	2,412.0	2,377.7	70.271	
7,800.0	7,800.0	7,802.0	7,802.0	17.4	17.4	89.54	19.5	2,411.9	2,412.0	2,377.2	69.362	
7,900.0	7,900.0	7,902.0	7,902.0	17.6	17.6	89.54	19.5	2,411.9	2,412.0	2,376.8	68.477	
8,000.0	8,000.0	8,002.0	8,002.0	17.8	17.8	89.54	19.5	2,411.9	2,412.0	2,376.3	67.614	
8,100.0	8,100.0	8,102.0	8,102.0	18.1	18.1	89.54	19.5	2,411.9	2,412.0	2,375.9	66.773	
8,200.0	8,200.0	8,202.0	8,202.0	18.3	18.3	89.54	19.5	2,411.9	2,412.0	2,375.4	65.952	
8,300.0	8,300.0	8,302.0	8,302.0	18.5	18.5	89.54	19.5	2,411.9	2,412.0	2,375.0	65.151	
8,400.0	8,400.0	8,402.0	8,402.0	18.7	18.7	89.54	19.5	2,411.9	2,412.0	2,374.5	64.370	
8,500.0	8,500.0	8,502.0	8,502.0	19.0	19.0	89.54	19.5	2,411.9	2,412.0	2,374.1	63.607	
8,600.0	8,600.0	8,602.0	8,602.0	19.2	19.2	89.54	19.5	2,411.9	2,412.0	2,373.6	62.861	
8,700.0	8,700.0	8,702.0	8,702.0	19.4	19.4	89.54	19.5	2,411.9	2,412.0	2,373.2	62.133	
8,800.0	8,800.0	8,802.0	8,802.0	19.6	19.6	89.54	19.5	2,411.9	2,412.0	2,372.7	61.422	
8,900.0	8,900.0	8,902.0	8,902.0	19.9	19.9	89.54	19.5	2,411.9	2,412.0	2,372.3	60.727	
9,000.0	9,000.0	9,002.0	9,002.0	20.1	20.1	89.54	19.5	2,411.9	2,412.0	2,371.8	60.047	
9,100.0	9,100.0	9,102.0	9,102.0	20.3	20.3	89.54	19.5	2,411.9	2,412.0	2,371.4	59.383	
9,200.0	9,200.0	9,202.0	9,202.0	20.5	20.5	89.54	19.5	2,411.9	2,412.0	2,370.9	58.733	
9,300.0	9,300.0	9,302.0	9,302.0	20.8	20.8	89.54	19.5	2,411.9	2,412.0	2,370.5	58.097	
9,400.0	9,400.0	9,402.0	9,402.0	21.0	21.0	89.54	19.5	2,411.9	2,412.0	2,370.0	57.475	
9,500.0	9,500.0	9,502.0	9,502.0	21.2	21.2	89.54	19.5	2,411.9	2,412.0	2,369.6	56.865	
9,600.0	9,600.0	9,602.0	9,602.0	21.4	21.4	89.54	19.5	2,411.9	2,412.0	2,369.1	56.269	
9,700.0	9,700.0	9,702.0	9,702.0	21.7	21.7	89.54	19.5	2,411.9	2,412.0	2,368.7	55.685	
9,800.0	9,800.0	9,802.0	9,802.0	21.9	21.9	89.54	19.5	2,411.9	2,412.0	2,368.2	55.113	
9,872.5	9,872.5	9,874.5	9,874.5	22.0	22.0	89.54	19.5	2,411.9	2,412.0	2,367.9	54.706 CC	
9,875.0	9,875.0	9,877.0	9,877.0	22.0	22.1	90.05	19.5	2,411.9	2,412.0	2,367.9	54.692	
9,900.0	9,900.0	9,902.0	9,902.0	22.1	22.1	90.06	19.5	2,411.9	2,412.0	2,367.8	54.553	
9,925.0	9,924.9	9,926.9	9,926.9	22.2	22.2	90.11	19.5	2,411.9	2,412.0	2,367.7	54.417	
9,950.0	9,949.7	9,951.1	9,951.1	22.2	22.2	90.18	19.9	2,411.9	2,412.0	2,367.6	54.284	

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 #8H
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 #8H	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 Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
9,975.0	9,974.2	9,975.0	9,974.9	22.3	22.3	90.25	21.4	2,411.9	2,412.0	2,367.5	54.156		
10,000.0	9,998.5	9,999.5	9,999.3	22.3	22.3	90.32	24.2	2,411.9	2,412.1	2,367.4	54.028		
10,025.0	10,022.4	10,024.0	10,023.4	22.4	22.4	90.38	28.2	2,411.9	2,412.1	2,367.4	53.903		
10,050.0	10,045.9	10,048.6	10,047.4	22.4	22.4	90.45	33.5	2,411.9	2,412.2	2,367.3	53.779		
10,075.0	10,069.0	10,073.3	10,071.3	22.5	22.5	90.51	40.1	2,411.9	2,412.3	2,367.3	53.657		
10,100.0	10,091.5	10,098.3	10,095.0	22.5	22.5	90.58	48.0	2,411.9	2,412.4	2,367.3	53.535		
10,125.0	10,113.4	10,123.4	10,118.3	22.6	22.6	90.64	57.1	2,411.9	2,412.5	2,367.3	53.413		
10,150.0	10,134.6	10,148.6	10,141.3	22.6	22.6	90.70	67.5	2,411.9	2,412.6	2,367.4	53.290		
10,175.0	10,155.2	10,174.1	10,163.9	22.7	22.7	90.76	79.3	2,411.9	2,412.8	2,367.4	53.164		
10,200.0	10,174.9	10,199.7	10,186.0	22.8	22.7	90.82	92.3	2,411.9	2,413.0	2,367.5	53.035		
10,225.0	10,193.8	10,225.5	10,207.5	22.8	22.8	90.87	106.6	2,411.9	2,413.1	2,367.5	52.901		
10,250.0	10,211.9	10,251.5	10,228.3	22.9	22.9	90.93	122.1	2,411.9	2,413.3	2,367.6	52.762		
10,275.0	10,229.0	10,277.7	10,248.4	22.9	22.9	90.98	138.9	2,412.0	2,413.5	2,367.7	52.616		
10,300.0	10,245.1	10,304.1	10,267.7	23.0	23.0	91.03	156.9	2,412.0	2,413.7	2,367.7	52.462		
10,325.0	10,260.2	10,330.6	10,286.1	23.1	23.1	91.07	176.0	2,412.0	2,414.0	2,367.8	52.298		
10,350.0	10,274.3	10,357.3	10,303.5	23.2	23.1	91.12	196.3	2,412.0	2,414.2	2,367.9	52.125		
10,375.0	10,287.2	10,384.2	10,319.8	23.3	23.2	91.16	217.7	2,412.0	2,414.4	2,368.0	51.940		
10,400.0	10,299.1	10,411.3	10,335.1	23.4	23.3	91.19	240.1	2,412.0	2,414.7	2,368.0	51.743		
10,425.0	10,309.7	10,438.6	10,349.1	23.5	23.4	91.23	263.4	2,412.0	2,414.9	2,368.1	51.534		
10,450.0	10,319.1	10,466.0	10,361.8	23.6	23.5	91.26	287.7	2,412.0	2,415.2	2,368.1	51.311		
10,475.0	10,327.4	10,493.6	10,373.1	23.7	23.6	91.28	312.8	2,412.0	2,415.5	2,368.2	51.076		
10,500.0	10,334.3	10,521.3	10,383.1	23.8	23.7	91.31	338.7	2,412.1	2,415.7	2,368.2	50.827		
10,525.0	10,340.0	10,549.2	10,391.5	23.9	23.9	91.33	365.3	2,412.1	2,416.0	2,368.2	50.565		
10,550.0	10,344.5	10,577.2	10,398.5	24.1	24.0	91.34	392.4	2,412.1	2,416.3	2,368.2	50.290		
10,575.0	10,347.6	10,605.3	10,403.8	24.2	24.2	91.35	420.0	2,412.1	2,416.5	2,368.2	50.003		
10,600.0	10,349.4	10,633.6	10,407.5	24.3	24.3	91.36	448.0	2,412.1	2,416.8	2,368.2	49.705		
10,625.0	10,350.0	10,661.9	10,409.6	24.5	24.5	91.36	476.3	2,412.1	2,417.1	2,368.1	49.398		
10,700.0	10,349.6	10,740.2	10,409.3	25.0	25.0	91.37	554.6	2,412.2	2,417.8	2,367.9	48.439		
10,800.0	10,349.0	10,840.2	10,407.9	25.7	25.7	91.34	654.6	2,412.2	2,418.7	2,367.3	47.075		
10,900.0	10,348.5	10,940.2	10,406.5	26.6	26.5	91.32	754.5	2,412.3	2,419.6	2,366.6	45.605		
11,000.0	10,348.0	11,040.2	10,405.1	27.5	27.4	91.30	854.5	2,412.3	2,420.5	2,365.6	44.071		
11,100.0	10,347.5	11,140.2	10,403.7	28.5	28.4	91.28	954.5	2,412.4	2,421.4	2,364.5	42.509		
11,200.0	10,347.0	11,240.2	10,402.3	29.6	29.5	91.26	1,054.5	2,412.4	2,422.4	2,363.2	40.948		
11,300.0	10,346.4	11,340.2	10,400.9	30.8	30.7	91.24	1,154.5	2,412.4	2,423.3	2,361.8	39.410		
11,400.0	10,345.9	11,440.2	10,399.5	32.1	31.9	91.22	1,254.5	2,412.5	2,424.2	2,360.3	37.911		
11,500.0	10,345.4	11,540.2	10,398.1	33.3	33.2	91.20	1,354.4	2,412.5	2,425.1	2,358.6	36.463		
11,600.0	10,344.9	11,640.2	10,396.7	34.7	34.5	91.17	1,454.4	2,412.6	2,426.0	2,356.9	35.073		
11,700.0	10,344.3	11,740.1	10,395.3	36.1	35.9	91.15	1,554.4	2,412.6	2,426.9	2,355.0	33.745		
11,800.0	10,343.8	11,840.1	10,393.9	37.5	37.3	91.13	1,654.4	2,412.7	2,427.9	2,353.1	32.482		
11,900.0	10,343.3	11,940.1	10,392.5	38.9	38.7	91.11	1,754.4	2,412.7	2,428.8	2,351.1	31.283		
12,000.0	10,342.8	12,040.1	10,391.1	40.4	40.2	91.09	1,854.3	2,412.8	2,429.7	2,349.1	30.148		
12,100.0	10,342.3	12,140.1	10,389.7	41.9	41.7	91.07	1,954.3	2,412.8	2,430.6	2,347.0	29.073		
12,200.0	10,341.7	12,240.1	10,388.3	43.5	43.2	91.05	2,054.3	2,412.9	2,431.5	2,344.9	28.058		
12,300.0	10,341.2	12,340.1	10,386.9	45.0	44.8	91.03	2,154.3	2,412.9	2,432.5	2,342.7	27.099		
12,400.0	10,340.7	12,440.1	10,385.5	46.6	46.3	91.00	2,254.3	2,413.0	2,433.4	2,340.5	26.192		
12,500.0	10,340.2	12,540.1	10,384.0	48.2	47.9	90.98	2,354.3	2,413.0	2,434.3	2,338.2	25.335		
12,600.0	10,339.6	12,640.1	10,382.6	49.8	49.5	90.96	2,454.2	2,413.1	2,435.2	2,335.9	24.526		
12,700.0	10,339.1	12,740.1	10,381.2	51.4	51.1	90.94	2,554.2	2,413.1	2,436.2	2,333.6	23.760		
12,800.0	10,338.6	12,840.1	10,379.8	53.1	52.8	90.92	2,654.2	2,413.2	2,437.1	2,331.3	23.035		
12,900.0	10,338.1	12,940.0	10,378.4	54.7	54.4	90.90	2,754.2	2,413.2	2,438.0	2,328.9	22.349		
13,000.0	10,337.5	13,040.0	10,377.0	56.4	56.0	90.88	2,854.2	2,413.3	2,438.9	2,326.5	21.699		
13,100.0	10,337.0	13,140.0	10,375.6	58.0	57.7	90.86	2,954.1	2,413.3	2,439.8	2,324.1	21.082		

