

HOBBS OCD

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COG Operating, LLC

Lea County, NM

Sec 27, T22S, R34E

Squints Federal Com #3H

Wellbore #1

Design #1

DDC Anticollision Report

08 June, 2015



APR 22 2016



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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: 5/30/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	21,062.2	Design #1 (Wellbore #1)	MWD default	MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 27, T22S, R34E						
Squints Federal Com #2H - Wellbore #1 - Design #1	10,828.7	10,831.4	1,151.9	1,103.6	23.809	CC
Squints Federal Com #2H - Wellbore #1 - Design #1	15,800.0	15,796.7	1,152.7	972.9	6.414	ES
Squints Federal Com #2H - Wellbore #1 - Design #1	15,900.0	15,796.7	1,158.4	976.9	6.384	SF
Squints Federal Com #4H - Wellbore #1 - Design #1	10,672.3	10,672.4	1,319.8	1,272.2	27.681	CC
Squints Federal Com #4H - Wellbore #1 - Design #1	21,062.7	20,940.1	1,320.0	951.9	3.585	ES, SF
Squints Federal Com #6H - Wellbore #1 - Design #1	9,923.2	9,925.2	1,122.1	1,077.8	25.320	CC
Squints Federal Com #6H - Wellbore #1 - Design #1	10,000.0	10,000.0	1,122.2	1,077.5	25.130	ES
Squints Federal Com #6H - Wellbore #1 - Design #1	16,000.0	14,966.6	1,443.4	1,290.2	9.421	SF
Squints Federal Com #7H - Wellbore #1 - Design #1	9,900.0	9,899.0	29.9	-14.3	0.676	Level 1, CC
Squints Federal Com #7H - Wellbore #1 - Design #1	9,928.4	9,927.3	29.9	-14.4	0.675	Level 1, ES, SF
Squints Federal Com #8H - Wellbore #1 - Design #1	9,857.5	9,857.5	1,289.8	1,245.8	29.303	CC
Squints Federal Com #8H - Wellbore #1 - Design #1	10,000.0	9,996.8	1,290.0	1,245.3	28.896	ES
Squints Federal Com #8H - Wellbore #1 - Design #1	21,062.7	20,182.0	1,570.0	1,250.7	4.917	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)	Semi Major Axis 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
0.0	0.0	3.0	3.0	0.0	0.0	89.53	9.4	1,151.9	1,151.9			
100.0	100.0	103.0	103.0	0.1	0.1	89.53	9.4	1,151.9	1,151.9	1,151.8	7,118.123	
200.0	200.0	203.0	203.0	0.3	0.3	89.53	9.4	1,151.9	1,151.9	1,151.3	1,884.211	
300.0	300.0	303.0	303.0	0.5	0.5	89.53	9.4	1,151.9	1,151.9	1,150.9	1,085.817	
400.0	400.0	403.0	403.0	0.8	0.8	89.53	9.4	1,151.9	1,151.9	1,150.4	762.657	
500.0	500.0	503.0	503.0	1.0	1.0	89.53	9.4	1,151.9	1,151.9	1,150.0	587.736	
600.0	600.0	603.0	603.0	1.2	1.2	89.53	9.4	1,151.9	1,151.9	1,149.5	478.083	
700.0	700.0	703.0	703.0	1.4	1.4	89.53	9.4	1,151.9	1,151.9	1,149.1	402.913	
800.0	800.0	803.0	803.0	1.7	1.7	89.53	9.4	1,151.9	1,151.9	1,148.6	348.170	
900.0	900.0	903.0	903.0	1.9	1.9	89.53	9.4	1,151.9	1,151.9	1,148.2	306.522	
1,000.0	1,000.0	1,003.0	1,003.0	2.1	2.1	89.53	9.4	1,151.9	1,151.9	1,147.7	273.774	
1,100.0	1,100.0	1,103.0	1,103.0	2.3	2.3	89.53	9.4	1,151.9	1,151.9	1,147.3	247.348	
1,200.0	1,200.0	1,203.0	1,203.0	2.5	2.6	89.53	9.4	1,151.9	1,151.9	1,146.8	225.575	
1,300.0	1,300.0	1,303.0	1,303.0	2.8	2.8	89.53	9.4	1,151.9	1,151.9	1,146.4	207.324	
1,400.0	1,400.0	1,403.0	1,403.0	3.0	3.0	89.53	9.4	1,151.9	1,151.9	1,145.9	191.806	

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 #3H
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 #3H	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 #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
1,500.0	1,500.0	1,503.0	1,503.0	3.2	3.2	89.53	9.4	1,151.9	1,151.9	1,145.5	178.449	
1,600.0	1,600.0	1,603.0	1,603.0	3.4	3.5	89.53	9.4	1,151.9	1,151.9	1,145.0	166.831	
1,700.0	1,700.0	1,703.0	1,703.0	3.7	3.7	89.53	9.4	1,151.9	1,151.9	1,144.6	156.634	
1,800.0	1,800.0	1,803.0	1,803.0	3.9	3.9	89.53	9.4	1,151.9	1,151.9	1,144.1	147.611	
1,900.0	1,900.0	1,903.0	1,903.0	4.1	4.1	89.53	9.4	1,151.9	1,151.9	1,143.7	139.571	
2,000.0	2,000.0	2,003.0	2,003.0	4.3	4.4	89.53	9.4	1,151.9	1,151.9	1,143.2	132.362	
2,100.0	2,100.0	2,103.0	2,103.0	4.6	4.6	89.53	9.4	1,151.9	1,151.9	1,142.8	125.861	
2,200.0	2,200.0	2,203.0	2,203.0	4.8	4.8	89.53	9.4	1,151.9	1,151.9	1,142.3	119.969	
2,300.0	2,300.0	2,303.0	2,303.0	5.0	5.0	89.53	9.4	1,151.9	1,151.9	1,141.9	114.603	
2,400.0	2,400.0	2,403.0	2,403.0	5.2	5.3	89.53	9.4	1,151.9	1,151.9	1,141.4	109.697	
2,500.0	2,500.0	2,503.0	2,503.0	5.5	5.5	89.53	9.4	1,151.9	1,151.9	1,141.0	105.194	
2,600.0	2,600.0	2,603.0	2,603.0	5.7	5.7	89.53	9.4	1,151.9	1,151.9	1,140.5	101.046	
2,700.0	2,700.0	2,703.0	2,703.0	5.9	5.9	89.53	9.4	1,151.9	1,151.9	1,140.1	97.213	
2,800.0	2,800.0	2,803.0	2,803.0	6.1	6.2	89.53	9.4	1,151.9	1,151.9	1,139.6	93.660	
2,900.0	2,900.0	2,903.0	2,903.0	6.4	6.4	89.53	9.4	1,151.9	1,151.9	1,139.2	90.357	
3,000.0	3,000.0	3,003.0	3,003.0	6.6	6.6	89.53	9.4	1,151.9	1,151.9	1,138.7	87.280	
3,100.0	3,100.0	3,103.0	3,103.0	6.8	6.8	89.53	9.4	1,151.9	1,151.9	1,138.3	84.405	
3,200.0	3,200.0	3,203.0	3,203.0	7.0	7.1	89.53	9.4	1,151.9	1,151.9	1,137.8	81.713	
3,300.0	3,300.0	3,303.0	3,303.0	7.3	7.3	89.53	9.4	1,151.9	1,151.9	1,137.4	79.188	
3,400.0	3,400.0	3,403.0	3,403.0	7.5	7.5	89.53	9.4	1,151.9	1,151.9	1,136.9	76.814	
3,500.0	3,500.0	3,503.0	3,503.0	7.7	7.7	89.53	9.4	1,151.9	1,151.9	1,136.5	74.579	
3,600.0	3,600.0	3,603.0	3,603.0	7.9	8.0	89.53	9.4	1,151.9	1,151.9	1,136.0	72.470	
3,700.0	3,700.0	3,703.0	3,703.0	8.2	8.2	89.53	9.4	1,151.9	1,151.9	1,135.6	70.477	
3,800.0	3,800.0	3,803.0	3,803.0	8.4	8.4	89.53	9.4	1,151.9	1,151.9	1,135.1	68.590	
3,900.0	3,900.0	3,903.0	3,903.0	8.6	8.6	89.53	9.4	1,151.9	1,151.9	1,134.7	66.802	
4,000.0	4,000.0	4,003.0	4,003.0	8.8	8.9	89.53	9.4	1,151.9	1,151.9	1,134.2	65.105	
4,100.0	4,100.0	4,103.0	4,103.0	9.1	9.1	89.53	9.4	1,151.9	1,151.9	1,133.8	63.492	
4,200.0	4,200.0	4,203.0	4,203.0	9.3	9.3	89.53	9.4	1,151.9	1,151.9	1,133.3	61.957	
4,300.0	4,300.0	4,303.0	4,303.0	9.5	9.5	89.53	9.4	1,151.9	1,151.9	1,132.9	60.494	
4,400.0	4,400.0	4,403.0	4,403.0	9.7	9.7	89.53	9.4	1,151.9	1,151.9	1,132.4	59.099	
4,500.0	4,500.0	4,503.0	4,503.0	10.0	10.0	89.53	9.4	1,151.9	1,151.9	1,132.0	57.767	
4,600.0	4,600.0	4,603.0	4,603.0	10.2	10.2	89.53	9.4	1,151.9	1,151.9	1,131.5	56.493	
4,700.0	4,700.0	4,703.0	4,703.0	10.4	10.4	89.53	9.4	1,151.9	1,151.9	1,131.1	55.275	
4,800.0	4,800.0	4,803.0	4,803.0	10.6	10.6	89.53	9.4	1,151.9	1,151.9	1,130.6	54.107	
4,900.0	4,900.0	4,903.0	4,903.0	10.9	10.9	89.53	9.4	1,151.9	1,151.9	1,130.2	52.989	
5,000.0	5,000.0	5,003.0	5,003.0	11.1	11.1	89.53	9.4	1,151.9	1,151.9	1,129.7	51.915	
5,100.0	5,100.0	5,103.0	5,103.0	11.3	11.3	89.53	9.4	1,151.9	1,151.9	1,129.3	50.884	
5,200.0	5,200.0	5,203.0	5,203.0	11.5	11.5	89.53	9.4	1,151.9	1,151.9	1,128.9	49.893	
5,300.0	5,300.0	5,303.0	5,303.0	11.8	11.8	89.53	9.4	1,151.9	1,151.9	1,128.4	48.941	
5,400.0	5,400.0	5,403.0	5,403.0	12.0	12.0	89.53	9.4	1,151.9	1,151.9	1,128.0	48.023	
5,500.0	5,500.0	5,503.0	5,503.0	12.2	12.2	89.53	9.4	1,151.9	1,151.9	1,127.5	47.140	
5,600.0	5,600.0	5,603.0	5,603.0	12.4	12.4	89.53	9.4	1,151.9	1,151.9	1,127.1	46.288	
5,700.0	5,700.0	5,703.0	5,703.0	12.7	12.7	89.53	9.4	1,151.9	1,151.9	1,126.6	45.467	
5,800.0	5,800.0	5,803.0	5,803.0	12.9	12.9	89.53	9.4	1,151.9	1,151.9	1,126.2	44.674	
5,900.0	5,900.0	5,903.0	5,903.0	13.1	13.1	89.53	9.4	1,151.9	1,151.9	1,125.7	43.909	
6,000.0	6,000.0	6,003.0	6,003.0	13.3	13.3	89.53	9.4	1,151.9	1,151.9	1,125.3	43.169	
6,100.0	6,100.0	6,103.0	6,103.0	13.6	13.6	89.53	9.4	1,151.9	1,151.9	1,124.8	42.454	
6,200.0	6,200.0	6,203.0	6,203.0	13.8	13.8	89.53	9.4	1,151.9	1,151.9	1,124.4	41.762	
6,300.0	6,300.0	6,303.0	6,303.0	14.0	14.0	89.53	9.4	1,151.9	1,151.9	1,123.9	41.092	
6,400.0	6,400.0	6,403.0	6,403.0	14.2	14.2	89.53	9.4	1,151.9	1,151.9	1,123.5	40.444	
6,500.0	6,500.0	6,503.0	6,503.0	14.5	14.5	89.53	9.4	1,151.9	1,151.9	1,123.0	39.816	
6,600.0	6,600.0	6,603.0	6,603.0	14.7	14.7	89.53	9.4	1,151.9	1,151.9	1,122.6	39.206	

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



HP
Anticollision Report



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Reference 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 #3H	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)	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		
6,700.0	6,700.0	6,703.0	6,703.0	14.9	14.9	89.53	9.4	1,151.9	1,151.9	1,122.1	38.616			
6,800.0	6,800.0	6,803.0	6,803.0	15.1	15.1	89.53	9.4	1,151.9	1,151.9	1,121.7	38.042			
6,900.0	6,900.0	6,903.0	6,903.0	15.4	15.4	89.53	9.4	1,151.9	1,151.9	1,121.2	37.486			
7,000.0	7,000.0	7,003.0	7,003.0	15.6	15.6	89.53	9.4	1,151.9	1,151.9	1,120.8	36.945			
7,100.0	7,100.0	7,103.0	7,103.0	15.8	15.8	89.53	9.4	1,151.9	1,151.9	1,120.3	36.420			
7,200.0	7,200.0	7,203.0	7,203.0	16.0	16.0	89.53	9.4	1,151.9	1,151.9	1,119.9	35.910			
7,300.0	7,300.0	7,303.0	7,303.0	16.3	16.3	89.53	9.4	1,151.9	1,151.9	1,119.4	35.414			
7,400.0	7,400.0	7,403.0	7,403.0	16.5	16.5	89.53	9.4	1,151.9	1,151.9	1,119.0	34.931			
7,500.0	7,500.0	7,503.0	7,503.0	16.7	16.7	89.53	9.4	1,151.9	1,151.9	1,118.5	34.461			
7,600.0	7,600.0	7,603.0	7,603.0	16.9	16.9	89.53	9.4	1,151.9	1,151.9	1,118.1	34.004			
7,700.0	7,700.0	7,703.0	7,703.0	17.2	17.2	89.53	9.4	1,151.9	1,151.9	1,117.6	33.559			
7,800.0	7,800.0	7,803.0	7,803.0	17.4	17.4	89.53	9.4	1,151.9	1,151.9	1,117.2	33.125			
7,900.0	7,900.0	7,903.0	7,903.0	17.6	17.6	89.53	9.4	1,151.9	1,151.9	1,116.7	32.702			
8,000.0	8,000.0	8,003.0	8,003.0	17.8	17.8	89.53	9.4	1,151.9	1,151.9	1,116.3	32.290			
8,100.0	8,100.0	8,103.0	8,103.0	18.1	18.1	89.53	9.4	1,151.9	1,151.9	1,115.8	31.888			
8,200.0	8,200.0	8,203.0	8,203.0	18.3	18.3	89.53	9.4	1,151.9	1,151.9	1,115.4	31.496			
8,300.0	8,300.0	8,303.0	8,303.0	18.5	18.5	89.53	9.4	1,151.9	1,151.9	1,114.9	31.114			
8,400.0	8,400.0	8,403.0	8,403.0	18.7	18.7	89.53	9.4	1,151.9	1,151.9	1,114.5	30.740			
8,500.0	8,500.0	8,503.0	8,503.0	19.0	19.0	89.53	9.4	1,151.9	1,151.9	1,114.0	30.376			
8,600.0	8,600.0	8,603.0	8,603.0	19.2	19.2	89.53	9.4	1,151.9	1,151.9	1,113.6	30.020			
8,700.0	8,700.0	8,703.0	8,703.0	19.4	19.4	89.53	9.4	1,151.9	1,151.9	1,113.1	29.673			
8,800.0	8,800.0	8,803.0	8,803.0	19.6	19.6	89.53	9.4	1,151.9	1,151.9	1,112.7	29.333			
8,900.0	8,900.0	8,903.0	8,903.0	19.9	19.9	89.53	9.4	1,151.9	1,151.9	1,112.2	29.001			
9,000.0	9,000.0	9,003.0	9,003.0	20.1	20.1	89.53	9.4	1,151.9	1,151.9	1,111.8	28.676			
9,100.0	9,100.0	9,103.0	9,103.0	20.3	20.3	89.53	9.4	1,151.9	1,151.9	1,111.3	28.359			
9,200.0	9,200.0	9,203.0	9,203.0	20.5	20.5	89.53	9.4	1,151.9	1,151.9	1,110.9	28.049			
9,300.0	9,300.0	9,303.0	9,303.0	20.8	20.8	89.53	9.4	1,151.9	1,151.9	1,110.4	27.745			
9,400.0	9,400.0	9,403.0	9,403.0	21.0	21.0	89.53	9.4	1,151.9	1,151.9	1,110.0	27.448			
9,500.0	9,500.0	9,503.0	9,503.0	21.2	21.2	89.53	9.4	1,151.9	1,151.9	1,109.5	27.157			
9,600.0	9,600.0	9,603.0	9,603.0	21.4	21.4	89.53	9.4	1,151.9	1,151.9	1,109.1	26.872			
9,700.0	9,700.0	9,703.0	9,703.0	21.7	21.7	89.53	9.4	1,151.9	1,151.9	1,108.6	26.593			
9,800.0	9,800.0	9,803.0	9,803.0	21.9	21.9	89.53	9.4	1,151.9	1,151.9	1,108.2	26.320			
9,900.0	9,900.0	9,903.0	9,903.0	22.1	22.1	89.53	9.4	1,151.9	1,151.9	1,107.7	26.053			
10,000.0	10,000.0	10,003.0	10,003.0	22.3	22.3	89.53	9.4	1,151.9	1,151.9	1,107.3	25.790			
10,100.0	10,100.0	10,103.0	10,103.0	22.6	22.6	89.53	9.4	1,151.9	1,151.9	1,106.8	25.533			
10,200.0	10,200.0	10,203.0	10,203.0	22.8	22.8	89.53	9.4	1,151.9	1,151.9	1,106.4	25.281			
10,300.0	10,300.0	10,303.0	10,303.0	23.0	23.0	89.53	9.4	1,151.9	1,151.9	1,105.9	25.034			
10,400.0	10,400.0	10,403.0	10,403.0	23.2	23.2	89.53	9.4	1,151.9	1,151.9	1,105.5	24.792			
10,500.0	10,500.0	10,503.0	10,503.0	23.5	23.5	89.53	9.4	1,151.9	1,151.9	1,105.0	24.555			
10,600.0	10,600.0	10,603.0	10,603.0	23.7	23.7	89.53	9.4	1,151.9	1,151.9	1,104.6	24.322			
10,700.0	10,700.0	10,703.0	10,703.0	23.9	23.9	89.53	9.4	1,151.9	1,151.9	1,104.1	24.093			
10,747.5	10,747.5	10,750.5	10,750.5	24.0	24.0	89.53	9.4	1,151.9	1,151.9	1,103.9	23.986			
10,750.0	10,750.0	10,753.0	10,753.0	24.0	24.0	89.87	9.4	1,151.9	1,151.9	1,103.9	23.980			
10,775.0	10,775.0	10,777.9	10,777.9	24.1	24.1	89.90	9.6	1,151.9	1,151.9	1,103.8	23.925			
10,800.0	10,799.9	10,802.8	10,802.8	24.1	24.1	89.93	11.1	1,151.9	1,151.9	1,103.7	23.870			
10,825.0	10,824.7	10,827.7	10,827.5	24.2	24.2	89.96	13.8	1,151.9	1,151.9	1,103.6	23.817			
10,828.7	10,828.3	10,831.4	10,831.2	24.2	24.2	89.97	14.4	1,151.9	1,151.9	1,103.6	23.809 CC			
10,850.0	10,849.2	10,852.7	10,852.2	24.2	24.2	89.99	17.9	1,151.9	1,151.9	1,103.5	23.764			
10,875.0	10,873.5	10,877.7	10,876.6	24.3	24.3	90.02	23.2	1,151.8	1,151.9	1,103.4	23.712			
10,900.0	10,897.4	10,902.7	10,900.7	24.3	24.3	90.06	29.8	1,151.8	1,151.9	1,103.3	23.662			
10,925.0	10,920.9	10,927.8	10,924.5	24.4	24.4	90.09	37.7	1,151.7	1,151.9	1,103.2	23.611			
10,950.0	10,944.0	10,952.9	10,947.9	24.4	24.5	90.12	46.8	1,151.7	1,151.9	1,103.1	23.561			