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 #8H
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 #8H	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	
13,200.0	10,336.5	13,240.0	10,374.2	59.7	59.4	90.84	3,054.1	2,413.4	2,440.8	2,321.7	20.497		
13,300.0	10,336.0	13,340.0	10,372.8	61.4	61.1	90.81	3,154.1	2,413.4	2,441.7	2,319.2	19.940		
13,400.0	10,335.5	13,440.0	10,371.4	63.1	62.8	90.79	3,254.1	2,413.5	2,442.6	2,316.8	19.412		
13,500.0	10,334.9	13,540.0	10,370.0	64.8	64.4	90.77	3,354.1	2,413.5	2,443.5	2,314.3	18.909		
13,600.0	10,334.4	13,640.0	10,368.6	66.5	66.2	90.75	3,454.1	2,413.6	2,444.5	2,311.8	18.429		
13,700.0	10,333.9	13,740.0	10,367.2	68.2	67.9	90.73	3,554.0	2,413.6	2,445.4	2,309.3	17.973		
13,800.0	10,333.4	13,840.0	10,365.8	69.9	69.6	90.71	3,654.0	2,413.7	2,446.3	2,306.8	17.537		
13,900.0	10,332.8	13,940.0	10,364.4	71.7	71.3	90.69	3,754.0	2,413.7	2,447.2	2,304.3	17.121		
14,000.0	10,332.3	14,040.0	10,363.0	73.4	73.0	90.67	3,854.0	2,413.8	2,448.2	2,301.8	16.723		
14,100.0	10,331.8	14,139.9	10,361.6	75.1	74.8	90.65	3,954.0	2,413.8	2,449.1	2,299.2	16.343		
14,200.0	10,331.3	14,239.9	10,360.2	76.9	76.5	90.63	4,054.0	2,413.8	2,450.0	2,296.7	15.979		
14,300.0	10,330.8	14,339.9	10,358.8	78.6	78.2	90.61	4,153.9	2,413.9	2,451.0	2,294.1	15.630		
14,400.0	10,330.2	14,439.9	10,357.4	80.3	80.0	90.59	4,253.9	2,413.9	2,451.9	2,291.6	15.296		
14,500.0	10,329.7	14,539.9	10,356.0	82.1	81.7	90.56	4,353.9	2,414.0	2,452.8	2,289.0	14.975		
14,600.0	10,329.2	14,639.9	10,354.6	83.8	83.5	90.54	4,453.9	2,414.0	2,453.7	2,286.4	14.667		
14,700.0	10,328.7	14,739.9	10,353.2	85.6	85.2	90.52	4,553.9	2,414.1	2,454.7	2,283.9	14.371		
14,800.0	10,328.1	14,839.9	10,351.8	87.4	87.0	90.50	4,653.8	2,414.1	2,455.6	2,281.3	14.087		
14,900.0	10,327.6	14,939.9	10,350.4	89.1	88.7	90.48	4,753.8	2,414.2	2,456.5	2,278.7	13.814		
15,000.0	10,327.1	14,966.6	10,350.0	90.9	89.2	90.48	4,780.5	2,414.2	2,458.5	2,278.5	13.654 ES		
15,100.0	10,326.6	14,966.6	10,350.0	92.7	89.2	90.48	4,780.5	2,414.2	2,464.5	2,282.7	13.554		
15,200.0	10,326.1	14,966.6	10,350.0	94.4	89.2	90.48	4,780.5	2,414.2	2,474.4	2,290.9	13.478		
15,300.0	10,325.5	14,966.6	10,350.0	96.2	89.2	90.48	4,780.5	2,414.2	2,488.4	2,303.0	13.424		
15,400.0	10,325.0	14,966.6	10,350.0	98.0	89.2	90.48	4,780.5	2,414.2	2,506.3	2,319.1	13.393		
15,500.0	10,324.5	14,966.6	10,350.0	99.7	89.2	90.48	4,780.5	2,414.2	2,528.0	2,339.0	13.382 SF		
15,600.0	10,324.0	14,966.6	10,350.0	101.5	89.2	90.48	4,780.5	2,414.2	2,553.4	2,362.7	13.390		
15,700.0	10,323.4	14,966.6	10,350.0	103.3	89.2	90.48	4,780.5	2,414.2	2,582.4	2,390.0	13.418		
15,800.0	10,322.9	14,966.6	10,350.0	105.1	89.2	90.48	4,780.5	2,414.2	2,615.0	2,420.8	13.462		
15,900.0	10,322.4	14,966.6	10,350.0	106.8	89.2	90.48	4,780.5	2,414.2	2,650.9	2,454.9	13.524		
16,000.0	10,321.9	14,966.6	10,350.0	108.6	89.2	90.48	4,780.5	2,414.2	2,690.1	2,492.3	13.600		
16,100.0	10,321.3	14,966.6	10,350.0	110.4	89.2	90.48	4,780.5	2,414.2	2,732.4	2,532.8	13.690		
16,200.0	10,320.8	14,966.6	10,350.0	112.2	89.2	90.48	4,780.5	2,414.2	2,777.6	2,576.3	13.793		
16,300.0	10,320.3	14,966.6	10,350.0	114.0	89.2	90.48	4,780.5	2,414.2	2,825.7	2,622.5	13.909		
16,400.0	10,319.8	14,966.6	10,350.0	115.8	89.2	90.48	4,780.5	2,414.2	2,876.4	2,671.4	14.035		
16,500.0	10,319.3	14,966.6	10,350.0	117.6	89.2	90.48	4,780.5	2,414.2	2,929.7	2,722.9	14.171		
16,600.0	10,318.7	14,966.6	10,350.0	119.3	89.2	90.48	4,780.5	2,414.2	2,985.3	2,776.8	14.316		
16,700.0	10,318.2	14,966.6	10,350.0	121.1	89.2	90.48	4,780.5	2,414.2	3,043.2	2,832.9	14.470		
16,800.0	10,317.7	14,966.6	10,350.0	122.9	89.2	90.48	4,780.5	2,414.2	3,103.3	2,891.2	14.631		
16,900.0	10,317.2	14,966.6	10,350.0	124.7	89.2	90.48	4,780.5	2,414.2	3,165.4	2,951.5	14.799		
17,000.0	10,316.6	14,966.6	10,350.0	126.5	89.2	90.48	4,780.5	2,414.2	3,229.4	3,013.7	14.972		
17,100.0	10,316.1	14,966.6	10,350.0	128.3	89.2	90.48	4,780.5	2,414.2	3,295.2	3,077.7	15.151		
17,200.0	10,315.6	14,966.6	10,350.0	130.1	89.2	90.48	4,780.5	2,414.2	3,362.7	3,143.4	15.335		
17,300.0	10,315.1	14,966.6	10,350.0	131.9	89.2	90.48	4,780.5	2,414.2	3,431.7	3,210.6	15.523		
17,400.0	10,314.6	14,966.6	10,350.0	133.7	89.2	90.48	4,780.5	2,414.2	3,502.3	3,279.4	15.714		
17,500.0	10,314.0	14,966.6	10,350.0	135.5	89.2	90.48	4,780.5	2,414.2	3,574.2	3,349.6	15.909		
17,600.0	10,313.5	14,966.6	10,350.0	137.3	89.2	90.48	4,780.5	2,414.2	3,647.5	3,421.1	16.106		
17,700.0	10,313.0	14,966.6	10,350.0	139.1	89.2	90.48	4,780.5	2,414.2	3,722.0	3,493.8	16.306		
17,800.0	10,312.5	14,966.6	10,350.0	140.9	89.2	90.48	4,780.5	2,414.2	3,797.7	3,567.7	16.507		
17,900.0	10,311.9	14,966.6	10,350.0	142.7	89.2	90.48	4,780.5	2,414.2	3,874.5	3,642.7	16.710		
18,000.0	10,311.4	14,966.6	10,350.0	144.5	89.2	90.48	4,780.5	2,414.2	3,952.4	3,718.7	16.915		
18,100.0	10,310.9	14,966.6	10,350.0	146.3	89.2	90.48	4,780.5	2,414.2	4,031.2	3,795.7	17.120		
18,200.0	10,310.4	14,966.6	10,350.0	148.1	89.2	90.48	4,780.5	2,414.2	4,110.9	3,873.7	17.326		
18,300.0	10,309.9	14,966.6	10,350.0	149.9	89.2	90.48	4,780.5	2,414.2	4,191.5	3,952.5	17.533		

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 #8H
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 #8H	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 Toolface (°)	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning	
18,400.0	10,309.3	14,966.6	10,350.0	151.7	89.2	90.48	4,780.5	2,414.2	4,273.0	4,032.1	17.740		
18,500.0	10,308.8	14,966.6	10,350.0	153.5	89.2	90.48	4,780.5	2,414.2	4,355.2	4,112.5	17.946		
18,600.0	10,308.3	14,966.6	10,350.0	155.3	89.2	90.48	4,780.5	2,414.2	4,438.1	4,193.6	18.153		
18,700.0	10,307.8	14,966.6	10,350.0	157.1	89.2	90.48	4,780.5	2,414.2	4,521.7	4,275.4	18.360		
18,800.0	10,307.2	14,966.6	10,350.0	158.9	89.2	90.48	4,780.5	2,414.2	4,606.0	4,357.9	18.566		
18,900.0	10,306.7	14,966.6	10,350.0	160.7	89.2	90.48	4,780.5	2,414.2	4,690.9	4,441.0	18.772		
19,000.0	10,306.2	14,966.6	10,350.0	162.5	89.2	90.48	4,780.5	2,414.2	4,776.4	4,524.7	18.977		
19,100.0	10,305.7	14,966.6	10,350.0	164.3	89.2	90.48	4,780.5	2,414.2	4,862.4	4,608.9	19.181		
19,200.0	10,305.1	14,966.6	10,350.0	166.1	89.2	90.48	4,780.5	2,414.2	4,948.9	4,693.6	19.384		
19,300.0	10,304.6	14,966.6	10,350.0	167.9	89.2	90.48	4,780.5	2,414.2	5,036.0	4,778.9	19.586		
19,400.0	10,304.1	14,966.6	10,350.0	169.7	89.2	90.48	4,780.5	2,414.2	5,123.5	4,864.6	19.788		
19,500.0	10,303.6	14,966.6	10,350.0	171.6	89.2	90.48	4,780.5	2,414.2	5,211.5	4,950.8	19.988		
19,600.0	10,303.1	14,966.6	10,350.0	173.4	89.2	90.48	4,780.5	2,414.2	5,299.9	5,037.4	20.187		
19,700.0	10,302.5	14,966.6	10,350.0	175.2	89.2	90.48	4,780.5	2,414.2	5,388.7	5,124.4	20.385		
19,800.0	10,302.0	14,966.6	10,350.0	177.0	89.2	90.48	4,780.5	2,414.2	5,477.9	5,211.8	20.582		
19,900.0	10,301.5	14,966.6	10,350.0	178.8	89.2	90.48	4,780.5	2,414.2	5,567.5	5,299.5	20.777		
20,000.0	10,301.0	14,966.6	10,350.0	180.6	89.2	90.48	4,780.5	2,414.2	5,657.4	5,387.6	20.971		
20,100.0	10,300.4	14,966.6	10,350.0	182.4	89.2	90.48	4,780.5	2,414.2	5,747.6	5,476.0	21.163		
20,185.1	10,300.0	14,966.6	10,350.0	183.9	89.2	90.48	4,780.5	2,414.2	5,824.6	5,551.5	21.326		



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #8H
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 #8H	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 #7H - 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
0.0	0.0	0.0	0.0	0.0	0.0	89.54	10.6	1,319.7	1,319.7			
100.0	100.0	99.0	99.0	0.1	0.1	89.54	10.6	1,319.7	1,319.7	1,319.6	8,552.356	
200.0	200.0	199.0	199.0	0.3	0.3	89.54	10.6	1,319.7	1,319.7	1,319.1	2,190.905	
300.0	300.0	299.0	299.0	0.5	0.5	89.54	10.6	1,319.7	1,319.7	1,318.7	1,254.621	
400.0	400.0	399.0	399.0	0.8	0.7	89.54	10.6	1,319.7	1,319.7	1,318.2	878.986	
500.0	500.0	499.0	499.0	1.0	1.0	89.54	10.6	1,319.7	1,319.7	1,317.8	676.455	
600.0	600.0	599.0	599.0	1.2	1.2	89.54	10.6	1,319.7	1,319.7	1,317.3	549.778	
700.0	700.0	699.0	699.0	1.4	1.4	89.54	10.6	1,319.7	1,319.7	1,316.9	463.062	
800.0	800.0	799.0	799.0	1.7	1.6	89.54	10.6	1,319.7	1,319.7	1,316.4	399.975	
900.0	900.0	899.0	899.0	1.9	1.9	89.54	10.6	1,319.7	1,319.7	1,316.0	352.016	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	89.54	10.6	1,319.7	1,319.7	1,315.5	314.327	
1,100.0	1,100.0	1,099.0	1,099.0	2.3	2.3	89.54	10.6	1,319.7	1,319.7	1,315.1	283.928	
1,200.0	1,200.0	1,199.0	1,199.0	2.5	2.5	89.54	10.6	1,319.7	1,319.7	1,314.6	258.890	
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	89.54	10.6	1,319.7	1,319.7	1,314.2	237.910	
1,400.0	1,400.0	1,399.0	1,399.0	3.0	3.0	89.54	10.6	1,319.7	1,319.7	1,313.7	220.076	
1,500.0	1,500.0	1,499.0	1,499.0	3.2	3.2	89.54	10.6	1,319.7	1,319.7	1,313.3	204.729	
1,600.0	1,600.0	1,599.0	1,599.0	3.4	3.4	89.54	10.6	1,319.7	1,319.7	1,312.8	191.383	
1,700.0	1,700.0	1,699.0	1,699.0	3.7	3.7	89.54	10.6	1,319.7	1,319.7	1,312.4	179.670	
1,800.0	1,800.0	1,799.0	1,799.0	3.9	3.9	89.54	10.6	1,319.7	1,319.7	1,311.9	169.309	
1,900.0	1,900.0	1,899.0	1,899.0	4.1	4.1	89.54	10.6	1,319.7	1,319.7	1,311.5	160.077	
2,000.0	2,000.0	1,999.0	1,999.0	4.3	4.3	89.54	10.6	1,319.7	1,319.7	1,311.0	151.800	
2,100.0	2,100.0	2,099.0	2,099.0	4.6	4.6	89.54	10.6	1,319.7	1,319.7	1,310.6	144.337	
2,200.0	2,200.0	2,199.0	2,199.0	4.8	4.8	89.54	10.6	1,319.7	1,319.7	1,310.1	137.573	
2,300.0	2,300.0	2,299.0	2,299.0	5.0	5.0	89.54	10.6	1,319.7	1,319.7	1,309.7	131.415	
2,400.0	2,400.0	2,399.0	2,399.0	5.2	5.2	89.54	10.6	1,319.7	1,319.7	1,309.3	125.785	
2,500.0	2,500.0	2,499.0	2,499.0	5.5	5.5	89.54	10.6	1,319.7	1,319.7	1,308.8	120.617	
2,600.0	2,600.0	2,599.0	2,599.0	5.7	5.7	89.54	10.6	1,319.7	1,319.7	1,308.4	115.857	
2,700.0	2,700.0	2,699.0	2,699.0	5.9	5.9	89.54	10.6	1,319.7	1,319.7	1,307.9	111.458	
2,800.0	2,800.0	2,799.0	2,799.0	6.1	6.1	89.54	10.6	1,319.7	1,319.7	1,307.5	107.382	
2,900.0	2,900.0	2,899.0	2,899.0	6.4	6.4	89.54	10.6	1,319.7	1,319.7	1,307.0	103.593	
3,000.0	3,000.0	2,999.0	2,999.0	6.6	6.6	89.54	10.6	1,319.7	1,319.7	1,306.6	100.062	
3,100.0	3,100.0	3,099.0	3,099.0	6.8	6.8	89.54	10.6	1,319.7	1,319.7	1,306.1	96.764	
3,200.0	3,200.0	3,199.0	3,199.0	7.0	7.0	89.54	10.6	1,319.7	1,319.7	1,305.7	93.676	
3,300.0	3,300.0	3,299.0	3,299.0	7.3	7.3	89.54	10.6	1,319.7	1,319.7	1,305.2	90.780	
3,400.0	3,400.0	3,399.0	3,399.0	7.5	7.5	89.54	10.6	1,319.7	1,319.7	1,304.8	88.057	
3,500.0	3,500.0	3,499.0	3,499.0	7.7	7.7	89.54	10.6	1,319.7	1,319.7	1,304.3	85.493	
3,600.0	3,600.0	3,599.0	3,599.0	7.9	7.9	89.54	10.6	1,319.7	1,319.7	1,303.9	83.073	
3,700.0	3,700.0	3,699.0	3,699.0	8.2	8.2	89.54	10.6	1,319.7	1,319.7	1,303.4	80.787	
3,800.0	3,800.0	3,799.0	3,799.0	8.4	8.4	89.54	10.6	1,319.7	1,319.7	1,303.0	78.624	
3,900.0	3,900.0	3,899.0	3,899.0	8.6	8.6	89.54	10.6	1,319.7	1,319.7	1,302.5	76.573	
4,000.0	4,000.0	3,999.0	3,999.0	8.8	8.8	89.54	10.6	1,319.7	1,319.7	1,302.1	74.627	
4,100.0	4,100.0	4,099.0	4,099.0	9.1	9.1	89.54	10.6	1,319.7	1,319.7	1,301.6	72.777	
4,200.0	4,200.0	4,199.0	4,199.0	9.3	9.3	89.54	10.6	1,319.7	1,319.7	1,301.2	71.016	
4,300.0	4,300.0	4,299.0	4,299.0	9.5	9.5	89.54	10.6	1,319.7	1,319.7	1,300.7	69.339	
4,400.0	4,400.0	4,399.0	4,399.0	9.7	9.7	89.54	10.6	1,319.7	1,319.7	1,300.3	67.739	
4,500.0	4,500.0	4,499.0	4,499.0	10.0	10.0	89.54	10.6	1,319.7	1,319.7	1,299.8	66.211	
4,600.0	4,600.0	4,599.0	4,599.0	10.2	10.2	89.54	10.6	1,319.7	1,319.7	1,299.4	64.751	
4,700.0	4,700.0	4,699.0	4,699.0	10.4	10.4	89.54	10.6	1,319.7	1,319.7	1,298.9	63.354	
4,800.0	4,800.0	4,799.0	4,799.0	10.6	10.6	89.54	10.6	1,319.7	1,319.7	1,298.5	62.016	
4,900.0	4,900.0	4,899.0	4,899.0	10.9	10.9	89.54	10.6	1,319.7	1,319.7	1,298.0	60.733	
5,000.0	5,000.0	4,999.0	4,999.0	11.1	11.1	89.54	10.6	1,319.7	1,319.7	1,297.6	59.502	
5,100.0	5,100.0	5,099.0	5,099.0	11.3	11.3	89.54	10.6	1,319.7	1,319.7	1,297.1	58.320	