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
10,975.0	10,966.5	10,978.0	10,970.8	24.5	24.5	90.15	57.2	1,151.6	1,151.9	1,102.9	23.511		
11,000.0	10,988.4	11,003.2	10,993.1	24.5	24.6	90.18	68.7	1,151.6	1,151.9	1,102.8	23.461		
11,025.0	11,009.6	11,028.4	11,014.9	24.6	24.6	90.21	81.5	1,151.5	1,152.0	1,102.7	23.410		
11,050.0	11,030.2	11,053.6	11,035.9	24.7	24.7	90.24	95.4	1,151.4	1,152.0	1,102.6	23.358		
11,075.0	11,049.9	11,078.9	11,056.2	24.7	24.7	90.27	110.4	1,151.3	1,152.0	1,102.5	23.305		
11,100.0	11,068.8	11,104.2	11,075.8	24.8	24.8	90.30	126.4	1,151.2	1,152.0	1,102.4	23.249		
11,125.0	11,086.9	11,129.5	11,094.4	24.8	24.8	90.33	143.6	1,151.1	1,152.0	1,102.3	23.192		
11,150.0	11,104.0	11,154.8	11,112.2	24.9	24.9	90.36	161.7	1,151.0	1,152.0	1,102.2	23.131		
11,175.0	11,120.1	11,180.2	11,129.0	25.0	25.0	90.38	180.7	1,150.9	1,152.0	1,102.0	23.068		
11,200.0	11,135.2	11,205.6	11,144.7	25.0	25.0	90.41	200.6	1,150.8	1,152.0	1,101.9	23.001		
11,225.0	11,149.3	11,231.1	11,159.4	25.1	25.1	90.43	221.4	1,150.7	1,152.0	1,101.8	22.930		
11,250.0	11,162.2	11,256.6	11,173.0	25.2	25.2	90.45	242.9	1,150.6	1,152.0	1,101.6	22.855		
11,275.0	11,174.1	11,282.0	11,185.5	25.3	25.3	90.48	265.2	1,150.4	1,152.0	1,101.4	22.776		
11,300.0	11,184.7	11,307.6	11,196.7	25.4	25.4	90.50	288.1	1,150.3	1,152.0	1,101.2	22.693		
11,325.0	11,194.1	11,333.1	11,206.7	25.5	25.5	90.51	311.6	1,150.2	1,152.0	1,101.1	22.605		
11,350.0	11,202.4	11,358.7	11,215.5	25.6	25.6	90.53	335.6	1,150.0	1,152.0	1,100.8	22.513		
11,375.0	11,209.3	11,384.2	11,222.9	25.7	25.7	90.55	360.0	1,149.9	1,152.0	1,100.6	22.417		
11,400.0	11,215.1	11,409.8	11,229.0	25.8	25.8	90.56	384.9	1,149.7	1,152.0	1,100.4	22.316		
11,425.0	11,219.5	11,435.4	11,233.8	25.9	25.9	90.57	410.0	1,149.6	1,152.0	1,100.2	22.211		
11,450.0	11,222.6	11,461.1	11,237.3	26.1	26.1	90.58	435.4	1,149.4	1,152.0	1,099.9	22.103		
11,475.0	11,224.4	11,466.7	11,239.4	26.2	26.2	90.59	461.0	1,149.3	1,152.0	1,099.7	21.991		
11,501.3	11,225.0	11,513.6	11,240.1	26.3	26.3	90.60	487.9	1,149.1	1,152.1	1,099.4	21.870		
11,600.0	11,224.2	11,612.5	11,238.7	26.9	27.0	90.57	586.8	1,148.6	1,152.1	1,098.2	21.377		
11,700.0	11,223.4	11,712.5	11,237.3	27.7	27.7	90.54	686.7	1,148.0	1,152.1	1,096.7	20.822		
11,800.0	11,222.6	11,812.5	11,235.9	28.5	28.5	90.51	786.7	1,147.4	1,152.1	1,095.1	20.225		
11,900.0	11,221.8	11,912.5	11,234.5	29.4	29.4	90.48	886.7	1,146.8	1,152.1	1,093.3	19.601		
12,000.0	11,221.0	12,012.5	11,233.1	30.4	30.4	90.45	986.7	1,146.3	1,152.1	1,091.3	18.962		
12,100.0	11,220.3	12,112.5	11,231.7	31.4	31.4	90.42	1,086.7	1,145.7	1,152.1	1,089.2	18.320		
12,200.0	11,219.5	12,212.5	11,230.3	32.6	32.6	90.39	1,186.7	1,145.1	1,152.1	1,086.9	17.684		
12,300.0	11,218.7	12,312.5	11,228.9	33.8	33.8	90.36	1,286.7	1,144.5	1,152.1	1,084.6	17.059		
12,400.0	11,217.9	12,412.5	11,227.5	35.0	35.0	90.33	1,386.7	1,143.9	1,152.1	1,082.1	16.432		
12,500.0	11,217.1	12,512.5	11,226.1	36.3	36.3	90.30	1,486.6	1,143.4	1,152.1	1,079.5	15.865		
12,600.0	11,216.3	12,612.5	11,224.7	37.7	37.6	90.27	1,586.6	1,142.8	1,152.1	1,076.8	15.301		
12,700.0	11,215.6	12,712.5	11,223.3	39.0	39.0	90.23	1,686.6	1,142.2	1,152.1	1,074.1	14.760		
12,800.0	11,214.8	12,812.5	11,221.9	40.4	40.4	90.20	1,786.6	1,141.6	1,152.1	1,071.3	14.244		
12,900.0	11,214.0	12,912.5	11,220.5	41.9	41.9	90.17	1,886.6	1,141.1	1,152.1	1,068.4	13.753		
13,000.0	11,213.2	13,012.5	11,219.1	43.4	43.4	90.14	1,986.6	1,140.5	1,152.2	1,065.4	13.285		
13,100.0	11,212.4	13,112.5	11,217.7	44.9	44.9	90.11	2,086.6	1,139.9	1,152.2	1,062.4	12.841		
13,200.0	11,211.6	13,212.5	11,216.3	46.4	46.4	90.08	2,186.5	1,139.3	1,152.2	1,059.4	12.420		
13,300.0	11,210.9	13,312.5	11,214.9	47.9	47.9	90.05	2,286.5	1,138.7	1,152.2	1,056.3	12.020		
13,400.0	11,210.1	13,412.5	11,213.5	49.5	49.5	90.02	2,386.5	1,138.2	1,152.2	1,053.2	11.640		
13,500.0	11,209.3	13,512.5	11,212.0	51.1	51.1	89.99	2,486.5	1,137.6	1,152.2	1,050.1	11.280		
13,600.0	11,208.5	13,612.5	11,210.6	52.7	52.7	89.96	2,586.5	1,137.0	1,152.2	1,046.9	10.938		
13,700.0	11,207.7	13,712.5	11,209.2	54.3	54.3	89.93	2,686.5	1,136.4	1,152.2	1,043.7	10.614		
13,800.0	11,206.9	13,812.5	11,207.8	55.9	55.9	89.90	2,786.5	1,135.9	1,152.2	1,040.4	10.306		
13,900.0	11,206.2	13,912.5	11,206.4	57.5	57.5	89.86	2,886.4	1,135.3	1,152.3	1,037.2	10.013		
14,000.0	11,205.4	14,012.5	11,205.0	59.2	59.2	89.83	2,986.4	1,134.7	1,152.3	1,033.9	9.735		
14,100.0	11,204.6	14,112.5	11,203.6	60.9	60.8	89.80	3,086.4	1,134.1	1,152.3	1,030.6	9.470		
14,200.0	11,203.8	14,212.5	11,202.2	62.5	62.5	89.77	3,186.4	1,133.5	1,152.3	1,027.3	9.217		
14,300.0	11,203.0	14,312.5	11,200.8	64.2	64.2	89.74	3,286.4	1,133.0	1,152.3	1,023.9	8.977		
14,400.0	11,202.2	14,412.5	11,199.4	65.9	65.9	89.71	3,386.4	1,132.4	1,152.3	1,020.6	8.748		
14,500.0	11,201.4	14,512.5	11,198.0	67.6	67.5	89.68	3,486.4	1,131.8	1,152.3	1,017.2	8.529		

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 #3H
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 #3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre N-S (usft)	E-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
14,600.0	11,200.7	14,612.5	11,196.6	69.3	69.2	89.65	3,586.4	1,131.2	1,152.3	1,013.8	8.320		
14,700.0	11,199.9	14,712.5	11,195.2	71.0	70.9	89.62	3,686.3	1,130.7	1,152.4	1,010.5	8.121		
14,800.0	11,199.1	14,812.5	11,193.8	72.7	72.6	89.59	3,786.3	1,130.1	1,152.4	1,007.1	7.930		
14,900.0	11,198.3	14,912.4	11,192.4	74.4	74.4	89.56	3,886.3	1,129.5	1,152.4	1,003.6	7.747		
15,000.0	11,197.5	15,012.4	11,191.0	76.1	76.1	89.53	3,986.3	1,128.9	1,152.4	1,000.2	7.572		
15,100.0	11,196.7	15,112.4	11,189.6	77.8	77.8	89.50	4,086.3	1,128.3	1,152.4	996.8	7.405		
15,200.0	11,196.0	15,212.4	11,188.2	79.6	79.5	89.46	4,186.3	1,127.8	1,152.4	993.4	7.244		
15,300.0	11,195.2	15,312.4	11,186.8	81.3	81.3	89.43	4,286.3	1,127.2	1,152.5	989.9	7.090		
15,400.0	11,194.4	15,412.4	11,185.4	83.0	83.0	89.40	4,386.2	1,126.6	1,152.5	986.4	6.942		
15,500.0	11,193.6	15,512.4	11,184.0	84.8	84.7	89.37	4,486.2	1,126.0	1,152.5	983.0	6.799		
15,600.0	11,192.8	15,612.4	11,182.6	86.5	86.5	89.34	4,586.2	1,125.5	1,152.5	979.5	6.662		
15,700.0	11,192.0	15,712.4	11,181.2	88.3	88.2	89.31	4,686.2	1,124.9	1,152.5	976.0	6.531		
15,754.0	11,191.6	15,766.4	11,180.4	89.2	89.2	89.29	4,740.2	1,124.6	1,152.5	974.2	6.461		
15,800.0	11,191.3	15,796.7	11,180.0	90.0	89.7	89.28	4,770.5	1,124.4	1,152.7	972.9	6.414	ES	
15,900.0	11,190.5	15,796.7	11,180.0	91.8	89.7	89.28	4,770.5	1,124.4	1,158.4	976.9	6.384	SF	
16,000.0	11,189.7	15,796.7	11,180.0	93.5	89.7	89.28	4,770.5	1,124.4	1,172.6	989.4	6.400		
16,100.0	11,188.9	15,796.7	11,180.0	95.3	89.7	89.28	4,770.5	1,124.4	1,195.1	1,010.1	6.461		
16,200.0	11,188.1	15,796.7	11,180.0	97.0	89.7	89.28	4,770.5	1,124.4	1,225.3	1,038.6	6.562		
16,300.0	11,187.3	15,796.7	11,180.0	98.8	89.7	89.28	4,770.5	1,124.4	1,262.7	1,074.2	6.699		
16,400.0	11,186.6	15,796.7	11,180.0	100.6	89.7	89.28	4,770.5	1,124.4	1,306.8	1,116.5	6.868		
16,500.0	11,185.8	15,796.7	11,180.0	102.3	89.7	89.28	4,770.5	1,124.4	1,356.8	1,164.8	7.066		
16,600.0	11,185.0	15,796.7	11,180.0	104.1	89.7	89.28	4,770.5	1,124.4	1,412.1	1,218.3	7.287		
16,700.0	11,184.2	15,796.7	11,180.0	105.9	89.7	89.28	4,770.5	1,124.4	1,472.2	1,276.6	7.528		
16,800.0	11,183.4	15,796.7	11,180.0	107.6	89.7	89.28	4,770.5	1,124.4	1,536.4	1,339.0	7.785		
16,900.0	11,182.6	15,796.7	11,180.0	109.4	89.7	89.28	4,770.5	1,124.4	1,604.2	1,405.1	8.057		
17,000.0	11,181.8	15,796.7	11,180.0	111.2	89.7	89.28	4,770.5	1,124.4	1,675.3	1,474.5	8.340		
17,100.0	11,181.1	15,796.7	11,180.0	113.0	89.7	89.28	4,770.5	1,124.4	1,749.3	1,546.6	8.631		
17,200.0	11,180.3	15,796.7	11,180.0	114.8	89.7	89.28	4,770.5	1,124.4	1,825.7	1,621.2	8.930		
17,300.0	11,179.5	15,796.7	11,180.0	116.5	89.7	89.28	4,770.5	1,124.4	1,904.3	1,698.1	9.234		
17,400.0	11,178.7	15,796.7	11,180.0	118.3	89.7	89.28	4,770.5	1,124.4	1,984.8	1,776.8	9.542		
17,500.0	11,177.9	15,796.7	11,180.0	120.1	89.7	89.28	4,770.5	1,124.4	2,067.0	1,857.3	9.853		
17,600.0	11,177.1	15,796.7	11,180.0	121.9	89.7	89.28	4,770.5	1,124.4	2,150.8	1,939.2	10.166		
17,700.0	11,176.4	15,796.7	11,180.0	123.7	89.7	89.28	4,770.5	1,124.4	2,235.9	2,022.5	10.479		
17,800.0	11,175.6	15,796.7	11,180.0	125.5	89.7	89.28	4,770.5	1,124.4	2,322.1	2,107.0	10.793		
17,900.0	11,174.8	15,796.7	11,180.0	127.2	89.7	89.28	4,770.5	1,124.4	2,409.4	2,192.5	11.107		
18,000.0	11,174.0	15,796.7	11,180.0	129.0	89.7	89.28	4,770.5	1,124.4	2,497.7	2,279.0	11.420		
18,100.0	11,173.2	15,796.7	11,180.0	130.8	89.7	89.28	4,770.5	1,124.4	2,586.8	2,366.3	11.731		
18,200.0	11,172.4	15,796.7	11,180.0	132.6	89.7	89.28	4,770.5	1,124.4	2,676.7	2,454.4	12.041		
18,300.0	11,171.7	15,796.7	11,180.0	134.4	89.7	89.28	4,770.5	1,124.4	2,767.3	2,543.2	12.349		
18,400.0	11,170.9	15,796.7	11,180.0	136.2	89.7	89.28	4,770.5	1,124.4	2,858.6	2,632.7	12.655		
18,500.0	11,170.1	15,796.7	11,180.0	138.0	89.7	89.28	4,770.5	1,124.4	2,950.3	2,722.7	12.958		
18,600.0	11,169.3	15,796.7	11,180.0	139.8	89.7	89.28	4,770.5	1,124.4	3,042.6	2,813.2	13.259		
18,700.0	11,168.5	15,796.7	11,180.0	141.6	89.7	89.28	4,770.5	1,124.4	3,135.4	2,904.2	13.558		
18,800.0	11,167.7	15,796.7	11,180.0	143.4	89.7	89.28	4,770.5	1,124.4	3,228.6	2,995.6	13.853		
18,900.0	11,167.0	15,796.7	11,180.0	145.2	89.7	89.28	4,770.5	1,124.4	3,322.2	3,087.4	14.146		
19,000.0	11,166.2	15,796.7	11,180.0	147.0	89.7	89.28	4,770.5	1,124.4	3,416.2	3,179.5	14.436		
19,100.0	11,165.4	15,796.7	11,180.0	148.8	89.7	89.28	4,770.5	1,124.4	3,510.5	3,272.0	14.722		
19,200.0	11,164.6	15,796.7	11,180.0	150.6	89.7	89.28	4,770.5	1,124.4	3,605.1	3,364.9	15.006		
19,300.0	11,163.8	15,796.7	11,180.0	152.4	89.7	89.28	4,770.5	1,124.4	3,700.0	3,457.9	15.286		
19,400.0	11,163.0	15,796.7	11,180.0	154.2	89.7	89.28	4,770.5	1,124.4	3,795.1	3,551.3	15.564		
19,500.0	11,162.2	15,796.7	11,180.0	156.0	89.7	89.28	4,770.5	1,124.4	3,890.5	3,644.9	15.838		
19,600.0	11,161.5	15,796.7	11,180.0	157.8	89.7	89.28	4,770.5	1,124.4	3,986.2	3,738.7	16.109		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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)	Measured Depth (usft)	Vertical Depth (usft)	Samt 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	
19,700.0	11,160.7	15,796.7	11,180.0	159.6	89.7	89.28	4,770.5	1,124.4	4,082.0	3,832.7	16.377		
19,800.0	11,159.9	15,796.7	11,180.0	161.4	89.7	89.28	4,770.5	1,124.4	4,178.0	3,927.0	16.642		
19,900.0	11,159.1	15,796.7	11,180.0	163.2	89.7	89.28	4,770.5	1,124.4	4,274.2	4,021.4	16.904		
20,000.0	11,158.3	15,796.7	11,180.0	165.0	89.7	89.28	4,770.5	1,124.4	4,370.6	4,116.0	17.163		
20,100.0	11,157.5	15,796.7	11,180.0	166.8	89.7	89.28	4,770.5	1,124.4	4,467.1	4,210.7	17.419		
20,200.0	11,156.8	15,796.7	11,180.0	168.6	89.7	89.28	4,770.5	1,124.4	4,563.8	4,305.6	17.672		
20,300.0	11,156.0	15,796.7	11,180.0	170.4	89.7	89.28	4,770.5	1,124.4	4,660.7	4,400.6	17.922		
20,400.0	11,155.2	15,796.7	11,180.0	172.2	89.7	89.28	4,770.5	1,124.4	4,757.6	4,495.8	18.168		
20,500.0	11,154.4	15,796.7	11,180.0	174.0	89.7	89.28	4,770.5	1,124.4	4,854.7	4,591.0	18.412		
20,600.0	11,153.6	15,796.7	11,180.0	175.8	89.7	89.28	4,770.5	1,124.4	4,951.9	4,686.4	18.653		
20,700.0	11,152.8	15,796.7	11,180.0	177.6	89.7	89.28	4,770.5	1,124.4	5,049.2	4,781.9	18.891		
20,800.0	11,152.1	15,796.7	11,180.0	179.4	89.7	89.28	4,770.5	1,124.4	5,146.6	4,877.5	19.127		
20,900.0	11,151.3	15,796.7	11,180.0	181.2	89.7	89.28	4,770.5	1,124.4	5,244.1	4,973.2	19.359		
21,000.0	11,150.5	15,796.7	11,180.0	183.0	89.7	89.28	4,770.5	1,124.4	5,341.7	5,069.0	19.589		
21,062.2	11,150.0	15,796.7	11,180.0	184.1	89.7	89.28	4,770.5	1,124.4	5,402.5	5,128.7	19.730		
21,062.7	11,150.0	15,796.7	11,180.0	184.1	89.7	89.28	4,770.5	1,124.4	5,403.0	5,129.1	19.731		