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 #8H
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 #8H	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:
Sec 27, T22S, R34E - Squints Federal Com #7H - Wellbore #1 - Design #1												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)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
5,200.0	5,200.0	5,199.0	5,199.0	11.5	11.5	89.54	10.6	1,319.7	1,319.7	1,296.7	57.184	
5,300.0	5,300.0	5,299.0	5,299.0	11.8	11.8	89.54	10.6	1,319.7	1,319.7	1,296.2	56.091	
5,400.0	5,400.0	5,399.0	5,399.0	12.0	12.0	89.54	10.6	1,319.7	1,319.7	1,295.8	55.040	
5,500.0	5,500.0	5,499.0	5,499.0	12.2	12.2	89.54	10.6	1,319.7	1,319.7	1,295.3	54.027	
5,600.0	5,600.0	5,599.0	5,599.0	12.4	12.4	89.54	10.6	1,319.7	1,319.7	1,294.9	53.050	
5,700.0	5,700.0	5,699.0	5,699.0	12.7	12.7	89.54	10.6	1,319.7	1,319.7	1,294.4	52.109	
5,800.0	5,800.0	5,799.0	5,799.0	12.9	12.9	89.54	10.6	1,319.7	1,319.7	1,294.0	51.200	
5,900.0	5,900.0	5,899.0	5,899.0	13.1	13.1	89.54	10.6	1,319.7	1,319.7	1,293.5	50.322	
6,000.0	6,000.0	5,999.0	5,999.0	13.3	13.3	89.54	10.6	1,319.7	1,319.7	1,293.1	49.474	
6,100.0	6,100.0	6,099.0	6,099.0	13.6	13.6	89.54	10.6	1,319.7	1,319.7	1,292.6	48.655	
6,200.0	6,200.0	6,199.0	6,199.0	13.8	13.8	89.54	10.6	1,319.7	1,319.7	1,292.2	47.861	
6,300.0	6,300.0	6,299.0	6,299.0	14.0	14.0	89.54	10.6	1,319.7	1,319.7	1,291.7	47.094	
6,400.0	6,400.0	6,399.0	6,399.0	14.2	14.2	89.54	10.6	1,319.7	1,319.7	1,291.3	46.350	
6,500.0	6,500.0	6,499.0	6,499.0	14.5	14.5	89.54	10.6	1,319.7	1,319.7	1,290.8	45.630	
6,600.0	6,600.0	6,599.0	6,599.0	14.7	14.7	89.54	10.6	1,319.7	1,319.7	1,290.4	44.931	
6,700.0	6,700.0	6,699.0	6,699.0	14.9	14.9	89.54	10.6	1,319.7	1,319.7	1,289.9	44.254	
6,800.0	6,800.0	6,799.0	6,799.0	15.1	15.1	89.54	10.6	1,319.7	1,319.7	1,289.5	43.597	
6,900.0	6,900.0	6,899.0	6,899.0	15.4	15.4	89.54	10.6	1,319.7	1,319.7	1,289.0	42.959	
7,000.0	7,000.0	6,999.0	6,999.0	15.6	15.6	89.54	10.6	1,319.7	1,319.7	1,288.6	42.339	
7,100.0	7,100.0	7,099.0	7,099.0	15.8	15.8	89.54	10.6	1,319.7	1,319.7	1,288.1	41.737	
7,200.0	7,200.0	7,199.0	7,199.0	16.0	16.0	89.54	10.6	1,319.7	1,319.7	1,287.7	41.152	
7,300.0	7,300.0	7,299.0	7,299.0	16.3	16.3	89.54	10.6	1,319.7	1,319.7	1,287.2	40.584	
7,400.0	7,400.0	7,399.0	7,399.0	16.5	16.5	89.54	10.6	1,319.7	1,319.7	1,286.8	40.030	
7,500.0	7,500.0	7,499.0	7,499.0	16.7	16.7	89.54	10.6	1,319.7	1,319.7	1,286.3	39.492	
7,600.0	7,600.0	7,599.0	7,599.0	16.9	16.9	89.54	10.6	1,319.7	1,319.7	1,285.9	38.968	
7,700.0	7,700.0	7,699.0	7,699.0	17.2	17.2	89.54	10.6	1,319.7	1,319.7	1,285.4	38.457	
7,800.0	7,800.0	7,799.0	7,799.0	17.4	17.4	89.54	10.6	1,319.7	1,319.7	1,285.0	37.960	
7,900.0	7,900.0	7,899.0	7,899.0	17.6	17.6	89.54	10.6	1,319.7	1,319.7	1,284.5	37.475	
8,000.0	8,000.0	7,999.0	7,999.0	17.8	17.8	89.54	10.6	1,319.7	1,319.7	1,284.1	37.003	
8,100.0	8,100.0	8,099.0	8,099.0	18.1	18.1	89.54	10.6	1,319.7	1,319.7	1,283.6	36.542	
8,200.0	8,200.0	8,199.0	8,199.0	18.3	18.3	89.54	10.6	1,319.7	1,319.7	1,283.2	36.093	
8,300.0	8,300.0	8,299.0	8,299.0	18.5	18.5	89.54	10.6	1,319.7	1,319.7	1,282.7	35.655	
8,400.0	8,400.0	8,399.0	8,399.0	18.7	18.7	89.54	10.6	1,319.7	1,319.7	1,282.3	35.227	
8,500.0	8,500.0	8,499.0	8,499.0	19.0	19.0	89.54	10.6	1,319.7	1,319.7	1,281.8	34.809	
8,600.0	8,600.0	8,599.0	8,599.0	19.2	19.2	89.54	10.6	1,319.7	1,319.7	1,281.4	34.401	
8,700.0	8,700.0	8,699.0	8,699.0	19.4	19.4	89.54	10.6	1,319.7	1,319.7	1,280.9	34.003	
8,800.0	8,800.0	8,799.0	8,799.0	19.6	19.6	89.54	10.6	1,319.7	1,319.7	1,280.5	33.614	
8,900.0	8,900.0	8,899.0	8,899.0	19.9	19.9	89.54	10.6	1,319.7	1,319.7	1,280.0	33.233	
9,000.0	9,000.0	8,999.0	8,999.0	20.1	20.1	89.54	10.6	1,319.7	1,319.7	1,279.6	32.861	
9,100.0	9,100.0	9,099.0	9,099.0	20.3	20.3	89.54	10.6	1,319.7	1,319.7	1,279.1	32.497	
9,200.0	9,200.0	9,199.0	9,199.0	20.5	20.5	89.54	10.6	1,319.7	1,319.7	1,278.7	32.142	
9,300.0	9,300.0	9,299.0	9,299.0	20.8	20.8	89.54	10.6	1,319.7	1,319.7	1,278.2	31.794	
9,400.0	9,400.0	9,399.0	9,399.0	21.0	21.0	89.54	10.6	1,319.7	1,319.7	1,277.8	31.453	
9,500.0	9,500.0	9,499.0	9,499.0	21.2	21.2	89.54	10.6	1,319.7	1,319.7	1,277.3	31.120	
9,600.0	9,600.0	9,599.0	9,599.0	21.4	21.4	89.54	10.6	1,319.7	1,319.7	1,276.9	30.793	
9,700.0	9,700.0	9,699.0	9,699.0	21.7	21.7	89.54	10.6	1,319.7	1,319.7	1,276.4	30.473	
9,800.0	9,800.0	9,799.0	9,799.0	21.9	21.9	89.54	10.6	1,319.7	1,319.7	1,276.0	30.160	
9,872.5	9,872.5	9,871.5	9,871.5	22.0	22.0	89.54	10.6	1,319.7	1,319.7	1,275.7	29.937 CC	
9,875.0	9,875.0	9,874.0	9,874.0	22.0	22.0	90.05	10.6	1,319.7	1,319.7	1,275.6	29.930	
9,900.0	9,900.0	9,899.0	9,899.0	22.1	22.1	90.08	10.6	1,319.7	1,319.7	1,275.5	29.854	
9,925.0	9,924.9	9,924.1	9,924.1	22.2	22.2	90.15	11.1	1,319.7	1,319.7	1,275.4	29.779	
9,950.0	9,949.7	9,949.2	9,949.2	22.2	22.2	90.22	12.9	1,319.7	1,319.8	1,275.3	29.706	