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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 #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)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.46	-10.6	-1,319.8	1,319.8			
100.0	100.0	100.0	100.0	0.1	0.1	-90.46	-10.6	-1,319.8	1,319.8	1,319.7	8,510.239	
200.0	200.0	200.0	200.0	0.3	0.3	-90.46	-10.6	-1,319.8	1,319.8	1,319.2	2,182.926	
300.0	300.0	300.0	300.0	0.5	0.5	-90.46	-10.6	-1,319.8	1,319.8	1,318.8	1,252.041	
400.0	400.0	400.0	400.0	0.8	0.8	-90.46	-10.6	-1,319.8	1,319.8	1,318.3	877.739	
500.0	500.0	500.0	500.0	1.0	1.0	-90.46	-10.6	-1,319.8	1,319.8	1,317.9	675.728	
600.0	600.0	600.0	600.0	1.2	1.2	-90.46	-10.6	-1,319.8	1,319.8	1,317.4	549.305	
700.0	700.0	700.0	700.0	1.4	1.4	-90.46	-10.6	-1,319.8	1,319.8	1,317.0	462.732	
800.0	800.0	800.0	800.0	1.7	1.7	-90.46	-10.6	-1,319.8	1,319.8	1,316.5	399.733	
900.0	900.0	900.0	900.0	1.9	1.9	-90.46	-10.6	-1,319.8	1,319.8	1,316.1	351.832	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.46	-10.6	-1,319.8	1,319.8	1,315.6	314.183	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-90.46	-10.6	-1,319.8	1,319.8	1,315.2	283.812	
1,200.0	1,200.0	1,200.0	1,200.0	2.5	2.5	-90.46	-10.6	-1,319.8	1,319.8	1,314.7	258.796	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.46	-10.6	-1,319.8	1,319.8	1,314.3	237.832	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.46	-10.6	-1,319.8	1,319.8	1,313.8	220.010	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	-90.46	-10.6	-1,319.8	1,319.8	1,313.4	204.673	
1,600.0	1,600.0	1,600.0	1,600.0	3.4	3.4	-90.46	-10.6	-1,319.8	1,319.8	1,312.9	191.335	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-90.46	-10.6	-1,319.8	1,319.8	1,312.5	179.629	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-90.46	-10.6	-1,319.8	1,319.8	1,312.0	169.273	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	-90.46	-10.6	-1,319.8	1,319.8	1,311.6	160.046	
2,000.0	2,000.0	2,000.0	2,000.0	4.3	4.3	-90.46	-10.6	-1,319.8	1,319.8	1,311.1	151.772	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-90.46	-10.6	-1,319.8	1,319.8	1,310.7	144.312	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-90.46	-10.6	-1,319.8	1,319.8	1,310.2	137.551	
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	-90.46	-10.6	-1,319.8	1,319.8	1,309.8	131.396	
2,400.0	2,400.0	2,400.0	2,400.0	5.2	5.2	-90.46	-10.6	-1,319.8	1,319.8	1,309.3	125.767	
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-90.46	-10.6	-1,319.8	1,319.8	1,308.9	120.601	
2,600.0	2,600.0	2,600.0	2,600.0	5.7	5.7	-90.46	-10.6	-1,319.8	1,319.8	1,308.4	115.843	
2,700.0	2,700.0	2,700.0	2,700.0	5.9	5.9	-90.46	-10.6	-1,319.8	1,319.8	1,308.0	111.446	
2,800.0	2,800.0	2,800.0	2,800.0	6.1	6.1	-90.46	-10.6	-1,319.8	1,319.8	1,307.6	107.370	
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-90.46	-10.6	-1,319.8	1,319.8	1,307.1	103.582	
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-90.46	-10.6	-1,319.8	1,319.8	1,306.7	100.052	
3,100.0	3,100.0	3,100.0	3,100.0	6.8	6.8	-90.46	-10.6	-1,319.8	1,319.8	1,306.2	96.755	
3,200.0	3,200.0	3,200.0	3,200.0	7.0	7.0	-90.46	-10.6	-1,319.8	1,319.8	1,305.8	93.668	
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-90.46	-10.6	-1,319.8	1,319.8	1,305.3	90.773	
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-90.46	-10.6	-1,319.8	1,319.8	1,304.9	88.050	
3,500.0	3,500.0	3,500.0	3,500.0	7.7	7.7	-90.46	-10.6	-1,319.8	1,319.8	1,304.4	85.487	
3,600.0	3,600.0	3,600.0	3,600.0	7.9	7.9	-90.46	-10.6	-1,319.8	1,319.8	1,304.0	83.068	
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-90.46	-10.6	-1,319.8	1,319.8	1,303.5	80.782	
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-90.46	-10.6	-1,319.8	1,319.8	1,303.1	78.619	
3,900.0	3,900.0	3,900.0	3,900.0	8.6	8.6	-90.46	-10.6	-1,319.8	1,319.8	1,302.6	76.569	
4,000.0	4,000.0	4,000.0	4,000.0	8.8	8.8	-90.46	-10.6	-1,319.8	1,319.8	1,302.2	74.623	
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-90.46	-10.6	-1,319.8	1,319.8	1,301.7	72.773	
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-90.46	-10.6	-1,319.8	1,319.8	1,301.3	71.013	
4,300.0	4,300.0	4,300.0	4,300.0	9.5	9.5	-90.46	-10.6	-1,319.8	1,319.8	1,300.8	69.336	
4,400.0	4,400.0	4,400.0	4,400.0	9.7	9.7	-90.46	-10.6	-1,319.8	1,319.8	1,300.4	67.736	
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-90.46	-10.6	-1,319.8	1,319.8	1,299.9	66.209	
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	-90.46	-10.6	-1,319.8	1,319.8	1,299.5	64.749	
4,700.0	4,700.0	4,700.0	4,700.0	10.4	10.4	-90.46	-10.6	-1,319.8	1,319.8	1,299.0	63.352	
4,800.0	4,800.0	4,800.0	4,800.0	10.6	10.6	-90.46	-10.6	-1,319.8	1,319.8	1,298.6	62.014	
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	-90.46	-10.6	-1,319.8	1,319.8	1,298.1	60.731	
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	-90.46	-10.6	-1,319.8	1,319.8	1,297.7	59.500	
5,100.0	5,100.0	5,100.0	5,100.0	11.3	11.3	-90.46	-10.6	-1,319.8	1,319.8	1,297.2	58.318	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Datbase:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:
Sec 27, T22S, R34E - Squints 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)	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
5,200.0	5,200.0	5,200.0	5,200.0	11.5	11.5	-90.46	-10.6	-1,319.8	1,319.8	1,296.8	57.183	
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	-90.46	-10.6	-1,319.8	1,319.8	1,296.3	56.090	
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	-90.46	-10.6	-1,319.8	1,319.8	1,295.9	55.039	
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	-90.46	-10.6	-1,319.8	1,319.8	1,295.4	54.026	
5,600.0	5,600.0	5,600.0	5,600.0	12.4	12.4	-90.46	-10.6	-1,319.8	1,319.8	1,295.0	53.050	
5,700.0	5,700.0	5,700.0	5,700.0	12.7	12.7	-90.46	-10.6	-1,319.8	1,319.8	1,294.5	52.108	
5,800.0	5,800.0	5,800.0	5,800.0	12.9	12.9	-90.46	-10.6	-1,319.8	1,319.8	1,294.1	51.200	
5,900.0	5,900.0	5,900.0	5,900.0	13.1	13.1	-90.46	-10.6	-1,319.8	1,319.8	1,293.6	50.322	
6,000.0	6,000.0	6,000.0	6,000.0	13.3	13.3	-90.46	-10.6	-1,319.8	1,319.8	1,293.2	49.474	
6,100.0	6,100.0	6,100.0	6,100.0	13.6	13.6	-90.46	-10.6	-1,319.8	1,319.8	1,292.7	48.654	
6,200.0	6,200.0	6,200.0	6,200.0	13.8	13.8	-90.46	-10.6	-1,319.8	1,319.8	1,292.3	47.861	
6,300.0	6,300.0	6,300.0	6,300.0	14.0	14.0	-90.46	-10.6	-1,319.8	1,319.8	1,291.8	47.093	
6,400.0	6,400.0	6,400.0	6,400.0	14.2	14.2	-90.46	-10.6	-1,319.8	1,319.8	1,291.4	46.350	
6,500.0	6,500.0	6,500.0	6,500.0	14.5	14.5	-90.46	-10.6	-1,319.8	1,319.8	1,290.9	45.630	
6,600.0	6,600.0	6,600.0	6,600.0	14.7	14.7	-90.46	-10.6	-1,319.8	1,319.8	1,290.5	44.931	
6,700.0	6,700.0	6,700.0	6,700.0	14.9	14.9	-90.46	-10.6	-1,319.8	1,319.8	1,290.0	44.254	
6,800.0	6,800.0	6,800.0	6,800.0	15.1	15.1	-90.46	-10.6	-1,319.8	1,319.8	1,289.6	43.597	
6,900.0	6,900.0	6,900.0	6,900.0	15.4	15.4	-90.46	-10.6	-1,319.8	1,319.8	1,289.1	42.959	
7,000.0	7,000.0	7,000.0	7,000.0	15.6	15.6	-90.46	-10.6	-1,319.8	1,319.8	1,288.7	42.340	
7,100.0	7,100.0	7,100.0	7,100.0	15.8	15.8	-90.46	-10.6	-1,319.8	1,319.8	1,288.2	41.738	
7,200.0	7,200.0	7,200.0	7,200.0	16.0	16.0	-90.46	-10.6	-1,319.8	1,319.8	1,287.8	41.153	
7,300.0	7,300.0	7,300.0	7,300.0	16.3	16.3	-90.46	-10.6	-1,319.8	1,319.8	1,287.3	40.584	
7,400.0	7,400.0	7,400.0	7,400.0	16.5	16.5	-90.46	-10.6	-1,319.8	1,319.8	1,286.9	40.030	
7,500.0	7,500.0	7,500.0	7,500.0	16.7	16.7	-90.46	-10.6	-1,319.8	1,319.8	1,286.4	39.492	
7,600.0	7,600.0	7,600.0	7,600.0	16.9	16.9	-90.46	-10.6	-1,319.8	1,319.8	1,286.0	38.968	
7,700.0	7,700.0	7,700.0	7,700.0	17.2	17.2	-90.46	-10.6	-1,319.8	1,319.8	1,285.5	38.457	
7,800.0	7,800.0	7,800.0	7,800.0	17.4	17.4	-90.46	-10.6	-1,319.8	1,319.8	1,285.1	37.960	
7,900.0	7,900.0	7,900.0	7,900.0	17.6	17.6	-90.46	-10.6	-1,319.8	1,319.8	1,284.6	37.476	
8,000.0	8,000.0	8,000.0	8,000.0	17.8	17.8	-90.46	-10.6	-1,319.8	1,319.8	1,284.2	37.003	
8,100.0	8,100.0	8,100.0	8,100.0	18.1	18.1	-90.46	-10.6	-1,319.8	1,319.8	1,283.7	36.543	
8,200.0	8,200.0	8,200.0	8,200.0	18.3	18.3	-90.46	-10.6	-1,319.8	1,319.8	1,283.3	36.094	
8,300.0	8,300.0	8,300.0	8,300.0	18.5	18.5	-90.46	-10.6	-1,319.8	1,319.8	1,282.8	35.655	
8,400.0	8,400.0	8,400.0	8,400.0	18.7	18.7	-90.46	-10.6	-1,319.8	1,319.8	1,282.4	35.228	
8,500.0	8,500.0	8,500.0	8,500.0	19.0	19.0	-90.46	-10.6	-1,319.8	1,319.8	1,281.9	34.810	
8,600.0	8,600.0	8,600.0	8,600.0	19.2	19.2	-90.46	-10.6	-1,319.8	1,319.8	1,281.5	34.402	
8,700.0	8,700.0	8,700.0	8,700.0	19.4	19.4	-90.46	-10.6	-1,319.8	1,319.8	1,281.0	34.004	
8,800.0	8,800.0	8,800.0	8,800.0	19.6	19.6	-90.46	-10.6	-1,319.8	1,319.8	1,280.6	33.614	
8,900.0	8,900.0	8,900.0	8,900.0	19.9	19.9	-90.46	-10.6	-1,319.8	1,319.8	1,280.1	33.234	
9,000.0	9,000.0	9,000.0	9,000.0	20.1	20.1	-90.46	-10.6	-1,319.8	1,319.8	1,279.7	32.862	
9,100.0	9,100.0	9,100.0	9,100.0	20.3	20.3	-90.46	-10.6	-1,319.8	1,319.8	1,279.2	32.498	
9,200.0	9,200.0	9,200.0	9,200.0	20.5	20.5	-90.46	-10.6	-1,319.8	1,319.8	1,278.8	32.142	
9,300.0	9,300.0	9,300.0	9,300.0	20.8	20.8	-90.46	-10.6	-1,319.8	1,319.8	1,278.3	31.794	
9,400.0	9,400.0	9,400.0	9,400.0	21.0	21.0	-90.46	-10.6	-1,319.8	1,319.8	1,277.9	31.454	
9,500.0	9,500.0	9,500.0	9,500.0	21.2	21.2	-90.46	-10.6	-1,319.8	1,319.8	1,277.4	31.120	
9,600.0	9,600.0	9,600.0	9,600.0	21.4	21.4	-90.46	-10.6	-1,319.8	1,319.8	1,277.0	30.794	
9,700.0	9,700.0	9,700.0	9,700.0	21.7	21.7	-90.46	-10.6	-1,319.8	1,319.8	1,276.5	30.474	
9,800.0	9,800.0	9,800.0	9,800.0	21.9	21.9	-90.46	-10.6	-1,319.8	1,319.8	1,276.1	30.161	
9,900.0	9,900.0	9,900.0	9,900.0	22.1	22.1	-90.46	-10.6	-1,319.8	1,319.8	1,275.6	29.854	
10,000.0	10,000.0	10,000.0	10,000.0	22.3	22.3	-90.46	-10.6	-1,319.8	1,319.8	1,275.2	29.554	
10,100.0	10,100.0	10,100.0	10,100.0	22.6	22.6	-90.46	-10.6	-1,319.8	1,319.8	1,274.7	29.259	
10,200.0	10,200.0	10,200.0	10,200.0	22.8	22.8	-90.46	-10.6	-1,319.8	1,319.8	1,274.3	28.971	
10,300.0	10,300.0	10,300.0	10,300.0	23.0	23.0	-90.46	-10.6	-1,319.8	1,319.8	1,273.8	28.688	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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 #4H - Wellbore #1 - Design #1												0.0usft
Survey Program: 0-MWD default												Offset Well Error:
												0.0usft
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)	Ellipses (usft)	Separation Factor	Warning
10,400.0	10,400.0	10,400.0	10,400.0	23.2	23.2	-90.46	-10.6	-1,319.8	1,319.8	1,273.4	28.410	
10,500.0	10,500.0	10,500.0	10,500.0	23.5	23.5	-90.46	-10.6	-1,319.8	1,319.8	1,272.9	28.138	
10,600.0	10,600.0	10,600.0	10,600.0	23.7	23.7	-90.46	-10.6	-1,319.8	1,319.8	1,272.5	27.871	
10,672.3	10,672.3	10,672.4	10,672.4	23.8	23.8	-90.37	-8.5	-1,319.8	1,319.8	1,272.2	27.681	CC
10,700.0	10,700.0	10,699.9	10,699.6	23.9	23.9	-90.22	-5.1	-1,319.8	1,319.8	1,272.0	27.611	
10,747.5	10,747.5	10,745.7	10,744.5	24.0	24.0	-89.83	4.0	-1,319.9	1,319.9	1,271.9	27.494	
10,750.0	10,750.0	10,748.1	10,746.8	24.0	24.0	-89.46	4.5	-1,319.9	1,319.9	1,271.9	27.488	
10,775.0	10,775.0	10,771.6	10,769.4	24.1	24.1	-89.21	11.0	-1,319.9	1,320.0	1,271.9	27.430	
10,800.0	10,799.9	10,794.8	10,791.4	24.1	24.1	-88.95	18.4	-1,320.0	1,320.1	1,271.8	27.373	
10,825.0	10,824.7	10,817.7	10,812.7	24.2	24.1	-88.70	26.8	-1,320.0	1,320.2	1,271.9	27.319	
10,850.0	10,849.2	10,840.5	10,833.5	24.2	24.2	-88.46	36.1	-1,320.1	1,320.3	1,271.9	27.265	
10,875.0	10,873.5	10,863.0	10,853.5	24.3	24.2	-88.22	46.3	-1,320.1	1,320.5	1,272.0	27.213	
10,900.0	10,897.4	10,885.2	10,872.9	24.3	24.3	-87.98	57.3	-1,320.2	1,320.7	1,272.1	27.162	
10,925.0	10,920.9	10,907.3	10,891.6	24.4	24.3	-87.75	69.1	-1,320.3	1,320.9	1,272.2	27.112	
10,950.0	10,944.0	10,929.2	10,909.5	24.4	24.4	-87.52	81.6	-1,320.3	1,321.1	1,272.3	27.063	
10,975.0	10,966.5	10,950.0	10,926.0	24.5	24.4	-87.31	94.2	-1,320.4	1,321.4	1,272.5	27.015	
11,000.0	10,988.4	10,972.5	10,943.2	24.5	24.5	-87.09	108.7	-1,320.5	1,321.6	1,272.6	26.964	
11,025.0	11,009.6	10,993.8	10,958.9	24.6	24.5	-86.89	123.2	-1,320.6	1,321.9	1,272.7	26.914	
11,050.0	11,030.2	11,015.1	10,973.9	24.7	24.6	-86.69	138.3	-1,320.7	1,322.1	1,272.9	26.863	
11,075.0	11,049.9	11,036.2	10,988.1	24.7	24.6	-86.50	153.9	-1,320.8	1,322.4	1,273.1	26.811	
11,100.0	11,068.8	11,057.1	11,001.5	24.8	24.7	-86.32	170.0	-1,320.9	1,322.6	1,273.2	26.757	
11,125.0	11,086.9	11,078.0	11,014.1	24.8	24.8	-86.15	186.6	-1,321.0	1,322.9	1,273.4	26.701	
11,150.0	11,104.0	11,100.0	11,026.6	24.9	24.8	-85.98	204.7	-1,321.1	1,323.2	1,273.5	26.641	
11,175.0	11,120.1	11,119.4	11,036.9	25.0	24.9	-85.83	221.1	-1,321.2	1,323.4	1,273.6	26.581	
11,200.0	11,135.2	11,139.9	11,047.1	25.0	25.0	-85.69	239.0	-1,321.3	1,323.7	1,273.7	26.516	
11,225.0	11,149.3	11,160.4	11,056.4	25.1	25.0	-85.55	257.1	-1,321.4	1,323.9	1,273.8	26.448	
11,250.0	11,162.2	11,180.7	11,065.0	25.2	25.1	-85.43	275.6	-1,321.5	1,324.1	1,273.9	26.375	
11,275.0	11,174.1	11,200.0	11,072.3	25.3	25.2	-85.32	293.4	-1,321.6	1,324.3	1,274.0	26.301	
11,300.0	11,184.7	11,221.3	11,079.6	25.4	25.3	-85.21	313.4	-1,321.7	1,324.5	1,274.0	26.217	
11,325.0	11,194.1	11,241.5	11,085.7	25.5	25.4	-85.12	332.7	-1,321.8	1,324.7	1,274.0	26.130	
11,350.0	11,202.4	11,261.6	11,091.0	25.6	25.5	-85.04	352.1	-1,321.9	1,324.8	1,273.9	26.039	
11,375.0	11,209.3	11,281.7	11,095.4	25.7	25.6	-84.97	371.7	-1,322.1	1,325.0	1,273.9	25.943	
11,400.0	11,215.1	11,300.0	11,098.7	25.8	25.6	-84.92	389.7	-1,322.2	1,325.1	1,273.8	25.846	
11,425.0	11,219.5	11,321.8	11,101.7	25.9	25.8	-84.87	411.3	-1,322.3	1,325.2	1,273.7	25.736	
11,450.0	11,222.6	11,341.8	11,103.6	26.1	25.9	-84.84	431.2	-1,322.4	1,325.2	1,273.5	25.625	
11,475.0	11,224.4	11,361.8	11,104.7	26.2	26.0	-84.81	451.1	-1,322.5	1,325.3	1,273.3	25.510	
11,501.3	11,225.0	11,384.8	11,105.0	26.3	26.1	-84.81	474.2	-1,322.7	1,325.3	1,273.1	25.379	
11,600.0	11,224.2	11,483.6	11,105.6	26.9	26.7	-84.87	572.9	-1,323.2	1,325.2	1,271.7	24.793	
11,700.0	11,223.4	11,583.5	11,106.3	27.7	27.5	-84.93	672.9	-1,323.8	1,325.0	1,270.1	24.136	
11,800.0	11,222.6	11,683.5	11,106.9	28.5	28.3	-84.99	772.9	-1,324.4	1,324.9	1,268.4	23.431	
11,900.0	11,221.8	11,783.5	11,107.5	29.4	29.2	-85.05	872.9	-1,325.0	1,324.8	1,266.4	22.695	
12,000.0	11,221.0	11,883.5	11,108.2	30.4	30.2	-85.11	972.8	-1,325.6	1,324.7	1,264.3	21.944	
12,100.0	11,220.3	11,983.5	11,108.8	31.4	31.3	-85.17	1,072.8	-1,326.2	1,324.6	1,262.0	21.191	
12,200.0	11,219.5	12,083.5	11,109.4	32.6	32.4	-85.23	1,172.8	-1,326.8	1,324.4	1,259.7	20.445	
12,300.0	11,218.7	12,183.5	11,110.0	33.8	33.6	-85.29	1,272.8	-1,327.4	1,324.3	1,257.1	19.714	
12,400.0	11,217.9	12,283.5	11,110.7	35.0	34.9	-85.35	1,372.8	-1,328.0	1,324.2	1,254.5	19.004	
12,500.0	11,217.1	12,383.5	11,111.3	36.3	36.2	-85.42	1,472.8	-1,328.5	1,324.1	1,251.8	18.319	
12,600.0	11,216.3	12,483.5	11,111.9	37.7	37.5	-85.48	1,572.8	-1,329.1	1,324.0	1,249.0	17.661	
12,700.0	11,215.6	12,583.4	11,112.5	39.0	38.9	-85.54	1,672.8	-1,329.7	1,323.9	1,246.1	17.031	
12,800.0	11,214.8	12,683.4	11,113.2	40.4	40.3	-85.60	1,772.7	-1,330.3	1,323.8	1,243.2	16.430	
12,900.0	11,214.0	12,783.4	11,113.8	41.9	41.8	-85.66	1,872.7	-1,330.9	1,323.7	1,240.2	15.858	
13,000.0	11,213.2	12,883.4	11,114.4	43.4	43.3	-85.72	1,972.7	-1,331.5	1,323.6	1,237.1	15.315	