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 #8H
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 #8H	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 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)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning:	
9,975.0	9,974.2	9,974.5	9,974.2	22.3	22.3	90.29	16.0	1,319.7	1,319.8	1,275.2	29.634		
10,000.0	9,998.5	9,999.8	9,999.2	22.3	22.3	90.36	20.5	1,319.6	1,319.8	1,275.1	29.563		
10,025.0	10,022.4	10,025.3	10,023.9	22.4	22.4	90.43	26.3	1,319.6	1,319.8	1,275.0	29.493		
10,050.0	10,045.9	10,050.8	10,048.4	22.4	22.4	90.50	33.4	1,319.5	1,319.8	1,274.9	29.424		
10,075.0	10,069.0	10,076.4	10,072.6	22.5	22.5	90.56	41.9	1,319.4	1,319.8	1,274.8	29.356		
10,100.0	10,091.5	10,102.1	10,096.3	22.5	22.5	90.63	51.7	1,319.3	1,319.8	1,274.8	29.287		
10,125.0	10,113.4	10,127.9	10,119.6	22.6	22.6	90.69	62.8	1,319.2	1,319.8	1,274.7	29.218		
10,150.0	10,134.6	10,153.7	10,142.3	22.6	22.6	90.75	75.2	1,319.1	1,319.9	1,274.6	29.148		
10,175.0	10,155.2	10,179.7	10,164.4	22.7	22.7	90.81	88.8	1,319.0	1,319.9	1,274.5	29.076		
10,200.0	10,174.9	10,205.7	10,185.7	22.8	22.8	90.86	103.7	1,318.9	1,319.9	1,274.4	29.002		
10,225.0	10,193.8	10,231.8	10,206.3	22.8	22.8	90.92	119.7	1,318.7	1,319.9	1,274.3	28.925		
10,250.0	10,211.9	10,257.9	10,226.0	22.9	22.9	90.97	136.9	1,318.6	1,319.9	1,274.2	28.844		
10,275.0	10,229.0	10,284.2	10,244.8	22.9	23.0	91.02	155.2	1,318.4	1,320.0	1,274.1	28.759		
10,300.0	10,245.1	10,310.5	10,262.6	23.0	23.0	91.06	174.5	1,318.2	1,320.0	1,273.9	28.669		
10,325.0	10,260.2	10,336.8	10,279.4	23.1	23.1	91.11	194.9	1,318.1	1,320.0	1,273.8	28.574		
10,350.0	10,274.3	10,363.2	10,295.0	23.2	23.2	91.15	216.2	1,317.9	1,320.0	1,273.7	28.473		
10,375.0	10,287.2	10,389.7	10,309.5	23.3	23.3	91.18	238.3	1,317.7	1,320.0	1,273.5	28.365		
10,400.0	10,299.1	10,416.2	10,322.7	23.4	23.4	91.22	261.3	1,317.5	1,320.0	1,273.3	28.251		
10,425.0	10,309.7	10,442.8	10,334.7	23.5	23.5	91.25	285.0	1,317.3	1,320.1	1,273.1	28.131		
10,450.0	10,319.1	10,469.4	10,345.3	23.6	23.6	91.27	309.4	1,317.1	1,320.1	1,272.9	28.003		
10,475.0	10,327.4	10,496.1	10,354.6	23.7	23.7	91.29	334.4	1,316.8	1,320.1	1,272.7	27.869		
10,500.0	10,334.3	10,522.7	10,362.4	23.8	23.8	91.31	359.9	1,316.6	1,320.1	1,272.5	27.728		
10,525.0	10,340.0	10,549.4	10,368.9	23.9	24.0	91.33	385.8	1,316.4	1,320.1	1,272.2	27.580		
10,550.0	10,344.5	10,576.1	10,373.9	24.1	24.1	91.34	412.0	1,316.1	1,320.1	1,272.0	27.426		
10,575.0	10,347.6	10,602.9	10,377.4	24.2	24.2	91.34	438.5	1,315.9	1,320.1	1,271.7	27.267		
10,600.0	10,349.4	10,629.6	10,379.4	24.3	24.4	91.35	465.2	1,315.7	1,320.1	1,271.4	27.102		
10,625.0	10,350.0	10,656.3	10,380.0	24.5	24.5	91.35	491.8	1,315.4	1,320.1	1,271.1	26.933		
10,700.0	10,349.6	10,731.3	10,379.5	25.0	25.0	91.34	566.8	1,314.8	1,320.1	1,270.1	26.404		
10,800.0	10,349.0	10,831.3	10,378.9	25.7	25.8	91.34	666.8	1,313.9	1,320.1	1,268.6	25.639		
10,900.0	10,348.5	10,931.3	10,378.2	26.6	26.6	91.33	766.8	1,313.0	1,320.1	1,266.9	24.820		
11,000.0	10,348.0	11,031.3	10,377.6	27.5	27.6	91.33	866.8	1,312.1	1,320.1	1,265.0	23.969		
11,100.0	10,347.5	11,131.3	10,377.0	28.5	28.6	91.32	966.8	1,311.2	1,320.1	1,263.0	23.104		
11,200.0	10,347.0	11,231.3	10,376.3	29.6	29.7	91.32	1,066.8	1,310.3	1,320.1	1,260.8	22.243		
11,300.0	10,346.4	11,331.3	10,375.7	30.8	30.9	91.31	1,166.8	1,309.5	1,320.1	1,258.4	21.396		
11,400.0	10,345.9	11,431.3	10,375.1	32.1	32.1	91.31	1,266.8	1,308.6	1,320.1	1,255.9	20.572		
11,500.0	10,345.4	11,531.3	10,374.5	33.3	33.4	91.31	1,366.8	1,307.7	1,320.1	1,253.4	19.777		
11,600.0	10,344.9	11,631.3	10,373.8	34.7	34.8	91.30	1,466.8	1,306.8	1,320.1	1,250.7	19.015		
11,700.0	10,344.3	11,731.3	10,373.2	36.1	36.1	91.30	1,566.8	1,305.9	1,320.1	1,247.9	18.288		
11,800.0	10,343.8	11,831.3	10,372.6	37.5	37.6	91.29	1,666.8	1,305.0	1,320.1	1,245.1	17.597		
11,900.0	10,343.3	11,931.3	10,372.0	38.9	39.0	91.29	1,766.8	1,304.1	1,320.1	1,242.2	16.941		
12,000.0	10,342.8	12,031.3	10,371.3	40.4	40.5	91.28	1,866.8	1,303.2	1,320.1	1,239.2	16.320		
12,100.0	10,342.3	12,131.3	10,370.7	41.9	42.0	91.28	1,966.7	1,302.4	1,320.1	1,236.2	15.733		
12,200.0	10,341.7	12,231.3	10,370.1	43.5	43.5	91.27	2,066.7	1,301.5	1,320.1	1,233.1	15.179		
12,300.0	10,341.2	12,331.3	10,369.4	45.0	45.1	91.27	2,166.7	1,300.6	1,320.1	1,230.0	14.655		
12,400.0	10,340.7	12,431.3	10,368.8	46.6	46.7	91.26	2,266.7	1,299.7	1,320.1	1,226.9	14.160		
12,500.0	10,340.2	12,531.3	10,368.2	48.2	48.2	91.26	2,366.7	1,298.8	1,320.1	1,223.7	13.692		
12,600.0	10,339.6	12,631.3	10,367.6	49.8	49.9	91.26	2,466.7	1,297.9	1,320.1	1,220.5	13.250		
12,700.0	10,339.1	12,731.3	10,366.9	51.4	51.5	91.25	2,566.7	1,297.0	1,320.1	1,217.2	12.832		
12,800.0	10,338.6	12,831.3	10,366.3	53.1	53.1	91.25	2,666.7	1,296.2	1,320.1	1,214.0	12.437		
12,900.0	10,338.1	12,931.3	10,365.7	54.7	54.8	91.24	2,766.7	1,295.3	1,320.1	1,210.7	12.062		
13,000.0	10,337.5	13,031.3	10,365.1	56.4	56.4	91.24	2,866.7	1,294.4	1,320.1	1,207.4	11.708		
13,100.0	10,337.0	13,131.3	10,364.4	58.0	58.1	91.23	2,966.7	1,293.5	1,320.1	1,204.0	11.371		