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 #3H
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 #3H	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 #4H - Wellbore #1 - Design #1												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
13,100.0	11,212.4	12,983.4	11,115.1	44.9	44.8	-85.78	2,072.7	-1,332.1	1,323.4	1,234.0	14.799	
13,200.0	11,211.6	13,083.4	11,115.7	46.4	46.3	-85.84	2,172.7	-1,332.7	1,323.3	1,230.9	14.309	
13,300.0	11,210.9	13,183.4	11,116.3	47.9	47.9	-85.90	2,272.7	-1,333.3	1,323.2	1,227.7	13.845	
13,400.0	11,210.1	13,283.4	11,116.9	49.5	49.4	-85.96	2,372.7	-1,333.9	1,323.1	1,224.4	13.405	
13,500.0	11,209.3	13,383.4	11,117.6	51.1	51.0	-86.02	2,472.6	-1,334.4	1,323.1	1,221.2	12.987	
13,600.0	11,208.5	13,483.4	11,118.2	52.7	52.6	-86.09	2,572.6	-1,335.0	1,323.0	1,217.9	12.591	
13,700.0	11,207.7	13,583.3	11,118.8	54.3	54.2	-86.15	2,672.6	-1,335.6	1,322.9	1,214.6	12.215	
13,800.0	11,206.9	13,683.3	11,119.4	55.9	55.9	-86.21	2,772.6	-1,336.2	1,322.8	1,211.2	11.858	
13,900.0	11,206.2	13,783.3	11,120.1	57.5	57.5	-86.27	2,872.6	-1,336.8	1,322.7	1,207.8	11.519	
14,000.0	11,205.4	13,883.3	11,120.7	59.2	59.1	-86.33	2,972.6	-1,337.4	1,322.6	1,204.5	11.196	
14,100.0	11,204.6	13,983.3	11,121.3	60.9	60.8	-86.39	3,072.6	-1,338.0	1,322.5	1,201.1	10.890	
14,200.0	11,203.8	14,083.3	11,122.0	62.5	62.5	-86.45	3,172.5	-1,338.6	1,322.4	1,197.6	10.598	
14,300.0	11,203.0	14,183.3	11,122.6	64.2	64.2	-86.51	3,272.5	-1,339.2	1,322.3	1,194.2	10.320	
14,400.0	11,202.2	14,283.3	11,123.2	65.9	65.8	-86.57	3,372.5	-1,339.7	1,322.2	1,190.7	10.055	
14,500.0	11,201.4	14,383.3	11,123.8	67.6	67.5	-86.64	3,472.5	-1,340.3	1,322.2	1,187.3	9.802	
14,600.0	11,200.7	14,483.3	11,124.5	69.3	69.2	-86.70	3,572.5	-1,340.9	1,322.1	1,183.8	9.560	
14,700.0	11,199.9	14,583.2	11,125.1	71.0	70.9	-86.76	3,672.5	-1,341.5	1,322.0	1,180.3	9.329	
14,800.0	11,199.1	14,683.2	11,125.7	72.7	72.6	-86.82	3,772.5	-1,342.1	1,321.9	1,176.8	9.109	
14,900.0	11,198.3	14,783.2	11,126.4	74.4	74.4	-86.88	3,872.5	-1,342.7	1,321.8	1,173.3	8.898	
15,000.0	11,197.5	14,883.2	11,127.0	76.1	76.1	-86.94	3,972.4	-1,343.3	1,321.8	1,169.8	8.696	
15,100.0	11,196.7	14,983.2	11,127.6	77.8	77.8	-87.00	4,072.4	-1,343.9	1,321.7	1,166.2	8.502	
15,200.0	11,196.0	15,083.2	11,128.2	79.6	79.5	-87.06	4,172.4	-1,344.5	1,321.6	1,162.7	8.316	
15,300.0	11,195.2	15,183.2	11,128.9	81.3	81.3	-87.12	4,272.4	-1,345.1	1,321.6	1,159.2	8.138	
15,400.0	11,194.4	15,283.2	11,129.5	83.0	83.0	-87.19	4,372.4	-1,345.6	1,321.5	1,155.6	7.967	
15,500.0	11,193.6	15,383.2	11,130.1	84.8	84.8	-87.25	4,472.4	-1,346.2	1,321.4	1,152.1	7.803	
15,600.0	11,192.8	15,483.2	11,130.7	86.5	86.5	-87.31	4,572.4	-1,346.8	1,321.3	1,148.5	7.645	
15,700.0	11,192.0	15,583.1	11,131.4	88.3	88.2	-87.37	4,672.3	-1,347.4	1,321.3	1,144.9	7.493	
15,800.0	11,191.3	15,683.1	11,132.0	90.0	90.0	-87.43	4,772.3	-1,348.0	1,321.2	1,141.4	7.346	
15,900.0	11,190.5	15,783.1	11,132.6	91.8	91.8	-87.49	4,872.3	-1,348.6	1,321.2	1,137.8	7.205	
16,000.0	11,189.7	15,883.1	11,133.3	93.5	93.5	-87.55	4,972.3	-1,349.2	1,321.1	1,134.2	7.069	
16,100.0	11,188.9	15,983.1	11,133.9	95.3	95.3	-87.61	5,072.3	-1,349.8	1,321.0	1,130.6	6.938	
16,200.0	11,188.1	16,083.1	11,134.5	97.0	97.0	-87.67	5,172.3	-1,350.4	1,321.0	1,127.1	6.812	
16,300.0	11,187.3	16,183.1	11,135.1	98.8	98.8	-87.74	5,272.3	-1,351.0	1,320.9	1,123.5	6.690	
16,400.0	11,186.6	16,283.1	11,135.8	100.6	100.6	-87.80	5,372.2	-1,351.5	1,320.9	1,119.9	6.572	
16,500.0	11,185.8	16,383.1	11,136.4	102.3	102.3	-87.86	5,472.2	-1,352.1	1,320.8	1,116.3	6.458	
16,600.0	11,185.0	16,483.1	11,137.0	104.1	104.1	-87.92	5,572.2	-1,352.7	1,320.8	1,112.7	6.347	
16,700.0	11,184.2	16,583.0	11,137.6	105.9	105.9	-87.98	5,672.2	-1,353.3	1,320.7	1,109.1	6.241	
16,800.0	11,183.4	16,683.0	11,138.3	107.6	107.6	-88.04	5,772.2	-1,353.9	1,320.7	1,105.5	6.138	
16,900.0	11,182.6	16,783.0	11,138.9	109.4	109.4	-88.10	5,872.2	-1,354.5	1,320.6	1,101.9	6.038	
17,000.0	11,181.8	16,883.0	11,139.5	111.2	111.2	-88.16	5,972.2	-1,355.1	1,320.6	1,098.3	5.941	
17,100.0	11,181.1	16,983.0	11,140.2	113.0	113.0	-88.23	6,072.2	-1,355.7	1,320.5	1,094.7	5.847	
17,200.0	11,180.3	17,083.0	11,140.8	114.8	114.8	-88.29	6,172.1	-1,356.3	1,320.5	1,091.1	5.756	
17,300.0	11,179.5	17,183.0	11,141.4	116.5	116.5	-88.35	6,272.1	-1,356.8	1,320.5	1,087.5	5.668	
17,400.0	11,178.7	17,283.0	11,142.0	118.3	118.3	-88.41	6,372.1	-1,357.4	1,320.4	1,083.9	5.582	
17,500.0	11,177.9	17,383.0	11,142.7	120.1	120.1	-88.47	6,472.1	-1,358.0	1,320.4	1,080.3	5.499	
17,600.0	11,177.1	17,483.0	11,143.3	121.9	121.9	-88.53	6,572.1	-1,358.6	1,320.3	1,076.6	5.418	
17,700.0	11,176.4	17,582.9	11,143.9	123.7	123.7	-88.59	6,672.1	-1,359.2	1,320.3	1,073.0	5.339	
17,800.0	11,175.6	17,682.9	11,144.6	125.5	125.5	-88.65	6,772.1	-1,359.8	1,320.3	1,069.4	5.263	
17,900.0	11,174.8	17,782.9	11,145.2	127.2	127.2	-88.71	6,872.0	-1,360.4	1,320.2	1,065.8	5.189	
18,000.0	11,174.0	17,882.9	11,145.8	129.0	129.0	-88.78	6,972.0	-1,361.0	1,320.2	1,062.2	5.117	
18,100.0	11,173.2	17,982.9	11,146.4	130.8	130.8	-88.84	7,072.0	-1,361.6	1,320.2	1,058.6	5.047	
18,200.0	11,172.4	18,082.9	11,147.1	132.6	132.6	-88.90	7,172.0	-1,362.2	1,320.2	1,055.0	4.978	