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 #8H
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 #8H	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 usf
Survey Program: 0-MWD default											Offset Well Error:	0.0 usf
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)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
13,200.0	10,336.5	13,231.3	10,363.8	59.7	59.8	91.23	3,066.7	1,292.6	1,320.1	1,200.7	11.052	
13,300.0	10,336.0	13,331.3	10,363.2	61.4	61.4	91.22	3,166.7	1,291.7	1,320.1	1,197.3	10.748	
13,400.0	10,335.5	13,431.3	10,362.5	63.1	63.1	91.22	3,266.7	1,290.8	1,320.1	1,193.9	10.460	
13,500.0	10,334.9	13,531.3	10,361.9	64.8	64.8	91.21	3,366.7	1,290.0	1,320.1	1,190.5	10.185	
13,600.0	10,334.4	13,631.3	10,361.3	66.5	66.5	91.21	3,466.7	1,289.1	1,320.1	1,187.1	9.924	
13,700.0	10,333.9	13,731.3	10,360.7	68.2	68.3	91.21	3,566.7	1,288.2	1,320.1	1,183.7	9.675	
13,800.0	10,333.4	13,831.3	10,360.0	69.9	70.0	91.20	3,666.6	1,287.3	1,320.1	1,180.2	9.437	
13,900.0	10,332.8	13,931.3	10,359.4	71.7	71.7	91.20	3,766.6	1,286.4	1,320.1	1,176.8	9.210	
14,000.0	10,332.3	14,031.3	10,358.8	73.4	73.4	91.19	3,866.6	1,285.5	1,320.1	1,173.3	8.993	
14,068.3	10,332.0	14,099.6	10,358.4	74.6	74.6	91.19	3,935.0	1,284.9	1,320.1	1,171.0	8.850	
14,100.0	10,331.8	14,131.3	10,358.2	75.1	75.2	91.19	3,966.6	1,284.6	1,320.1	1,169.9	8.786	
14,200.0	10,331.3	14,231.3	10,357.5	76.9	76.9	91.18	4,066.6	1,283.8	1,320.1	1,166.4	8.587	
14,300.0	10,330.8	14,331.3	10,356.9	78.6	78.6	91.18	4,166.6	1,282.9	1,320.1	1,162.9	8.397	
14,400.0	10,330.2	14,431.3	10,356.3	80.3	80.4	91.17	4,266.6	1,282.0	1,320.1	1,159.4	8.215	
14,500.0	10,329.7	14,531.3	10,355.7	82.1	82.1	91.17	4,366.6	1,281.1	1,320.1	1,155.9	8.040	
14,600.0	10,329.2	14,631.3	10,355.0	83.8	83.9	91.16	4,466.6	1,280.2	1,320.1	1,152.4	7.872	
14,700.0	10,328.7	14,731.3	10,354.4	85.6	85.6	91.16	4,566.6	1,279.3	1,320.1	1,148.9	7.710	
14,800.0	10,328.1	14,831.3	10,353.8	87.4	87.4	91.16	4,666.6	1,278.4	1,320.1	1,145.4	7.555	
14,900.0	10,327.6	14,931.3	10,353.1	89.1	89.2	91.15	4,766.6	1,277.5	1,320.1	1,141.9	7.406	
15,000.0	10,327.1	15,031.3	10,352.5	90.9	90.9	91.15	4,866.6	1,276.7	1,320.1	1,138.3	7.262	
15,100.0	10,326.6	15,131.3	10,351.9	92.7	92.7	91.14	4,966.6	1,275.8	1,320.1	1,134.8	7.124	
15,200.0	10,326.1	15,231.3	10,351.3	94.4	94.5	91.14	5,066.6	1,274.9	1,320.1	1,131.3	6.991	
15,300.0	10,325.5	15,331.3	10,350.6	96.2	96.2	91.13	5,166.6	1,274.0	1,320.1	1,127.7	6.862	
15,400.0	10,325.0	15,431.3	10,350.0	98.0	98.0	91.13	5,266.6	1,273.1	1,320.1	1,124.2	6.738	
15,500.0	10,324.5	15,531.3	10,349.4	99.7	99.8	91.12	5,366.5	1,272.2	1,320.1	1,120.6	6.618	
15,600.0	10,324.0	15,631.3	10,348.8	101.5	101.5	91.12	5,466.5	1,271.3	1,320.1	1,117.1	6.502	
15,700.0	10,323.4	15,731.3	10,348.1	103.3	103.3	91.12	5,566.5	1,270.5	1,320.1	1,113.5	6.390	
15,800.0	10,322.9	15,831.3	10,347.5	105.1	105.1	91.11	5,666.5	1,269.6	1,320.1	1,110.0	6.282	
15,900.0	10,322.4	15,931.3	10,346.9	106.8	106.9	91.11	5,766.5	1,268.7	1,320.1	1,106.4	6.178	
16,000.0	10,321.9	16,031.3	10,346.2	108.6	108.7	91.10	5,866.5	1,267.8	1,320.1	1,102.9	6.076	
16,100.0	10,321.3	16,131.3	10,345.6	110.4	110.4	91.10	5,966.5	1,266.9	1,320.1	1,099.3	5.978	
16,200.0	10,320.8	16,231.3	10,345.0	112.2	112.2	91.09	6,066.5	1,266.0	1,320.1	1,095.7	5.883	
16,300.0	10,320.3	16,331.3	10,344.4	114.0	114.0	91.09	6,166.5	1,265.1	1,320.1	1,092.2	5.791	
16,400.0	10,319.8	16,431.3	10,343.7	115.8	115.8	91.08	6,266.5	1,264.3	1,320.1	1,088.6	5.702	
16,500.0	10,319.3	16,531.3	10,343.1	117.6	117.6	91.08	6,366.5	1,263.4	1,320.1	1,085.0	5.615	
16,600.0	10,318.7	16,631.3	10,342.5	119.3	119.4	91.07	6,466.5	1,262.5	1,320.1	1,081.4	5.531	
16,700.0	10,318.2	16,731.3	10,341.9	121.1	121.2	91.07	6,566.5	1,261.6	1,320.1	1,077.8	5.449	
16,800.0	10,317.7	16,831.3	10,341.2	122.9	123.0	91.07	6,666.5	1,260.7	1,320.1	1,074.3	5.370	
16,900.0	10,317.2	16,931.3	10,340.6	124.7	124.8	91.06	6,766.5	1,259.8	1,320.1	1,070.7	5.292	
17,000.0	10,316.6	17,031.3	10,340.0	126.5	126.5	91.06	6,866.5	1,258.9	1,320.1	1,067.1	5.217	
17,100.0	10,316.1	17,131.3	10,339.3	128.3	128.3	91.05	6,966.5	1,258.0	1,320.1	1,063.5	5.144	
17,200.0	10,315.6	17,231.3	10,338.7	130.1	130.1	91.05	7,066.4	1,257.2	1,320.1	1,059.9	5.073	
17,300.0	10,315.1	17,331.3	10,338.1	131.9	131.9	91.04	7,166.4	1,256.3	1,320.1	1,056.3	5.004	
17,400.0	10,314.6	17,431.3	10,337.5	133.7	133.7	91.04	7,266.4	1,255.4	1,320.1	1,052.7	4.937	
17,500.0	10,314.0	17,531.3	10,336.8	135.5	135.5	91.03	7,366.4	1,254.5	1,320.1	1,049.1	4.872	
17,600.0	10,313.5	17,631.3	10,336.2	137.3	137.3	91.03	7,466.4	1,253.6	1,320.1	1,045.5	4.808	
17,700.0	10,313.0	17,731.3	10,335.6	139.1	139.1	91.02	7,566.4	1,252.7	1,320.1	1,041.9	4.746	
17,800.0	10,312.5	17,831.3	10,335.0	140.9	140.9	91.02	7,666.4	1,251.8	1,320.1	1,038.4	4.685	
17,900.0	10,311.9	17,931.3	10,334.3	142.7	142.7	91.02	7,766.4	1,251.0	1,320.1	1,034.8	4.626	
18,000.0	10,311.4	18,031.3	10,333.7	144.5	144.5	91.01	7,866.4	1,250.1	1,320.1	1,031.2	4.568	
18,100.0	10,310.9	18,131.3	10,333.1	146.3	146.3	91.01	7,966.4	1,249.2	1,320.1	1,027.5	4.512	
18,200.0	10,310.4	18,231.3	10,332.5	148.1	148.1	91.00	8,066.4	1,248.3	1,320.1	1,023.9	4.457	

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 #8H
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 #8H	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 #7H - 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		Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning	
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)					
18,300.0	10,309.9	18,331.3	10,331.8	149.9	149.9	91.00	8,166.4	1,247.4	1,320.1	1,020.3	4.404		
18,400.0	10,309.3	18,431.3	10,331.2	151.7	151.7	90.99	8,266.4	1,246.5	1,320.1	1,016.7	4.351		
18,500.0	10,308.8	18,531.3	10,330.6	153.5	153.5	90.99	8,366.4	1,245.6	1,320.1	1,013.1	4.300		
18,600.0	10,308.3	18,631.3	10,329.9	155.3	155.3	90.98	8,466.4	1,244.8	1,320.1	1,009.5	4.250		
18,700.0	10,307.8	18,731.3	10,329.3	157.1	157.1	90.98	8,566.4	1,243.9	1,320.1	1,005.9	4.201		
18,800.0	10,307.2	18,831.3	10,328.7	158.9	158.9	90.97	8,666.4	1,243.0	1,320.1	1,002.3	4.154		
18,900.0	10,306.7	18,931.3	10,328.1	160.7	160.7	90.97	8,766.3	1,242.1	1,320.1	998.7	4.107		
19,000.0	10,306.2	19,031.3	10,327.4	162.5	162.6	90.97	8,866.3	1,241.2	1,320.1	995.1	4.061		
19,100.0	10,305.7	19,131.3	10,326.8	164.3	164.4	90.96	8,966.3	1,240.3	1,320.1	991.5	4.017		
19,200.0	10,305.1	19,231.3	10,326.2	166.1	166.2	90.96	9,066.3	1,239.4	1,320.1	987.9	3.973		
19,300.0	10,304.6	19,331.3	10,325.6	167.9	168.0	90.95	9,166.3	1,238.6	1,320.1	984.3	3.930		
19,400.0	10,304.1	19,431.3	10,324.9	169.7	169.8	90.95	9,266.3	1,237.7	1,320.1	980.6	3.889		
19,500.0	10,303.6	19,531.3	10,324.3	171.6	171.6	90.94	9,366.3	1,236.8	1,320.1	977.0	3.848		
19,600.0	10,303.1	19,631.3	10,323.7	173.4	173.4	90.94	9,466.3	1,235.9	1,320.1	973.4	3.808		
19,700.0	10,302.5	19,731.3	10,323.0	175.2	175.2	90.93	9,566.3	1,235.0	1,320.1	969.8	3.768		
19,800.0	10,302.0	19,831.3	10,322.4	177.0	177.0	90.93	9,666.3	1,234.1	1,320.1	966.2	3.730		
19,900.0	10,301.5	19,931.3	10,321.8	178.8	178.8	90.92	9,766.3	1,233.2	1,320.1	962.6	3.692		
20,000.0	10,301.0	20,031.3	10,321.2	180.6	180.6	90.92	9,866.3	1,232.3	1,320.1	958.9	3.655		
20,100.0	10,300.4	20,131.3	10,320.5	182.4	182.4	90.92	9,966.3	1,231.5	1,320.1	955.3	3.619		
20,185.1	10,300.0	20,216.3	10,320.0	183.9	184.0	90.91	10,051.3	1,230.7	1,320.1	952.2	3.588	ES, SF	



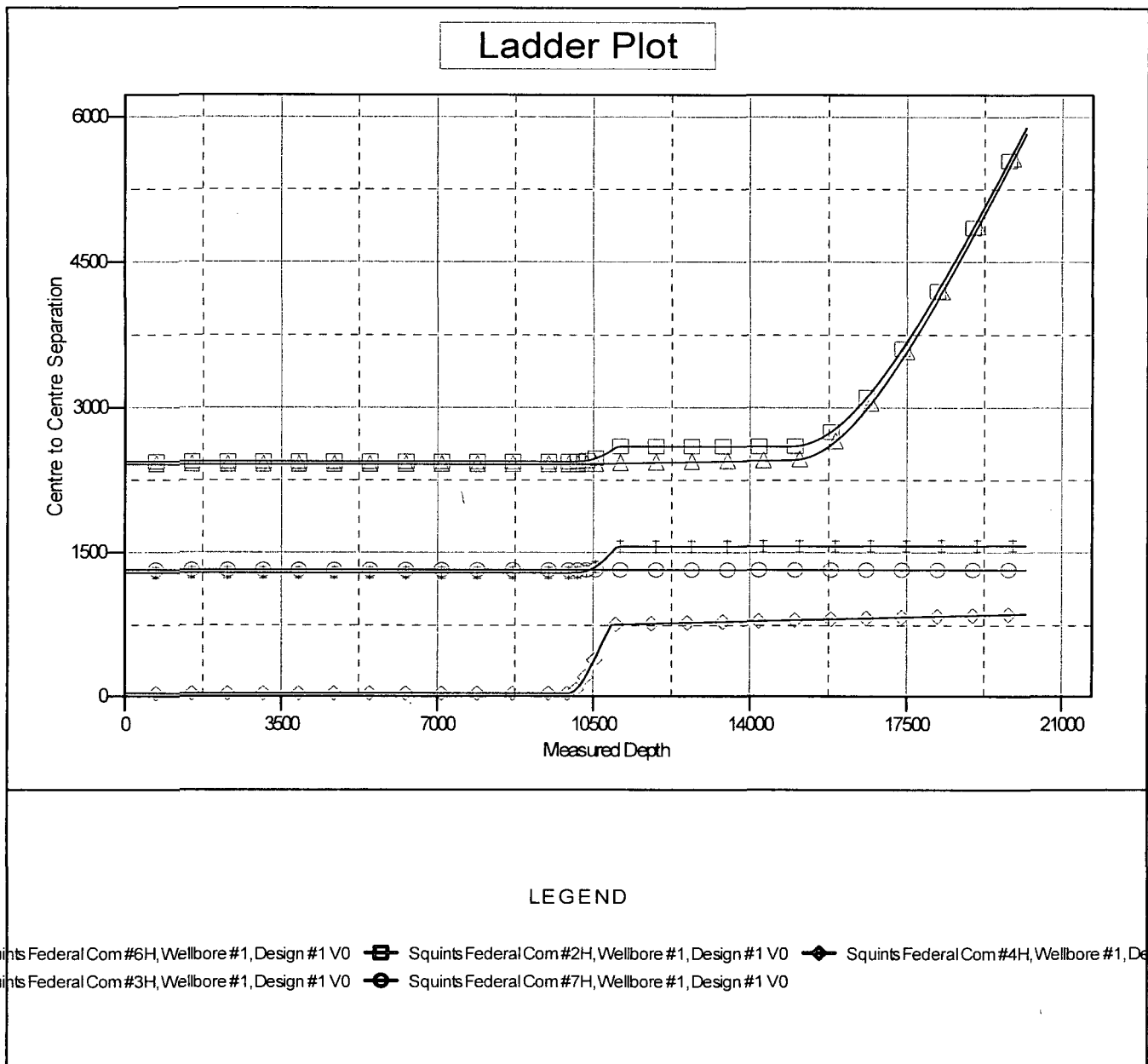
HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #8H
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 #8H	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 #8H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.47°





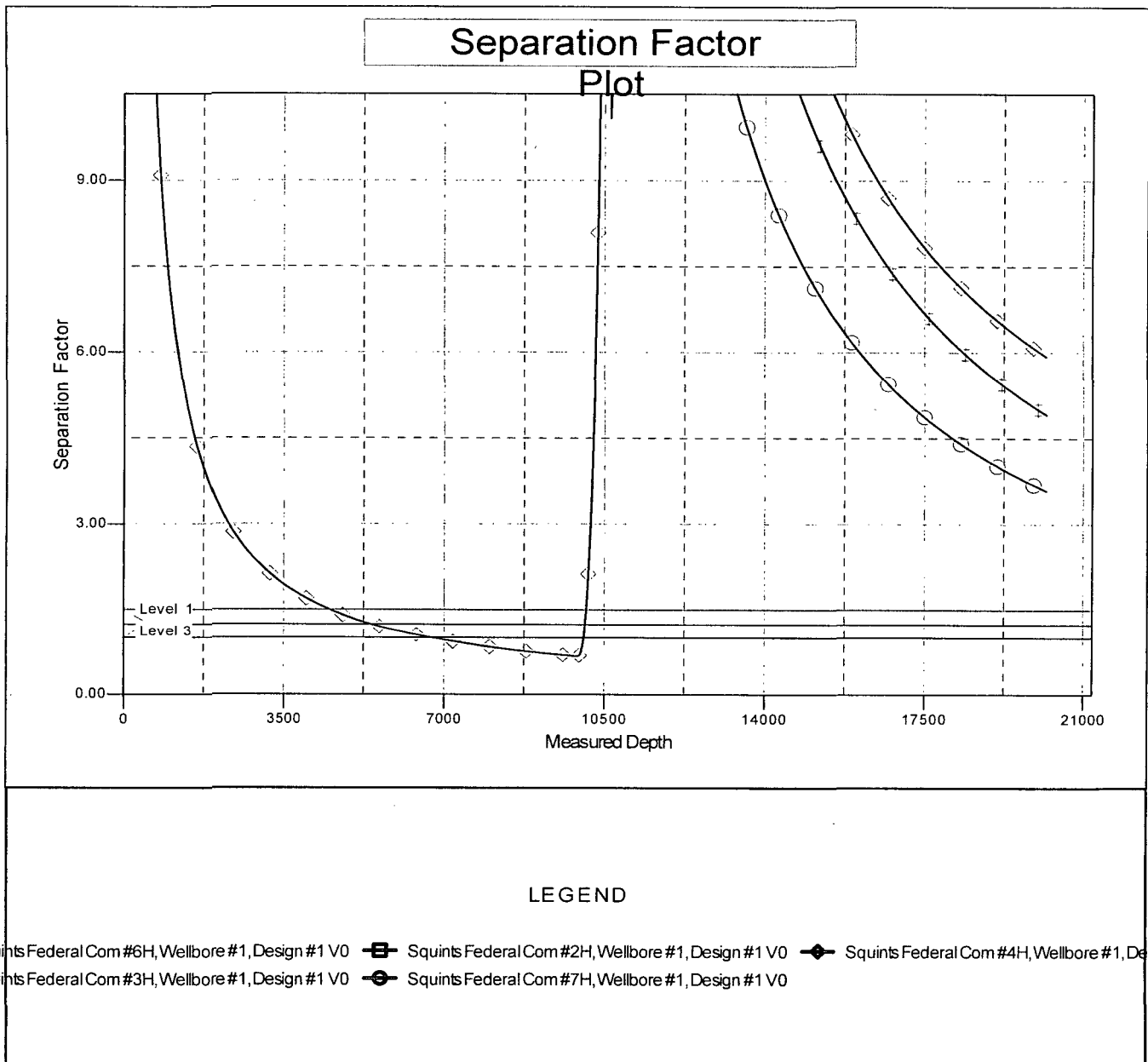
HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #8H
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 #8H	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

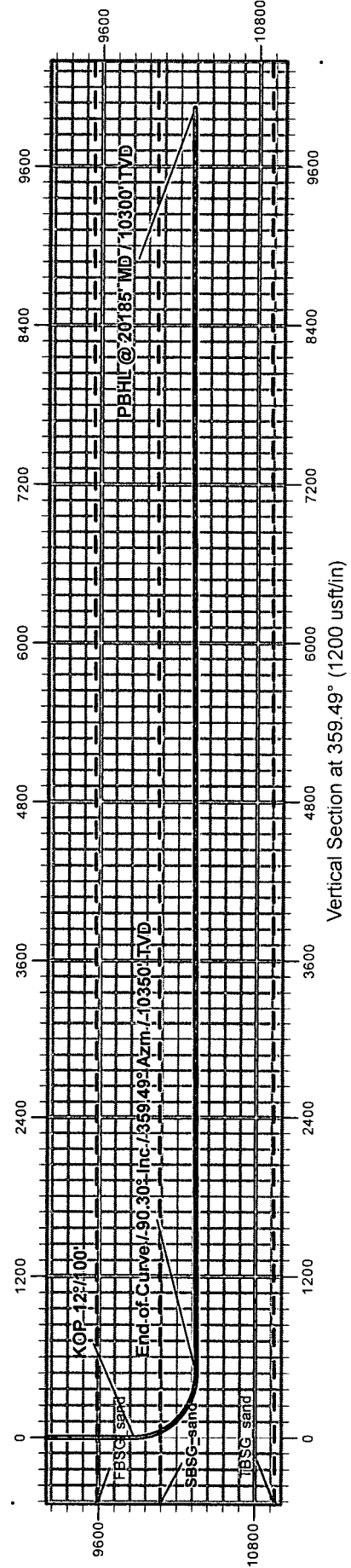
Reference Depths are relative to Well @ 3436.0usft (Ensign #772)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Squints Federal Com #8H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.47°