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 #3H
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 #3H	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 #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)	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	
18,300.0	11,171.7	18,182.9	11,147.7	134.4	134.4	-88.96	7,272.0	-1,362.7	1,320.1	1,051.4	4.912		
18,400.0	11,170.9	18,282.9	11,148.3	136.2	136.2	-89.02	7,372.0	-1,363.3	1,320.1	1,047.8	4.847		
18,500.0	11,170.1	18,382.9	11,148.9	138.0	138.0	-89.08	7,472.0	-1,363.9	1,320.1	1,044.1	4.784		
18,600.0	11,169.3	18,482.9	11,149.6	139.8	139.8	-89.14	7,571.9	-1,364.5	1,320.1	1,040.5	4.722		
18,700.0	11,168.5	18,582.8	11,150.2	141.6	141.6	-89.20	7,671.9	-1,365.1	1,320.1	1,036.9	4.662		
18,800.0	11,167.7	18,682.8	11,150.8	143.4	143.4	-89.27	7,771.9	-1,365.7	1,320.0	1,033.3	4.604		
18,900.0	11,167.0	18,782.8	11,151.5	145.2	145.2	-89.33	7,871.9	-1,366.3	1,320.0	1,029.7	4.547		
19,000.0	11,166.2	18,882.8	11,152.1	147.0	147.0	-89.39	7,971.9	-1,366.9	1,320.0	1,026.1	4.491		
19,100.0	11,165.4	18,982.8	11,152.7	148.8	148.8	-89.45	8,071.9	-1,367.5	1,320.0	1,022.5	4.437		
19,200.0	11,164.6	19,082.8	11,153.3	150.6	150.6	-89.51	8,171.9	-1,368.0	1,320.0	1,018.9	4.384		
19,300.0	11,163.8	19,182.8	11,154.0	152.4	152.4	-89.57	8,271.9	-1,368.6	1,320.0	1,015.3	4.332		
19,400.0	11,163.0	19,282.8	11,154.6	154.2	154.2	-89.63	8,371.8	-1,369.2	1,320.0	1,011.6	4.281		
19,500.0	11,162.2	19,382.8	11,155.2	156.0	156.0	-89.70	8,471.8	-1,369.8	1,320.0	1,008.0	4.232		
19,600.0	11,161.5	19,482.8	11,155.9	157.8	157.8	-89.76	8,571.8	-1,370.4	1,319.9	1,004.4	4.183		
19,700.0	11,160.7	19,582.7	11,156.5	159.6	159.6	-89.82	8,671.8	-1,371.0	1,319.9	1,000.8	4.136		
19,800.0	11,159.9	19,682.7	11,157.1	161.4	161.4	-89.88	8,771.8	-1,371.6	1,319.9	997.2	4.090		
19,900.0	11,159.1	19,782.7	11,157.7	163.2	163.2	-89.94	8,871.8	-1,372.2	1,319.9	993.6	4.045		
19,923.8	11,158.9	19,806.5	11,157.9	163.6	163.6	-89.95	8,895.6	-1,372.3	1,319.9	992.7	4.034		
20,000.0	11,158.3	19,882.7	11,158.4	165.0	165.0	-90.00	8,971.8	-1,372.8	1,319.9	990.0	4.001		
20,100.0	11,157.5	19,982.7	11,159.0	166.8	166.8	-90.06	9,071.7	-1,373.4	1,319.9	986.4	3.957		
20,200.0	11,156.8	20,082.7	11,159.6	168.6	168.6	-90.12	9,171.7	-1,373.9	1,319.9	982.8	3.915		
20,300.0	11,156.0	20,182.7	11,160.2	170.4	170.4	-90.19	9,271.7	-1,374.5	1,319.9	979.2	3.874		
20,400.0	11,155.2	20,282.7	11,160.9	172.2	172.2	-90.25	9,371.7	-1,375.1	1,320.0	975.6	3.833		
20,500.0	11,154.4	20,382.7	11,161.5	174.0	174.0	-90.31	9,471.7	-1,375.7	1,320.0	972.0	3.793		
20,600.0	11,153.6	20,482.7	11,162.1	175.8	175.8	-90.37	9,571.7	-1,376.3	1,320.0	968.4	3.754		
20,700.0	11,152.8	20,582.6	11,162.8	177.6	177.6	-90.43	9,671.7	-1,376.9	1,320.0	964.8	3.716		
20,800.0	11,152.1	20,682.6	11,163.4	179.4	179.4	-90.49	9,771.6	-1,377.5	1,320.0	961.2	3.679		
20,900.0	11,151.3	20,782.6	11,164.0	181.2	181.2	-90.55	9,871.6	-1,378.1	1,320.0	957.6	3.642		
21,000.0	11,150.5	20,882.6	11,164.6	183.0	183.0	-90.61	9,971.6	-1,378.7	1,320.0	954.0	3.607		
21,032.5	11,150.2	20,915.1	11,164.8	183.6	183.6	-90.63	10,004.1	-1,378.9	1,320.0	952.8	3.595		
21,062.2	11,150.0	20,940.1	11,165.0	184.1	184.1	-90.65	10,029.1	-1,379.0	1,320.0	951.9	3.585		
21,062.7	11,150.0	20,940.1	11,165.0	184.1	184.1	-90.65	10,029.1	-1,379.0	1,320.0	951.9	3.585 ES, SF		



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #6H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
Reference Measured Depth (usft)	Vertical Depth (usft)	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)	Ellipses (usft)	Separation Factor	Warning	
0.0	0.0	2.0	2.0	0.0	0.0	89.54	9.1	1,122.1	1,122.1				
100.0	100.0	102.0	102.0	0.1	0.1	89.54	9.1	1,122.1	1,122.1	1,122.0	7,031.633		
200.0	200.0	202.0	202.0	0.3	0.3	89.54	9.1	1,122.1	1,122.1	1,121.5	1,842.238		
300.0	300.0	302.0	302.0	0.5	0.5	89.54	9.1	1,122.1	1,122.1	1,121.1	1,059.971		
400.0	400.0	402.0	402.0	0.8	0.8	89.54	9.1	1,122.1	1,122.1	1,120.6	744.034		
500.0	500.0	502.0	502.0	1.0	1.0	89.54	9.1	1,122.1	1,122.1	1,120.2	573.188		
600.0	600.0	602.0	602.0	1.2	1.2	89.54	9.1	1,122.1	1,122.1	1,119.7	466.150		
700.0	700.0	702.0	702.0	1.4	1.4	89.54	9.1	1,122.1	1,122.1	1,119.3	392.798		
800.0	800.0	802.0	802.0	1.7	1.7	89.54	9.1	1,122.1	1,122.1	1,118.8	339.393		
900.0	900.0	902.0	902.0	1.9	1.9	89.54	9.1	1,122.1	1,122.1	1,118.4	298.771		
1,000.0	1,000.0	1,002.0	1,002.0	2.1	2.1	89.54	9.1	1,122.1	1,122.1	1,117.9	266.834		
1,100.0	1,100.0	1,102.0	1,102.0	2.3	2.3	89.54	9.1	1,122.1	1,122.1	1,117.5	241.065		
1,200.0	1,200.0	1,202.0	1,202.0	2.5	2.6	89.54	9.1	1,122.1	1,122.1	1,117.0	219.836		
1,300.0	1,300.0	1,302.0	1,302.0	2.8	2.8	89.54	9.1	1,122.1	1,122.1	1,116.6	202.042		
1,400.0	1,400.0	1,402.0	1,402.0	3.0	3.0	89.54	9.1	1,122.1	1,122.1	1,116.1	186.914		
1,500.0	1,500.0	1,502.0	1,502.0	3.2	3.2	89.54	9.1	1,122.1	1,122.1	1,115.7	173.893		
1,600.0	1,600.0	1,602.0	1,602.0	3.4	3.5	89.54	9.1	1,122.1	1,122.1	1,115.2	162.568		
1,700.0	1,700.0	1,702.0	1,702.0	3.7	3.7	89.54	9.1	1,122.1	1,122.1	1,114.8	152.628		
1,800.0	1,800.0	1,802.0	1,802.0	3.9	3.9	89.54	9.1	1,122.1	1,122.1	1,114.3	143.834		
1,900.0	1,900.0	1,902.0	1,902.0	4.1	4.1	89.54	9.1	1,122.1	1,122.1	1,113.9	135.997		
2,000.0	2,000.0	2,002.0	2,002.0	4.3	4.4	89.54	9.1	1,122.1	1,122.1	1,113.4	128.971		
2,100.0	2,100.0	2,102.0	2,102.0	4.6	4.6	89.54	9.1	1,122.1	1,122.1	1,113.0	122.635		
2,200.0	2,200.0	2,202.0	2,202.0	4.8	4.8	89.54	9.1	1,122.1	1,122.1	1,112.5	116.892		
2,300.0	2,300.0	2,302.0	2,302.0	5.0	5.0	89.54	9.1	1,122.1	1,122.1	1,112.1	111.663		
2,400.0	2,400.0	2,402.0	2,402.0	5.2	5.3	89.54	9.1	1,122.1	1,122.1	1,111.6	106.882		
2,500.0	2,500.0	2,502.0	2,502.0	5.5	5.5	89.54	9.1	1,122.1	1,122.1	1,111.2	102.494		
2,600.0	2,600.0	2,602.0	2,602.0	5.7	5.7	89.54	9.1	1,122.1	1,122.1	1,110.7	98.451		
2,700.0	2,700.0	2,702.0	2,702.0	5.9	5.9	89.54	9.1	1,122.1	1,122.1	1,110.3	94.716		
2,800.0	2,800.0	2,802.0	2,802.0	6.1	6.2	89.54	9.1	1,122.1	1,122.1	1,109.8	91.253		
2,900.0	2,900.0	2,902.0	2,902.0	6.4	6.4	89.54	9.1	1,122.1	1,122.1	1,109.4	88.035		
3,000.0	3,000.0	3,002.0	3,002.0	6.6	6.6	89.54	9.1	1,122.1	1,122.1	1,108.9	85.036		
3,100.0	3,100.0	3,102.0	3,102.0	6.8	6.8	89.54	9.1	1,122.1	1,122.1	1,108.5	82.235		
3,200.0	3,200.0	3,202.0	3,202.0	7.0	7.0	89.54	9.1	1,122.1	1,122.1	1,108.0	79.612		
3,300.0	3,300.0	3,302.0	3,302.0	7.3	7.3	89.54	9.1	1,122.1	1,122.1	1,107.6	77.151		
3,400.0	3,400.0	3,402.0	3,402.0	7.5	7.5	89.54	9.1	1,122.1	1,122.1	1,107.1	74.838		
3,500.0	3,500.0	3,502.0	3,502.0	7.7	7.7	89.54	9.1	1,122.1	1,122.1	1,106.7	72.660		
3,600.0	3,600.0	3,602.0	3,602.0	7.9	7.9	89.54	9.1	1,122.1	1,122.1	1,106.2	70.605		
3,700.0	3,700.0	3,702.0	3,702.0	8.2	8.2	89.54	9.1	1,122.1	1,122.1	1,105.8	68.663		
3,800.0	3,800.0	3,802.0	3,802.0	8.4	8.4	89.54	9.1	1,122.1	1,122.1	1,105.3	66.825		
3,900.0	3,900.0	3,902.0	3,902.0	8.6	8.6	89.54	9.1	1,122.1	1,122.1	1,104.9	65.082		
4,000.0	4,000.0	4,002.0	4,002.0	8.8	8.8	89.54	9.1	1,122.1	1,122.1	1,104.4	63.429		
4,100.0	4,100.0	4,102.0	4,102.0	9.1	9.1	89.54	9.1	1,122.1	1,122.1	1,104.0	61.857		
4,200.0	4,200.0	4,202.0	4,202.0	9.3	9.3	89.54	9.1	1,122.1	1,122.1	1,103.5	60.361		
4,300.0	4,300.0	4,302.0	4,302.0	9.5	9.5	89.54	9.1	1,122.1	1,122.1	1,103.1	58.936		
4,400.0	4,400.0	4,402.0	4,402.0	9.7	9.7	89.54	9.1	1,122.1	1,122.1	1,102.6	57.577		
4,500.0	4,500.0	4,502.0	4,502.0	10.0	10.0	89.54	9.1	1,122.1	1,122.1	1,102.2	56.279		
4,600.0	4,600.0	4,602.0	4,602.0	10.2	10.2	89.54	9.1	1,122.1	1,122.1	1,101.7	55.038		
4,700.0	4,700.0	4,702.0	4,702.0	10.4	10.4	89.54	9.1	1,122.1	1,122.1	1,101.3	53.850		
4,800.0	4,800.0	4,802.0	4,802.0	10.6	10.6	89.54	9.1	1,122.1	1,122.1	1,100.8	52.713		
4,900.0	4,900.0	4,902.0	4,902.0	10.9	10.9	89.54	9.1	1,122.1	1,122.1	1,100.4	51.623		
5,000.0	5,000.0	5,002.0	5,002.0	11.1	11.1	89.54	9.1	1,122.1	1,122.1	1,100.0	50.577		
5,100.0	5,100.0	5,102.0	5,102.0	11.3	11.3	89.54	9.1	1,122.1	1,122.1	1,099.5	49.573		

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 #3H
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 #3H	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 #6H - 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
5,200.0	5,200.0	5,202.0	5,202.0	11.5	11.5	89.54	9.1	1,122.1	1,122.1	1,099.1	48.607	
5,300.0	5,300.0	5,302.0	5,302.0	11.8	11.8	89.54	9.1	1,122.1	1,122.1	1,098.6	47.679	
5,400.0	5,400.0	5,402.0	5,402.0	12.0	12.0	89.54	9.1	1,122.1	1,122.1	1,098.2	46.785	
5,500.0	5,500.0	5,502.0	5,502.0	12.2	12.2	89.54	9.1	1,122.1	1,122.1	1,097.7	45.925	
5,600.0	5,600.0	5,602.0	5,602.0	12.4	12.4	89.54	9.1	1,122.1	1,122.1	1,097.3	45.095	
5,700.0	5,700.0	5,702.0	5,702.0	12.7	12.7	89.54	9.1	1,122.1	1,122.1	1,096.8	44.295	
5,800.0	5,800.0	5,802.0	5,802.0	12.9	12.9	89.54	9.1	1,122.1	1,122.1	1,096.4	43.523	
5,900.0	5,900.0	5,902.0	5,902.0	13.1	13.1	89.54	9.1	1,122.1	1,122.1	1,095.9	42.777	
6,000.0	6,000.0	6,002.0	6,002.0	13.3	13.3	89.54	9.1	1,122.1	1,122.1	1,095.5	42.056	
6,100.0	6,100.0	6,102.0	6,102.0	13.6	13.6	89.54	9.1	1,122.1	1,122.1	1,095.0	41.359	
6,200.0	6,200.0	6,202.0	6,202.0	13.8	13.8	89.54	9.1	1,122.1	1,122.1	1,094.6	40.685	
6,300.0	6,300.0	6,302.0	6,302.0	14.0	14.0	89.54	9.1	1,122.1	1,122.1	1,094.1	40.033	
6,400.0	6,400.0	6,402.0	6,402.0	14.2	14.2	89.54	9.1	1,122.1	1,122.1	1,093.7	39.401	
6,500.0	6,500.0	6,502.0	6,502.0	14.5	14.5	89.54	9.1	1,122.1	1,122.1	1,093.2	38.788	
6,600.0	6,600.0	6,602.0	6,602.0	14.7	14.7	89.54	9.1	1,122.1	1,122.1	1,092.8	38.195	
6,700.0	6,700.0	6,702.0	6,702.0	14.9	14.9	89.54	9.1	1,122.1	1,122.1	1,092.3	37.619	
6,800.0	6,800.0	6,802.0	6,802.0	15.1	15.1	89.54	9.1	1,122.1	1,122.1	1,091.9	37.061	
6,900.0	6,900.0	6,902.0	6,902.0	15.4	15.4	89.54	9.1	1,122.1	1,122.1	1,091.4	36.519	
7,000.0	7,000.0	7,002.0	7,002.0	15.6	15.6	89.54	9.1	1,122.1	1,122.1	1,091.0	35.992	
7,100.0	7,100.0	7,102.0	7,102.0	15.8	15.8	89.54	9.1	1,122.1	1,122.1	1,090.5	35.481	
7,200.0	7,200.0	7,202.0	7,202.0	16.0	16.0	89.54	9.1	1,122.1	1,122.1	1,090.1	34.983	
7,300.0	7,300.0	7,302.0	7,302.0	16.3	16.3	89.54	9.1	1,122.1	1,122.1	1,089.6	34.500	
7,400.0	7,400.0	7,402.0	7,402.0	16.5	16.5	89.54	9.1	1,122.1	1,122.1	1,089.2	34.029	
7,500.0	7,500.0	7,502.0	7,502.0	16.7	16.7	89.54	9.1	1,122.1	1,122.1	1,088.7	33.572	
7,600.0	7,600.0	7,602.0	7,602.0	16.9	16.9	89.54	9.1	1,122.1	1,122.1	1,088.3	33.126	
7,700.0	7,700.0	7,702.0	7,702.0	17.2	17.2	89.54	9.1	1,122.1	1,122.1	1,087.8	32.692	
7,800.0	7,800.0	7,802.0	7,802.0	17.4	17.4	89.54	9.1	1,122.1	1,122.1	1,087.4	32.270	
7,900.0	7,900.0	7,902.0	7,902.0	17.6	17.6	89.54	9.1	1,122.1	1,122.1	1,086.9	31.858	
8,000.0	8,000.0	8,002.0	8,002.0	17.8	17.8	89.54	9.1	1,122.1	1,122.1	1,086.5	31.457	
8,100.0	8,100.0	8,102.0	8,102.0	18.1	18.1	89.54	9.1	1,122.1	1,122.1	1,086.0	31.065	
8,200.0	8,200.0	8,202.0	8,202.0	18.3	18.3	89.54	9.1	1,122.1	1,122.1	1,085.6	30.683	
8,300.0	8,300.0	8,302.0	8,302.0	18.5	18.5	89.54	9.1	1,122.1	1,122.1	1,085.1	30.311	
8,400.0	8,400.0	8,402.0	8,402.0	18.7	18.7	89.54	9.1	1,122.1	1,122.1	1,084.7	29.947	
8,500.0	8,500.0	8,502.0	8,502.0	19.0	19.0	89.54	9.1	1,122.1	1,122.1	1,084.2	29.592	
8,600.0	8,600.0	8,602.0	8,602.0	19.2	19.2	89.54	9.1	1,122.1	1,122.1	1,083.8	29.245	
8,700.0	8,700.0	8,702.0	8,702.0	19.4	19.4	89.54	9.1	1,122.1	1,122.1	1,083.3	28.907	
8,800.0	8,800.0	8,802.0	8,802.0	19.6	19.6	89.54	9.1	1,122.1	1,122.1	1,082.9	28.576	
8,900.0	8,900.0	8,902.0	8,902.0	19.9	19.9	89.54	9.1	1,122.1	1,122.1	1,082.4	28.252	
9,000.0	9,000.0	9,002.0	9,002.0	20.1	20.1	89.54	9.1	1,122.1	1,122.1	1,082.0	27.936	
9,100.0	9,100.0	9,102.0	9,102.0	20.3	20.3	89.54	9.1	1,122.1	1,122.1	1,081.5	27.627	
9,200.0	9,200.0	9,202.0	9,202.0	20.5	20.5	89.54	9.1	1,122.1	1,122.1	1,081.1	27.325	
9,300.0	9,300.0	9,302.0	9,302.0	20.8	20.8	89.54	9.1	1,122.1	1,122.1	1,080.6	27.029	
9,400.0	9,400.0	9,402.0	9,402.0	21.0	21.0	89.54	9.1	1,122.1	1,122.1	1,080.2	26.739	
9,500.0	9,500.0	9,502.0	9,502.0	21.2	21.2	89.54	9.1	1,122.1	1,122.1	1,079.7	26.456	
9,600.0	9,600.0	9,602.0	9,602.0	21.4	21.4	89.54	9.1	1,122.1	1,122.1	1,079.3	26.178	
9,700.0	9,700.0	9,702.0	9,702.0	21.7	21.7	89.54	9.1	1,122.1	1,122.1	1,078.8	25.907	
9,800.0	9,800.0	9,802.0	9,802.0	21.9	21.9	89.54	9.1	1,122.1	1,122.1	1,078.4	25.641	
9,900.0	9,900.0	9,902.0	9,902.0	22.1	22.1	89.54	9.1	1,122.1	1,122.1	1,077.9	25.380	
9,923.2	9,923.2	9,925.2	9,925.2	22.2	22.2	89.54	9.1	1,122.1	1,122.1	1,077.8	25.320 CC	
10,000.0	10,000.0	10,000.0	9,999.8	22.3	22.3	89.29	13.8	1,122.1	1,122.2	1,077.5	25.130 ES	
10,100.0	10,100.0	10,092.4	10,089.4	22.6	22.5	88.18	35.6	1,122.1	1,122.7	1,077.7	24.907	
10,200.0	10,200.0	10,175.0	10,164.7	22.8	22.7	86.46	69.3	1,122.1	1,124.9	1,079.4	24.734	

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 #3H
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 #3H	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)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
10,300.0	10,300.0	10,242.4	10,221.1	23.0	22.8	84.60	106.1	1,122.1	1,130.1	1,084.2	24.643		
10,400.0	10,400.0	10,300.0	10,264.8	23.2	23.0	82.71	143.6	1,122.2	1,139.6	1,093.4	24.656		
10,500.0	10,500.0	10,344.7	10,295.4	23.5	23.1	81.08	176.2	1,122.2	1,154.6	1,108.0	24.796		
10,600.0	10,600.0	10,382.2	10,318.7	23.7	23.2	79.62	205.6	1,122.2	1,175.5	1,128.6	25.068		
10,700.0	10,700.0	10,413.1	10,336.0	23.9	23.3	78.36	231.2	1,122.2	1,202.8	1,155.6	25.476		
10,747.5	10,747.5	10,425.0	10,342.2	24.0	23.4	77.87	241.3	1,122.2	1,218.0	1,170.6	25.718		
10,750.0	10,750.0	10,425.0	10,342.2	24.0	23.4	78.10	241.3	1,122.2	1,218.8	1,171.4	25.733		
10,775.0	10,775.0	10,433.1	10,346.3	24.1	23.4	76.72	248.3	1,122.2	1,227.2	1,179.8	25.868		
10,800.0	10,799.9	10,439.9	10,349.7	24.1	23.4	75.39	254.2	1,122.2	1,235.7	1,188.2	26.013		
10,825.0	10,824.7	10,450.0	10,354.5	24.2	23.5	73.96	263.1	1,122.2	1,244.3	1,196.8	26.162		
10,850.0	10,849.2	10,450.0	10,354.5	24.2	23.5	72.90	263.1	1,122.2	1,252.9	1,205.3	26.338		
10,875.0	10,873.5	10,461.7	10,359.9	24.3	23.5	71.45	273.5	1,122.2	1,261.5	1,213.9	26.506		
10,900.0	10,897.4	10,475.0	10,365.6	24.3	23.5	69.98	285.4	1,122.2	1,270.0	1,222.4	26.690		
10,925.0	10,920.9	10,475.0	10,365.6	24.4	23.5	68.98	285.4	1,122.2	1,278.4	1,230.9	26.908		
10,950.0	10,944.0	10,485.1	10,369.8	24.4	23.6	67.70	294.7	1,122.2	1,286.7	1,239.3	27.131		
10,975.0	10,966.5	10,500.0	10,375.6	24.5	23.7	66.32	308.4	1,122.2	1,294.9	1,247.6	27.372		
11,000.0	10,988.4	10,500.0	10,375.6	24.5	23.7	65.41	308.4	1,122.2	1,302.9	1,255.7	27.648		
11,025.0	11,009.6	10,509.7	10,379.1	24.6	23.7	64.28	317.4	1,122.2	1,310.6	1,263.7	27.938		
11,050.0	11,030.2	10,525.0	10,384.3	24.7	23.8	63.07	331.8	1,122.3	1,318.2	1,271.5	28.248		
11,075.0	11,049.9	10,525.0	10,384.3	24.7	23.8	62.27	331.8	1,122.3	1,325.4	1,279.1	28.590		
11,100.0	11,068.8	10,535.3	10,387.5	24.8	23.8	61.29	341.6	1,122.3	1,332.4	1,286.4	28.947		
11,125.0	11,086.9	10,550.0	10,391.8	24.8	23.9	60.30	355.7	1,122.3	1,339.1	1,293.4	29.324		
11,150.0	11,104.0	10,550.0	10,391.8	24.9	23.9	59.62	355.7	1,122.3	1,345.4	1,300.1	29.722		
11,175.0	11,120.1	10,561.6	10,394.8	25.0	23.9	58.80	366.8	1,122.3	1,351.4	1,306.5	30.129		
11,200.0	11,135.2	10,575.0	10,398.0	25.0	24.0	58.02	379.9	1,122.3	1,357.0	1,312.6	30.546		
11,225.0	11,149.3	10,575.0	10,398.0	25.1	24.0	57.48	379.9	1,122.3	1,362.2	1,318.2	30.971		
11,250.0	11,162.2	10,588.4	10,400.8	25.2	24.1	56.82	393.0	1,122.3	1,367.0	1,323.4	31.385		
11,275.0	11,174.1	10,600.0	10,402.9	25.3	24.1	56.26	404.4	1,122.3	1,371.4	1,328.3	31.790		
11,300.0	11,184.7	10,600.0	10,402.9	25.4	24.1	55.85	404.4	1,122.3	1,375.4	1,332.7	32.186		
11,325.0	11,194.1	10,615.6	10,405.4	25.5	24.2	55.37	419.8	1,122.3	1,378.9	1,336.5	32.535		
11,350.0	11,202.4	10,625.0	10,406.6	25.6	24.3	55.01	429.1	1,122.3	1,381.9	1,339.9	32.854		
11,375.0	11,209.3	10,633.9	10,407.6	25.7	24.3	54.70	438.0	1,122.3	1,384.6	1,342.8	33.124		
11,400.0	11,215.1	10,650.0	10,409.0	25.8	24.4	54.42	454.0	1,122.3	1,386.7	1,345.1	33.323		
11,425.0	11,219.5	10,650.0	10,409.0	25.9	24.4	54.26	454.0	1,122.3	1,388.4	1,346.9	33.492		
11,450.0	11,222.6	10,661.5	10,409.6	26.1	24.5	54.12	465.5	1,122.3	1,389.5	1,348.1	33.561		
11,475.0	11,224.4	10,675.0	10,410.0	26.2	24.5	54.04	479.0	1,122.3	1,390.2	1,348.8	33.545		
11,501.3	11,225.0	10,680.4	10,410.1	26.3	24.6	54.02	484.4	1,122.3	1,390.4	1,348.9	33.476		
11,506.0	11,224.9	10,682.2	10,410.1	26.4	24.6	54.02	486.1	1,122.3	1,390.4	1,348.9	33.448		
11,600.0	11,224.2	10,764.0	10,409.0	26.9	25.1	54.02	567.9	1,122.4	1,391.2	1,348.6	32.710		
11,700.0	11,223.4	10,864.0	10,407.6	27.7	25.9	54.01	667.9	1,122.4	1,392.1	1,348.3	31.789		
11,800.0	11,222.6	10,964.0	10,406.2	28.5	26.7	54.01	767.9	1,122.5	1,392.9	1,347.7	30.800		
11,900.0	11,221.8	11,064.0	10,404.8	29.4	27.7	54.00	867.9	1,122.5	1,393.8	1,347.0	29.772		
12,000.0	11,221.0	11,164.0	10,403.4	30.4	28.7	54.00	967.9	1,122.6	1,394.7	1,346.1	28.726		
12,100.0	11,220.3	11,264.0	10,402.0	31.4	29.8	53.99	1,067.9	1,122.6	1,395.6	1,345.2	27.683		
12,200.0	11,219.5	11,363.9	10,400.6	32.6	31.0	53.99	1,167.8	1,122.7	1,396.5	1,344.1	26.655		
12,300.0	11,218.7	11,463.9	10,399.1	33.8	32.2	53.98	1,267.8	1,122.7	1,397.3	1,342.9	25.655		
12,400.0	11,217.9	11,563.9	10,397.7	35.0	33.5	53.98	1,367.8	1,122.8	1,398.2	1,341.6	24.689		
12,500.0	11,217.1	11,663.9	10,396.3	36.3	34.8	53.97	1,467.8	1,122.8	1,399.1	1,340.2	23.761		
12,600.0	11,216.3	11,763.9	10,394.9	37.7	36.2	53.97	1,567.8	1,122.9	1,400.0	1,338.8	22.875		
12,700.0	11,215.6	11,863.9	10,393.5	39.0	37.6	53.96	1,667.8	1,122.9	1,400.8	1,337.3	22.032		
12,800.0	11,214.8	11,963.9	10,392.1	40.4	39.1	53.96	1,767.8	1,122.9	1,401.7	1,335.7	21.231		
12,900.0	11,214.0	12,063.9	10,390.7	41.9	40.5	53.95	1,867.8	1,123.0	1,402.6	1,334.1	20.473		

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 #3H
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 #3H	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 - Squires Federal Com #6H - Wellbore #1 - Design #1											Offset Well Error: 0.0 usft	
Survey Program: 0-MWD default												
Reference	Vertical	Offset	Vertical	Semi Major Axis	Offset	Highside	Offset Wellbore Centre	Distance	Between	Between	Separation	Warning
Measured	Depth	Measured	Depth	Reference		Toolface	+N-S	+E-W	Centres	Ellipses	Factor	
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)		
13,000.0	11,213.2	12,163.9	10,389.3	43.4	42.0	53.95	1,967.7	1,123.0	1,403.5	1,332.4	19.755	
13,100.0	11,212.4	12,263.9	10,387.9	44.9	43.6	53.94	2,067.7	1,123.1	1,404.4	1,330.7	19.076	
13,200.0	11,211.6	12,363.9	10,386.5	46.4	45.1	53.93	2,167.7	1,123.1	1,405.2	1,329.0	18.434	
13,300.0	11,210.9	12,463.9	10,385.1	47.9	46.7	53.93	2,267.7	1,123.2	1,406.1	1,327.2	17.827	
13,400.0	11,210.1	12,563.9	10,383.7	49.5	48.3	53.92	2,367.7	1,123.2	1,407.0	1,325.5	17.253	
13,500.0	11,209.3	12,663.9	10,382.3	51.1	49.9	53.92	2,467.7	1,123.3	1,407.9	1,323.6	16.711	
13,600.0	11,208.5	12,763.9	10,380.9	52.7	51.5	53.91	2,567.7	1,123.3	1,408.8	1,321.8	16.197	
13,700.0	11,207.7	12,863.9	10,379.5	54.3	53.1	53.91	2,667.6	1,123.4	1,409.6	1,319.9	15.711	
13,800.0	11,206.9	12,963.9	10,378.1	55.9	54.8	53.90	2,767.6	1,123.4	1,410.5	1,318.0	15.251	
13,900.0	11,206.2	13,063.9	10,376.7	57.5	56.4	53.90	2,867.6	1,123.5	1,411.4	1,316.1	14.815	
14,000.0	11,205.4	13,163.9	10,375.3	59.2	58.1	53.89	2,967.6	1,123.5	1,412.3	1,314.2	14.401	
14,100.0	11,204.6	13,263.9	10,373.9	60.9	59.8	53.89	3,067.6	1,123.6	1,413.2	1,312.3	14.007	
14,200.0	11,203.8	13,363.9	10,372.5	62.5	61.5	53.88	3,167.6	1,123.6	1,414.0	1,310.3	13.634	
14,300.0	11,203.0	13,463.9	10,371.1	64.2	63.2	53.88	3,267.6	1,123.7	1,414.9	1,308.4	13.278	
14,400.0	11,202.2	13,563.9	10,369.7	65.9	64.9	53.87	3,367.5	1,123.7	1,415.8	1,306.4	12.940	
14,500.0	11,201.4	13,663.9	10,368.3	67.6	66.6	53.87	3,467.5	1,123.8	1,416.7	1,304.4	12.617	
14,600.0	11,200.7	13,763.9	10,366.9	69.3	68.3	53.86	3,567.5	1,123.8	1,417.6	1,302.4	12.310	
14,700.0	11,199.9	13,863.8	10,365.5	71.0	70.0	53.86	3,667.5	1,123.9	1,418.4	1,300.4	12.017	
14,800.0	11,199.1	13,963.8	10,364.1	72.7	71.7	53.85	3,767.5	1,123.9	1,419.3	1,298.4	11.737	
14,900.0	11,198.3	14,063.8	10,362.7	74.4	73.4	53.85	3,867.5	1,124.0	1,420.2	1,296.4	11.469	
15,000.0	11,197.5	14,163.8	10,361.3	76.1	75.2	53.84	3,967.5	1,124.0	1,421.1	1,294.3	11.213	
15,100.0	11,196.7	14,263.8	10,359.9	77.8	76.9	53.84	4,067.4	1,124.1	1,422.0	1,292.3	10.967	
15,200.0	11,196.0	14,363.8	10,358.5	79.6	78.6	53.83	4,167.4	1,124.1	1,422.8	1,290.3	10.732	
15,300.0	11,195.2	14,463.8	10,357.1	81.3	80.4	53.83	4,267.4	1,124.2	1,423.7	1,288.2	10.507	
15,400.0	11,194.4	14,563.8	10,355.7	83.0	82.1	53.82	4,367.4	1,124.2	1,424.6	1,286.2	10.291	
15,500.0	11,193.6	14,663.8	10,354.2	84.8	83.9	53.82	4,467.4	1,124.3	1,425.5	1,284.1	10.083	
15,600.0	11,192.8	14,763.8	10,352.8	86.5	85.6	53.81	4,567.4	1,124.3	1,426.3	1,282.0	9.883	
15,700.0	11,192.0	14,863.8	10,351.4	88.3	87.4	53.81	4,667.4	1,124.4	1,427.2	1,280.0	9.692	
15,800.0	11,191.3	14,963.8	10,350.0	90.0	89.1	53.80	4,767.3	1,124.4	1,428.1	1,277.9	9.507	
15,900.0	11,190.5	14,966.6	10,350.0	91.8	89.2	53.80	4,770.1	1,124.4	1,432.3	1,280.6	9.439	
16,000.0	11,189.7	14,966.6	10,350.0	93.5	89.2	53.80	4,770.1	1,124.4	1,443.4	1,290.2	9.421 SF	
16,100.0	11,188.9	14,966.6	10,350.0	95.3	89.2	53.80	4,770.1	1,124.4	1,461.3	1,306.6	9.446	
16,200.0	11,188.1	14,966.6	10,350.0	97.0	89.2	53.80	4,770.1	1,124.4	1,485.7	1,329.5	9.513	
16,300.0	11,187.3	14,966.6	10,350.0	98.8	89.2	53.80	4,770.1	1,124.4	1,516.3	1,358.7	9.617	
16,400.0	11,186.6	14,966.6	10,350.0	100.6	89.2	53.80	4,770.1	1,124.4	1,552.8	1,393.7	9.756	
16,500.0	11,185.8	14,966.6	10,350.0	102.3	89.2	53.80	4,770.1	1,124.4	1,594.8	1,434.1	9.927	
16,600.0	11,185.0	14,966.6	10,350.0	104.1	89.2	53.80	4,770.1	1,124.4	1,641.7	1,479.6	10.125	
16,700.0	11,184.2	14,966.6	10,350.0	105.9	89.2	53.80	4,770.1	1,124.4	1,693.3	1,529.6	10.348	
16,800.0	11,183.4	14,966.6	10,350.0	107.6	89.2	53.80	4,770.1	1,124.4	1,749.0	1,583.9	10.592	
16,900.0	11,182.6	14,966.6	10,350.0	109.4	89.2	53.80	4,770.1	1,124.4	1,808.6	1,642.0	10.854	
17,000.0	11,181.8	14,966.6	10,350.0	111.2	89.2	53.80	4,770.1	1,124.4	1,871.6	1,703.5	11.133	
17,100.0	11,181.1	14,966.6	10,350.0	113.0	89.2	53.80	4,770.1	1,124.4	1,937.8	1,768.2	11.424	
17,200.0	11,180.3	14,966.6	10,350.0	114.8	89.2	53.80	4,770.1	1,124.4	2,006.7	1,835.6	11.727	
17,300.0	11,179.5	14,966.6	10,350.0	116.5	89.2	53.80	4,770.1	1,124.4	2,078.2	1,905.6	12.039	
17,400.0	11,178.7	14,966.6	10,350.0	118.3	89.2	53.80	4,770.1	1,124.4	2,152.0	1,977.8	12.359	
17,500.0	11,177.9	14,966.6	10,350.0	120.1	89.2	53.80	4,770.1	1,124.4	2,227.7	2,052.1	12.685	
17,600.0	11,177.1	14,966.6	10,350.0	121.9	89.2	53.80	4,770.1	1,124.4	2,305.4	2,128.3	13.015	
17,700.0	11,176.4	14,966.6	10,350.0	123.7	89.2	53.80	4,770.1	1,124.4	2,384.7	2,206.1	13.350	
17,800.0	11,175.6	14,966.6	10,350.0	125.5	89.2	53.80	4,770.1	1,124.4	2,465.5	2,285.4	13.687	
17,900.0	11,174.8	14,966.6	10,350.0	127.2	89.2	53.80	4,770.1	1,124.4	2,547.7	2,366.0	14.026	
18,000.0	11,174.0	14,966.6	10,350.0	129.0	89.2	53.80	4,770.1	1,124.4	2,631.1	2,447.9	14.366	
18,100.0	11,173.2	14,966.6	10,350.0	130.8	89.2	53.80	4,770.1	1,124.4	2,715.6	2,531.0	14.706	