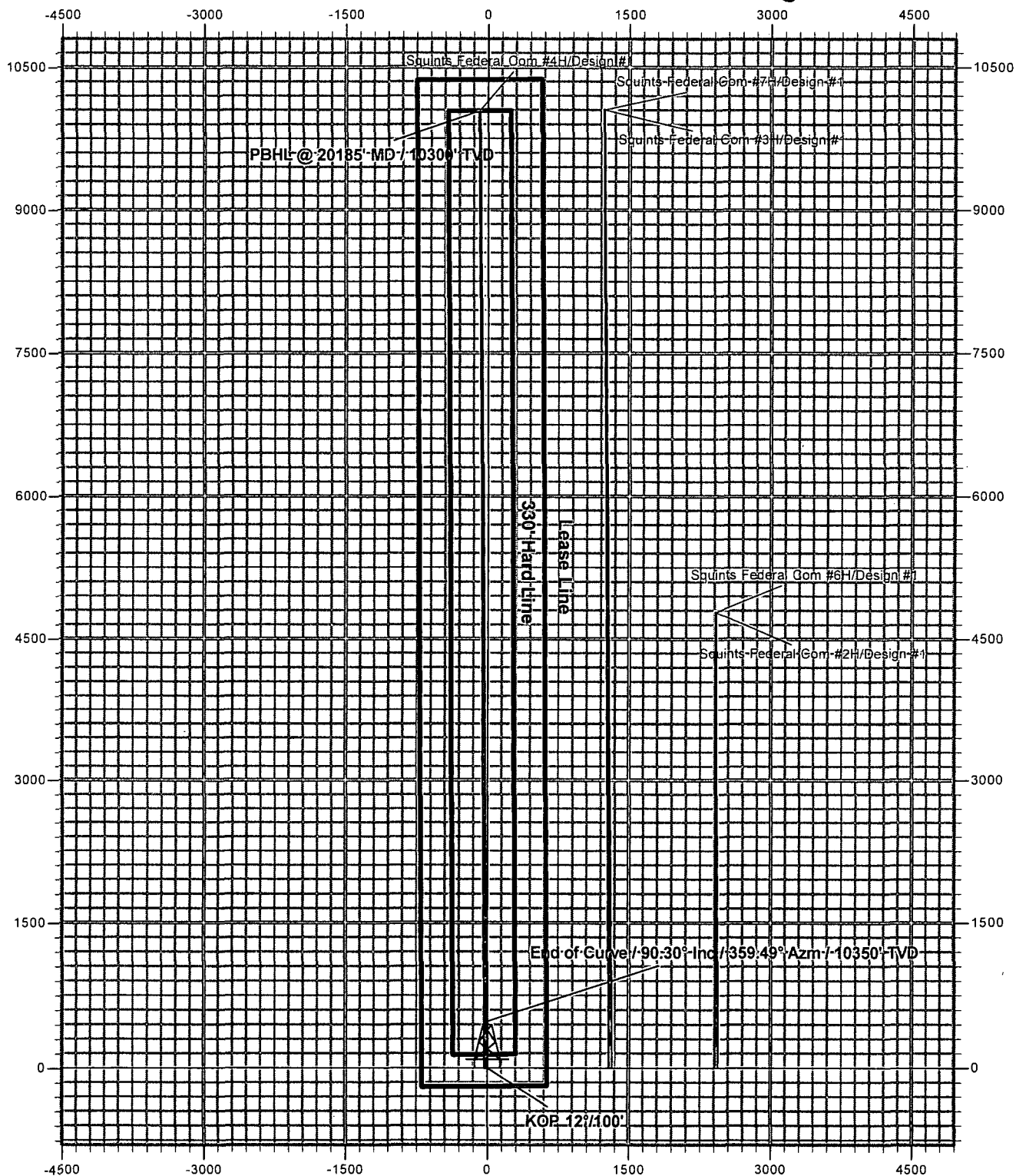




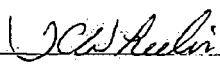
Lea County, NM
Sec 27, T22S, R34E
Squints Federal Com #8H
Design #1



Lea County, NM
Sec 27, T22S, R34E
Squints Federal Com #8H
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		
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.		
Licence Number 16C-0001		(If Required)
TECHNIP QUALITY CONTROL		
 4/30/15 		
Name/ Date/ Stamp		

TechnipTECHNIP 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**Application**

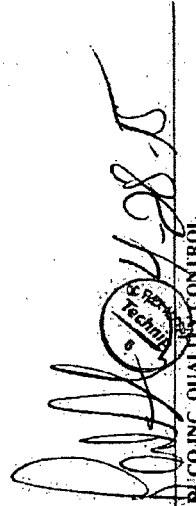
3" X 30' 10K CHOKE/KILL LINE

Part Number 076 60414 13 13

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		

THIRD PARTY INSPECTION FIRM OR CUSTOMER REPRESENTATIVE


DU CO INC. QUALITY CONTROL

DOAC 1124 Rev 2

18 Sept 09

Date Printed:

4/28/2015 11:49:43 PM

Test Configuration 12 Zone

Production Information Input

Customer ID
OFS CANADA INC.
Line S-N
KJ2386-202 ©KJ2387-202
Technician
ROY

QC Information Input

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

Station Information

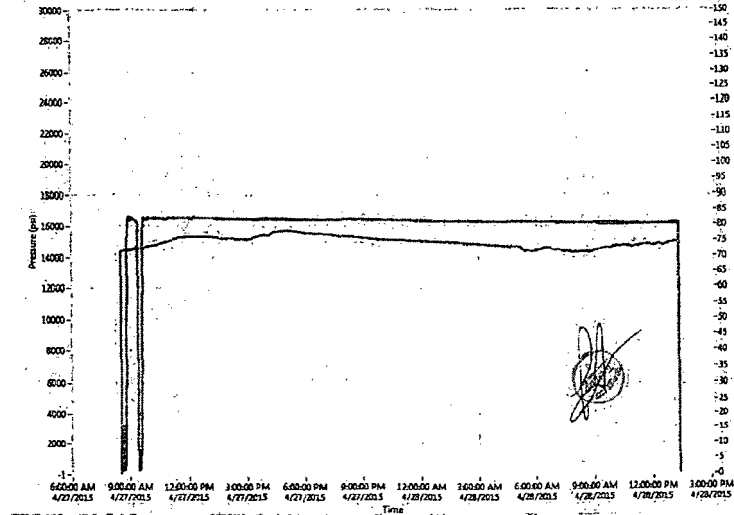
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1221570
Stable Press
16500
C/Lb. Due
9/9/2015 8:29:12 AM
Temperature S/N
113A
Test Press
15000
Pressure Range
0 - 30000

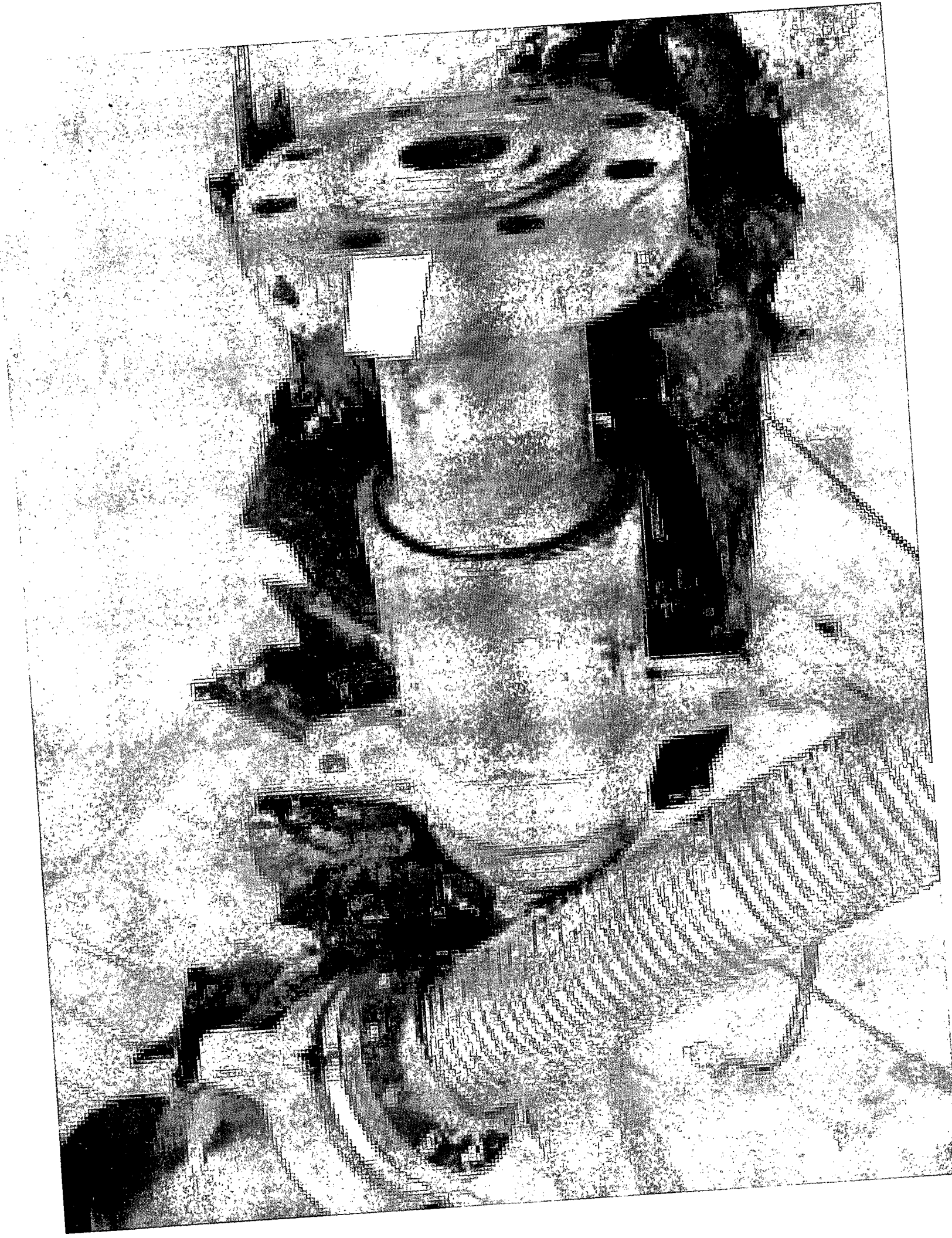
Station 04

Calibration

Raw Maximum
0.004500
Raw Maximum
0.020000
Eng Maximum
6.000000
Eng Maximum
30000.000000

RT Graph





LSA: K12387-202 3 CHON

51/7 51/15 TEMP. DT