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 #3H
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 #3H	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 #6H - 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 Offset (usft) (usft)		Highside Toolface (°)	Offset Wellbore Centre +N/S (usft) +E/W (usft)		Distance Between Centres (usft) (usft)		Separation Factor	Warning
18,200.0	11,172.4	14,966.6	10,350.0	132.6	89.2	53.80	4,770.1	1,124.4	2,801.2	2,615.0	15.047	
18,300.0	11,171.7	14,966.6	10,350.0	134.4	89.2	53.80	4,770.1	1,124.4	2,887.7	2,700.0	15.387	
18,400.0	11,170.9	14,966.6	10,350.0	136.2	89.2	53.80	4,770.1	1,124.4	2,975.0	2,785.8	15.725	
18,500.0	11,170.1	14,966.6	10,350.0	138.0	89.2	53.80	4,770.1	1,124.4	3,063.1	2,872.4	16.063	
18,600.0	11,169.3	14,966.6	10,350.0	139.8	89.2	53.80	4,770.1	1,124.4	3,151.9	2,959.7	16.399	
18,700.0	11,168.5	14,966.6	10,350.0	141.6	89.2	53.80	4,770.1	1,124.4	3,241.4	3,047.6	16.732	
18,800.0	11,167.7	14,966.6	10,350.0	143.4	89.2	53.80	4,770.1	1,124.4	3,331.4	3,136.2	17.064	
18,900.0	11,167.0	14,966.6	10,350.0	145.2	89.2	53.80	4,770.1	1,124.4	3,422.0	3,225.3	17.394	
19,000.0	11,166.2	14,966.6	10,350.0	147.0	89.2	53.80	4,770.1	1,124.4	3,513.2	3,314.9	17.720	
19,100.0	11,165.4	14,966.6	10,350.0	148.8	89.2	53.80	4,770.1	1,124.4	3,604.8	3,405.0	18.045	
19,200.0	11,164.6	14,966.6	10,350.0	150.6	89.2	53.80	4,770.1	1,124.4	3,696.8	3,495.5	18.366	
19,300.0	11,163.8	14,966.6	10,350.0	152.4	89.2	53.80	4,770.1	1,124.4	3,789.2	3,586.4	18.685	
19,400.0	11,163.0	14,966.6	10,350.0	154.2	89.2	53.80	4,770.1	1,124.4	3,882.0	3,677.7	19.000	
19,500.0	11,162.2	14,966.6	10,350.0	156.0	89.2	53.80	4,770.1	1,124.4	3,975.2	3,769.4	19.313	
19,600.0	11,161.5	14,966.6	10,350.0	157.8	89.2	53.80	4,770.1	1,124.4	4,068.7	3,861.3	19.623	
19,700.0	11,160.7	14,966.6	10,350.0	159.6	89.2	53.80	4,770.1	1,124.4	4,162.5	3,953.6	19.929	
19,800.0	11,159.9	14,966.6	10,350.0	161.4	89.2	53.80	4,770.1	1,124.4	4,256.5	4,046.1	20.233	
19,900.0	11,159.1	14,966.6	10,350.0	163.2	89.2	53.80	4,770.1	1,124.4	4,350.9	4,139.0	20.533	
20,000.0	11,158.3	14,966.6	10,350.0	165.0	89.2	53.80	4,770.1	1,124.4	4,445.4	4,232.0	20.830	
20,100.0	11,157.5	14,966.6	10,350.0	166.8	89.2	53.80	4,770.1	1,124.4	4,540.3	4,325.3	21.124	
20,200.0	11,156.8	14,966.6	10,350.0	168.6	89.2	53.80	4,770.1	1,124.4	4,635.3	4,418.8	21.415	
20,300.0	11,156.0	14,966.6	10,350.0	170.4	89.2	53.80	4,770.1	1,124.4	4,730.5	4,512.5	21.703	
20,400.0	11,155.2	14,966.6	10,350.0	172.2	89.2	53.80	4,770.1	1,124.4	4,825.9	4,606.5	21.987	
20,500.0	11,154.4	14,966.6	10,350.0	174.0	89.2	53.80	4,770.1	1,124.4	4,921.6	4,700.6	22.269	
20,600.0	11,153.6	14,966.6	10,350.0	175.8	89.2	53.80	4,770.1	1,124.4	5,017.3	4,794.8	22.547	
20,700.0	11,152.8	14,966.6	10,350.0	177.6	89.2	53.80	4,770.1	1,124.4	5,113.3	4,889.2	22.822	
20,800.0	11,152.1	14,966.6	10,350.0	179.4	89.2	53.80	4,770.1	1,124.4	5,209.4	4,983.8	23.095	
20,900.0	11,151.3	14,966.6	10,350.0	181.2	89.2	53.80	4,770.1	1,124.4	5,305.6	5,078.5	23.364	
21,000.0	11,150.5	14,966.6	10,350.0	183.0	89.2	53.80	4,770.1	1,124.4	5,402.0	5,173.4	23.630	
21,062.2	11,150.0	14,966.6	10,350.0	184.1	89.2	53.80	4,770.1	1,124.4	5,462.0	5,232.5	23.794	
21,062.7	11,150.0	14,966.6	10,350.0	184.1	89.2	53.80	4,770.1	1,124.4	5,462.5	5,232.9	23.795	



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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													
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 Toothface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	89.62	0.2	29.9	29.9				
100.0	100.0	99.0	99.0	0.1	0.1	89.62	0.2	29.9	29.9	29.7	193.766		
200.0	200.0	199.0	199.0	0.3	0.3	89.62	0.2	29.9	29.9	29.3	49.638		
300.0	300.0	299.0	299.0	0.5	0.5	89.62	0.2	29.9	29.9	28.8	28.425		
400.0	400.0	399.0	399.0	0.8	0.7	89.62	0.2	29.9	29.9	28.4	19.915		
500.0	500.0	499.0	499.0	1.0	1.0	89.62	0.2	29.9	29.9	27.9	15.326		
600.0	600.0	599.0	599.0	1.2	1.2	89.62	0.2	29.9	29.9	27.5	12.456		
700.0	700.0	699.0	699.0	1.4	1.4	89.62	0.2	29.9	29.9	27.1	10.491		
800.0	800.0	799.0	799.0	1.7	1.6	89.62	0.2	29.9	29.9	26.6	9.062		
900.0	900.0	899.0	899.0	1.9	1.9	89.62	0.2	29.9	29.9	26.2	7.975		
1,000.0	1,000.0	999.0	999.0	2.1	2.1	89.62	0.2	29.9	29.9	25.7	7.122		
1,100.0	1,100.0	1,099.0	1,099.0	2.3	2.3	89.62	0.2	29.9	29.9	25.3	6.433		
1,200.0	1,200.0	1,199.0	1,199.0	2.5	2.5	89.62	0.2	29.9	29.9	24.8	5.866		
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	89.62	0.2	29.9	29.9	24.4	5.390		
1,400.0	1,400.0	1,399.0	1,399.0	3.0	3.0	89.62	0.2	29.9	29.9	23.9	4.986		
1,500.0	1,500.0	1,499.0	1,499.0	3.2	3.2	89.62	0.2	29.9	29.9	23.5	4.638		
1,600.0	1,600.0	1,599.0	1,599.0	3.4	3.4	89.62	0.2	29.9	29.9	23.0	4.336		
1,700.0	1,700.0	1,699.0	1,699.0	3.7	3.7	89.62	0.2	29.9	29.9	22.6	4.071		
1,800.0	1,800.0	1,799.0	1,799.0	3.9	3.9	89.62	0.2	29.9	29.9	22.1	3.836		
1,900.0	1,900.0	1,899.0	1,899.0	4.1	4.1	89.62	0.2	29.9	29.9	21.7	3.627		
2,000.0	2,000.0	1,999.0	1,999.0	4.3	4.3	89.62	0.2	29.9	29.9	21.2	3.439		
2,100.0	2,100.0	2,099.0	2,099.0	4.6	4.6	89.62	0.2	29.9	29.9	20.8	3.270		
2,200.0	2,200.0	2,199.0	2,199.0	4.8	4.8	89.62	0.2	29.9	29.9	20.3	3.117		
2,300.0	2,300.0	2,299.0	2,299.0	5.0	5.0	89.62	0.2	29.9	29.9	19.9	2.977		
2,400.0	2,400.0	2,399.0	2,399.0	5.2	5.2	89.62	0.2	29.9	29.9	19.4	2.850		
2,500.0	2,500.0	2,499.0	2,499.0	5.5	5.5	89.62	0.2	29.9	29.9	19.0	2.733		
2,600.0	2,600.0	2,599.0	2,599.0	5.7	5.7	89.62	0.2	29.9	29.9	18.5	2.625		
2,700.0	2,700.0	2,699.0	2,699.0	5.9	5.9	89.62	0.2	29.9	29.9	18.1	2.525		
2,800.0	2,800.0	2,799.0	2,799.0	6.1	6.1	89.62	0.2	29.9	29.9	17.6	2.433		
2,900.0	2,900.0	2,899.0	2,899.0	6.4	6.4	89.62	0.2	29.9	29.9	17.2	2.347		
3,000.0	3,000.0	2,999.0	2,999.0	6.6	6.6	89.62	0.2	29.9	29.9	16.7	2.267		
3,100.0	3,100.0	3,099.0	3,099.0	6.8	6.8	89.62	0.2	29.9	29.9	16.3	2.192		
3,200.0	3,200.0	3,199.0	3,199.0	7.0	7.0	89.62	0.2	29.9	29.9	15.8	2.122		
3,300.0	3,300.0	3,299.0	3,299.0	7.3	7.3	89.62	0.2	29.9	29.9	15.4	2.057		
3,400.0	3,400.0	3,399.0	3,399.0	7.5	7.5	89.62	0.2	29.9	29.9	14.9	1.995		
3,500.0	3,500.0	3,499.0	3,499.0	7.7	7.7	89.62	0.2	29.9	29.9	14.5	1.937		
3,600.0	3,600.0	3,599.0	3,599.0	7.9	7.9	89.62	0.2	29.9	29.9	14.0	1.882		
3,700.0	3,700.0	3,699.0	3,699.0	8.2	8.2	89.62	0.2	29.9	29.9	13.6	1.830		
3,800.0	3,800.0	3,799.0	3,799.0	8.4	8.4	89.62	0.2	29.9	29.9	13.1	1.781		
3,900.0	3,900.0	3,899.0	3,899.0	8.6	8.6	89.62	0.2	29.9	29.9	12.7	1.735		
4,000.0	4,000.0	3,999.0	3,999.0	8.8	8.8	89.62	0.2	29.9	29.9	12.2	1.691		
4,100.0	4,100.0	4,099.0	4,099.0	9.1	9.1	89.62	0.2	29.9	29.9	11.8	1.649		
4,200.0	4,200.0	4,199.0	4,199.0	9.3	9.3	89.62	0.2	29.9	29.9	11.3	1.609		
4,300.0	4,300.0	4,299.0	4,299.0	9.5	9.5	89.62	0.2	29.9	29.9	10.9	1.571		
4,400.0	4,400.0	4,399.0	4,399.0	9.7	9.7	89.62	0.2	29.9	29.9	10.4	1.535		
4,500.0	4,500.0	4,499.0	4,499.0	10.0	10.0	89.62	0.2	29.9	29.9	10.0	1.500		
4,600.0	4,600.0	4,599.0	4,599.0	10.2	10.2	89.62	0.2	29.9	29.9	9.5	1.467 Level 3		
4,700.0	4,700.0	4,699.0	4,699.0	10.4	10.4	89.62	0.2	29.9	29.9	9.1	1.435 Level 3		
4,800.0	4,800.0	4,799.0	4,799.0	10.6	10.6	89.62	0.2	29.9	29.9	8.6	1.405 Level 3		
4,900.0	4,900.0	4,899.0	4,899.0	10.9	10.9	89.62	0.2	29.9	29.9	8.2	1.376 Level 3		
5,000.0	5,000.0	4,999.0	4,999.0	11.1	11.1	89.62	0.2	29.9	29.9	7.7	1.348 Level 3		
5,100.0	5,100.0	5,099.0	5,099.0	11.3	11.3	89.62	0.2	29.9	29.9	7.3	1.321 Level 3		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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)	E-W (usft)	Distance Between Centres (usft)	Separation Factor	Warning	
5,200.0	5,200.0	5,199.0	5,199.0	11.5	11.5	89.62	0.2	29.9	29.9	6.8	1.296 Level 3	
5,300.0	5,300.0	5,299.0	5,299.0	11.8	11.8	89.62	0.2	29.9	29.9	6.4	1.271 Level 3	
5,400.0	5,400.0	5,399.0	5,399.0	12.0	12.0	89.62	0.2	29.9	29.9	5.9	1.247 Level 2	
5,500.0	5,500.0	5,499.0	5,499.0	12.2	12.2	89.62	0.2	29.9	29.9	5.5	1.224 Level 2	
5,600.0	5,600.0	5,599.0	5,599.0	12.4	12.4	89.62	0.2	29.9	29.9	5.0	1.202 Level 2	
5,700.0	5,700.0	5,699.0	5,699.0	12.7	12.7	89.62	0.2	29.9	29.9	4.6	1.181 Level 2	
5,800.0	5,800.0	5,799.0	5,799.0	12.9	12.9	89.62	0.2	29.9	29.9	4.1	1.160 Level 2	
5,900.0	5,900.0	5,899.0	5,899.0	13.1	13.1	89.62	0.2	29.9	29.9	3.7	1.140 Level 2	
6,000.0	6,000.0	5,999.0	5,999.0	13.3	13.3	89.62	0.2	29.9	29.9	3.2	1.121 Level 2	
6,100.0	6,100.0	6,099.0	6,099.0	13.6	13.6	89.62	0.2	29.9	29.9	2.8	1.102 Level 2	
6,200.0	6,200.0	6,199.0	6,199.0	13.8	13.8	89.62	0.2	29.9	29.9	2.3	1.084 Level 2	
6,300.0	6,300.0	6,299.0	6,299.0	14.0	14.0	89.62	0.2	29.9	29.9	1.9	1.067 Level 2	
6,400.0	6,400.0	6,399.0	6,399.0	14.2	14.2	89.62	0.2	29.9	29.9	1.4	1.050 Level 2	
6,500.0	6,500.0	6,499.0	6,499.0	14.5	14.5	89.62	0.2	29.9	29.9	1.0	1.034 Level 2	
6,600.0	6,600.0	6,599.0	6,599.0	14.7	14.7	89.62	0.2	29.9	29.9	0.5	1.018 Level 2	
6,700.0	6,700.0	6,699.0	6,699.0	14.9	14.9	89.62	0.2	29.9	29.9	0.1	1.003 Level 2	
6,800.0	6,800.0	6,799.0	6,799.0	15.1	15.1	89.62	0.2	29.9	29.9	-0.4	0.988 Level 1	
6,900.0	6,900.0	6,899.0	6,899.0	15.4	15.4	89.62	0.2	29.9	29.9	-0.8	0.973 Level 1	
7,000.0	7,000.0	6,999.0	6,999.0	15.6	15.6	89.62	0.2	29.9	29.9	-1.3	0.959 Level 1	
7,100.0	7,100.0	7,099.0	7,099.0	15.8	15.8	89.62	0.2	29.9	29.9	-1.7	0.946 Level 1	
7,200.0	7,200.0	7,199.0	7,199.0	16.0	16.0	89.62	0.2	29.9	29.9	-2.2	0.932 Level 1	
7,300.0	7,300.0	7,299.0	7,299.0	16.3	16.3	89.62	0.2	29.9	29.9	-2.6	0.919 Level 1	
7,400.0	7,400.0	7,399.0	7,399.0	16.5	16.5	89.62	0.2	29.9	29.9	-3.1	0.907 Level 1	
7,500.0	7,500.0	7,499.0	7,499.0	16.7	16.7	89.62	0.2	29.9	29.9	-3.5	0.895 Level 1	
7,600.0	7,600.0	7,599.0	7,599.0	16.9	16.9	89.62	0.2	29.9	29.9	-4.0	0.883 Level 1	
7,700.0	7,700.0	7,699.0	7,699.0	17.2	17.2	89.62	0.2	29.9	29.9	-4.4	0.871 Level 1	
7,800.0	7,800.0	7,799.0	7,799.0	17.4	17.4	89.62	0.2	29.9	29.9	-4.9	0.860 Level 1	
7,900.0	7,900.0	7,899.0	7,899.0	17.6	17.6	89.62	0.2	29.9	29.9	-5.3	0.849 Level 1	
8,000.0	8,000.0	7,999.0	7,999.0	17.8	17.8	89.62	0.2	29.9	29.9	-5.8	0.838 Level 1	
8,100.0	8,100.0	8,099.0	8,099.0	18.1	18.1	89.62	0.2	29.9	29.9	-6.2	0.828 Level 1	
8,200.0	8,200.0	8,199.0	8,199.0	18.3	18.3	89.62	0.2	29.9	29.9	-6.7	0.818 Level 1	
8,300.0	8,300.0	8,299.0	8,299.0	18.5	18.5	89.62	0.2	29.9	29.9	-7.1	0.808 Level 1	
8,400.0	8,400.0	8,399.0	8,399.0	18.7	18.7	89.62	0.2	29.9	29.9	-7.6	0.798 Level 1	
8,500.0	8,500.0	8,499.0	8,499.0	19.0	19.0	89.62	0.2	29.9	29.9	-8.0	0.789 Level 1	
8,600.0	8,600.0	8,599.0	8,599.0	19.2	19.2	89.62	0.2	29.9	29.9	-8.5	0.779 Level 1	
8,700.0	8,700.0	8,699.0	8,699.0	19.4	19.4	89.62	0.2	29.9	29.9	-8.9	0.770 Level 1	
8,800.0	8,800.0	8,799.0	8,799.0	19.6	19.6	89.62	0.2	29.9	29.9	-9.4	0.762 Level 1	
8,900.0	8,900.0	8,899.0	8,899.0	19.9	19.9	89.62	0.2	29.9	29.9	-9.8	0.753 Level 1	
9,000.0	9,000.0	8,999.0	8,999.0	20.1	20.1	89.62	0.2	29.9	29.9	-10.3	0.745 Level 1	
9,100.0	9,100.0	9,099.0	9,099.0	20.3	20.3	89.62	0.2	29.9	29.9	-10.7	0.736 Level 1	
9,200.0	9,200.0	9,199.0	9,199.0	20.5	20.5	89.62	0.2	29.9	29.9	-11.2	0.728 Level 1	
9,300.0	9,300.0	9,299.0	9,299.0	20.8	20.8	89.62	0.2	29.9	29.9	-11.6	0.720 Level 1	
9,400.0	9,400.0	9,399.0	9,399.0	21.0	21.0	89.62	0.2	29.9	29.9	-12.1	0.713 Level 1	
9,500.0	9,500.0	9,499.0	9,499.0	21.2	21.2	89.62	0.2	29.9	29.9	-12.5	0.705 Level 1	
9,600.0	9,600.0	9,599.0	9,599.0	21.4	21.4	89.62	0.2	29.9	29.9	-13.0	0.698 Level 1	
9,700.0	9,700.0	9,699.0	9,699.0	21.7	21.7	89.62	0.2	29.9	29.9	-13.4	0.690 Level 1	
9,800.0	9,800.0	9,799.0	9,799.0	21.9	21.9	89.62	0.2	29.9	29.9	-13.9	0.683 Level 1	
9,900.0	9,900.0	9,899.0	9,899.0	22.1	22.1	89.62	0.2	29.9	29.9	-14.3	0.676 Level 1, CC	
9,928.4	9,928.4	9,927.3	9,927.3	22.2	22.2	88.38	0.8	29.9	29.9	-14.4	0.675 Level 1, ES, SF	
10,000.0	10,000.0	9,997.7	9,997.1	22.3	22.3	72.04	9.7	29.8	31.4	-13.2	0.703 Level 1	
10,100.0	10,100.0	10,088.9	10,084.2	22.6	22.5	39.30	36.1	29.6	49.0	3.9	1.087 Level 2	
10,200.0	10,200.0	10,167.9	10,154.4	22.8	22.7	22.10	72.1	29.3	89.6	44.2	1.973	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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												
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
10,300.0	10,300.0	10,233.4	10,207.6	23.0	22.8	14.69	110.4	28.9	146.2	100.4	3.195	
10,400.0	10,400.0	10,286.9	10,246.7	23.2	23.0	11.03	146.7	28.6	213.4	167.4	4.633	
10,500.0	10,500.0	10,330.2	10,275.3	23.5	23.1	8.97	179.3	28.3	288.1	241.8	6.217	
10,600.0	10,600.0	10,365.6	10,296.3	23.7	23.2	7.69	207.7	28.1	368.2	321.6	7.901	
10,700.0	10,700.0	10,400.0	10,314.7	23.9	23.3	6.70	236.8	27.8	452.2	405.3	9.652	
10,747.5	10,747.5	10,406.7	10,318.1	24.0	23.3	6.53	242.6	27.8	493.1	446.2	10.500	
10,750.0	10,750.0	10,407.3	10,318.4	24.0	23.3	6.79	243.1	27.7	495.3	448.3	10.544	
10,775.0	10,775.0	10,413.6	10,321.4	24.1	23.4	6.09	248.6	27.7	516.7	469.7	10.998	
10,800.0	10,799.9	10,425.0	10,326.8	24.1	23.4	5.44	258.7	27.6	537.7	490.8	11.472	
10,825.0	10,824.7	10,425.0	10,326.8	24.2	23.4	5.06	258.7	27.6	558.0	511.4	11.968	
10,850.0	10,849.2	10,433.7	10,330.7	24.2	23.4	4.63	266.5	27.5	577.8	531.5	12.490	
10,875.0	10,873.5	10,440.9	10,333.8	24.3	23.5	4.28	272.9	27.5	597.0	551.2	13.042	
10,900.0	10,897.4	10,450.0	10,337.7	24.3	23.5	3.97	281.2	27.4	615.7	570.5	13.630	
10,925.0	10,920.9	10,450.0	10,337.7	24.4	23.5	3.75	281.2	27.4	633.7	589.3	14.262	
10,950.0	10,944.0	10,463.4	10,343.0	24.4	23.6	3.49	293.4	27.3	651.0	607.4	14.933	
10,975.0	10,966.5	10,475.0	10,347.3	24.5	23.6	3.28	304.2	27.2	667.7	625.1	15.661	
11,000.0	10,988.4	10,475.0	10,347.3	24.5	23.6	3.14	304.2	27.2	683.8	642.2	16.455	
11,025.0	11,009.6	10,487.2	10,351.6	24.6	23.7	2.97	315.6	27.1	699.1	658.7	17.314	
11,050.0	11,030.2	10,500.0	10,355.8	24.7	23.7	2.82	327.7	27.0	713.7	674.6	18.257	
11,075.0	11,049.9	10,500.0	10,355.8	24.7	23.7	2.72	327.7	27.0	727.6	689.9	19.303	
11,100.0	11,068.8	10,512.0	10,359.5	24.8	23.8	2.60	339.2	26.9	740.8	704.6	20.456	
11,125.0	11,086.9	10,525.0	10,363.0	24.8	23.8	2.50	351.7	26.8	753.3	718.6	21.742	
11,150.0	11,104.0	10,525.0	10,363.0	24.9	23.8	2.43	351.7	26.8	764.9	731.9	23.199	
11,175.0	11,120.1	10,537.6	10,366.2	25.0	23.9	2.35	363.9	26.7	775.8	744.6	24.836	
11,200.0	11,135.2	10,550.0	10,369.0	25.0	24.0	2.27	375.9	26.6	786.0	756.5	26.704	
11,225.0	11,149.3	10,550.0	10,369.0	25.1	24.0	2.23	375.9	26.6	795.3	767.8	28.876	
11,250.0	11,162.2	10,563.8	10,371.8	25.2	24.0	2.17	389.5	26.4	803.8	778.2	31.371	
11,275.0	11,174.1	10,575.0	10,373.7	25.3	24.1	2.12	400.5	26.4	811.6	787.9	34.305	
11,300.0	11,184.7	10,575.0	10,373.7	25.4	24.1	2.09	400.5	26.4	818.6	797.0	37.825	
11,325.0	11,194.1	10,590.4	10,375.9	25.5	24.2	2.05	415.8	26.2	824.7	805.0	41.975	
11,350.0	11,202.4	10,600.0	10,377.1	25.6	24.2	2.02	425.3	26.1	830.0	812.3	47.019	
11,375.0	11,209.3	10,608.3	10,377.9	25.7	24.3	1.99	433.6	26.1	834.5	818.8	53.153	
11,400.0	11,215.1	10,625.0	10,379.2	25.8	24.4	1.97	450.2	25.9	838.2	824.4	60.465	
11,425.0	11,219.5	10,625.0	10,379.2	25.9	24.4	1.96	450.2	25.9	841.0	828.8	69.301	
11,450.0	11,222.6	10,635.4	10,379.7	26.1	24.4	1.94	460.5	25.8	843.0	832.3	78.774	
11,475.0	11,224.4	10,650.0	10,380.0	26.2	24.5	1.93	475.1	25.7	844.2	834.5	87.154	
11,501.3	11,225.0	10,655.5	10,380.0	26.3	24.5	1.93	480.6	25.6	844.5	835.3	92.051	
11,600.0	11,224.2	10,749.8	10,379.4	26.9	25.2	1.91	574.9	24.8	844.3	834.2	83.592	
11,700.0	11,223.4	10,849.8	10,378.7	27.7	25.9	1.89	674.9	23.9	844.1	833.0	75.623	
11,800.0	11,222.6	10,949.8	10,378.1	28.5	26.8	1.87	774.9	23.0	844.0	831.7	68.565	
11,900.0	11,221.8	11,049.8	10,377.5	29.4	27.8	1.85	874.9	22.1	843.8	830.3	62.419	
12,000.0	11,221.0	11,149.8	10,376.9	30.4	28.8	1.83	974.9	21.3	843.6	828.9	57.099	
12,100.0	11,220.3	11,249.8	10,376.2	31.4	29.9	1.81	1,074.9	20.4	843.5	827.4	52.494	
12,200.0	11,219.5	11,349.8	10,375.6	32.6	31.1	1.79	1,174.9	19.5	843.3	825.9	48.497	
12,300.0	11,218.7	11,449.8	10,375.0	33.8	32.4	1.77	1,274.9	18.6	843.1	824.4	45.012	
12,400.0	11,217.9	11,549.8	10,374.3	35.0	33.7	1.75	1,374.8	17.7	843.0	822.9	41.955	
12,500.0	11,217.1	11,649.8	10,373.7	36.3	35.0	1.73	1,474.8	16.8	842.8	821.3	39.261	
12,600.0	11,216.3	11,749.8	10,373.1	37.7	36.4	1.71	1,574.8	15.9	842.6	819.8	36.872	
12,700.0	11,215.6	11,849.8	10,372.5	39.0	37.8	1.69	1,674.8	15.1	842.5	818.2	34.742	
12,800.0	11,214.8	11,949.8	10,371.8	40.4	39.3	1.67	1,774.8	14.2	842.3	816.7	32.834	
12,900.0	11,214.0	12,049.8	10,371.2	41.9	40.8	1.65	1,874.8	13.3	842.1	815.1	31.117	
13,000.0	11,213.2	12,149.8	10,370.6	43.4	42.3	1.63	1,974.8	12.4	842.0	813.5	29.563	

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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)	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
13,100.0	11,212.4	12,249.8	10,370.0	44.9	43.8	1.61	2,074.8	11.5	841.8	811.9	28.152	
13,200.0	11,211.6	12,349.8	10,369.3	46.4	45.4	1.59	2,174.8	10.6	841.7	810.3	26.866	
13,300.0	11,210.9	12,449.8	10,368.7	47.9	46.9	1.57	2,274.8	9.7	841.5	808.7	25.689	
13,400.0	11,210.1	12,549.7	10,368.1	49.5	48.5	1.55	2,374.8	8.9	841.3	807.1	24.608	
13,500.0	11,209.3	12,649.7	10,367.5	51.1	50.2	1.53	2,474.8	8.0	841.2	805.5	23.612	
13,600.0	11,208.5	12,749.7	10,366.8	52.7	51.8	1.51	2,574.8	7.1	841.0	803.9	22.691	
13,700.0	11,207.7	12,849.7	10,366.2	54.3	53.4	1.49	2,674.8	6.2	840.8	802.3	21.838	
13,800.0	11,206.9	12,949.7	10,365.6	55.9	55.1	1.47	2,774.8	5.3	840.7	800.7	21.046	
13,900.0	11,206.2	13,049.7	10,364.9	57.5	56.7	1.45	2,874.8	4.4	840.5	799.1	20.308	
14,000.0	11,205.4	13,149.7	10,364.3	59.2	58.4	1.43	2,974.7	3.5	840.3	797.5	19.619	
14,100.0	11,204.6	13,249.7	10,363.7	60.9	60.1	1.41	3,074.7	2.6	840.2	795.9	18.975	
14,200.0	11,203.8	13,349.7	10,363.1	62.5	61.8	1.39	3,174.7	1.8	840.0	794.3	18.370	
14,300.0	11,203.0	13,449.7	10,362.4	64.2	63.5	1.37	3,274.7	0.9	839.8	792.7	17.803	
14,400.0	11,202.2	13,549.7	10,361.8	65.9	65.2	1.35	3,374.7	0.0	839.7	791.1	17.269	
14,500.0	11,201.4	13,649.7	10,361.2	67.6	66.9	1.33	3,474.7	-0.9	839.5	789.4	16.765	
14,600.0	11,200.7	13,749.7	10,360.6	69.3	68.6	1.31	3,574.7	-1.8	839.3	787.8	16.290	
14,700.0	11,199.9	13,849.7	10,359.9	71.0	70.3	1.29	3,674.7	-2.7	839.2	786.2	15.840	
14,800.0	11,199.1	13,949.7	10,359.3	72.7	72.0	1.27	3,774.7	-3.6	839.0	784.6	15.414	
14,900.0	11,198.3	14,049.7	10,358.7	74.4	73.8	1.25	3,874.7	-4.4	838.9	783.0	15.010	
15,000.0	11,197.5	14,149.7	10,358.0	76.1	75.5	1.23	3,974.7	-5.3	838.7	781.4	14.627	
15,100.0	11,196.7	14,249.7	10,357.4	77.8	77.2	1.21	4,074.7	-6.2	838.5	779.7	14.262	
15,200.0	11,196.0	14,349.7	10,356.8	79.6	79.0	1.19	4,174.7	-7.1	838.4	778.1	13.915	
15,300.0	11,195.2	14,449.7	10,356.2	81.3	80.7	1.17	4,274.7	-8.0	838.2	776.5	13.584	
15,400.0	11,194.4	14,549.7	10,355.5	83.0	82.5	1.15	4,374.7	-8.9	838.0	774.9	13.268	
15,500.0	11,193.6	14,649.7	10,354.9	84.8	84.2	1.13	4,474.6	-9.8	837.9	773.3	12.967	
15,600.0	11,192.8	14,749.7	10,354.3	86.5	86.0	1.11	4,574.6	-10.6	837.7	771.6	12.679	
15,700.0	11,192.0	14,849.7	10,353.7	88.3	87.7	1.09	4,674.6	-11.5	837.6	770.0	12.403	
15,800.0	11,191.3	14,949.7	10,353.0	90.0	89.5	1.07	4,774.6	-12.4	837.4	768.4	12.138	
15,900.0	11,190.5	15,049.7	10,352.4	91.8	91.2	1.05	4,874.6	-13.3	837.2	766.8	11.885	
16,000.0	11,189.7	15,149.7	10,351.8	93.5	93.0	1.03	4,974.6	-14.2	837.1	765.2	11.641	
16,100.0	11,188.9	15,249.7	10,351.1	95.3	94.8	1.01	5,074.6	-15.1	836.9	763.5	11.408	
16,200.0	11,188.1	15,349.7	10,350.5	97.0	96.6	0.99	5,174.6	-16.0	836.7	761.9	11.183	
16,300.0	11,187.3	15,449.7	10,349.9	98.8	98.3	0.97	5,274.6	-16.8	836.6	760.3	10.967	
16,400.0	11,186.6	15,549.7	10,349.3	100.6	100.1	0.95	5,374.6	-17.7	836.4	758.7	10.759	
16,500.0	11,185.8	15,649.7	10,348.6	102.3	101.9	0.93	5,474.6	-18.6	836.3	757.1	10.559	
16,600.0	11,185.0	15,749.7	10,348.0	104.1	103.7	0.91	5,574.6	-19.5	836.1	755.4	10.366	
16,700.0	11,184.2	15,849.7	10,347.4	105.9	105.4	0.89	5,674.6	-20.4	835.9	753.8	10.180	
16,800.0	11,183.4	15,949.7	10,346.8	107.6	107.2	0.87	5,774.6	-21.3	835.8	752.2	10.000	
16,900.0	11,182.6	16,049.7	10,346.1	109.4	109.0	0.85	5,874.6	-22.2	835.6	750.6	9.827	
17,000.0	11,181.8	16,149.7	10,345.5	111.2	110.8	0.83	5,974.6	-23.1	835.4	749.0	9.659	
17,100.0	11,181.1	16,249.7	10,344.9	113.0	112.6	0.81	6,074.5	-23.9	835.3	747.3	9.497	
17,200.0	11,180.3	16,349.7	10,344.3	114.8	114.3	0.79	6,174.5	-24.8	835.1	745.7	9.340	
17,300.0	11,179.5	16,449.7	10,343.6	116.5	116.1	0.77	6,274.5	-25.7	835.0	744.1	9.188	
17,400.0	11,178.7	16,549.7	10,343.0	118.3	117.9	0.75	6,374.5	-26.6	834.8	742.5	9.041	
17,500.0	11,177.9	16,649.7	10,342.4	120.1	119.7	0.73	6,474.5	-27.5	834.6	740.8	8.898	
17,600.0	11,177.1	16,749.7	10,341.7	121.9	121.5	0.71	6,574.5	-28.4	834.5	739.2	8.760	
17,700.0	11,176.4	16,849.7	10,341.1	123.7	123.3	0.69	6,674.5	-29.3	834.3	737.6	8.626	
17,800.0	11,175.6	16,949.7	10,340.5	125.5	125.1	0.67	6,774.5	-30.1	834.2	736.0	8.496	
17,900.0	11,174.8	17,049.7	10,339.9	127.2	126.9	0.65	6,874.5	-31.0	834.0	734.4	8.370	
18,000.0	11,174.0	17,149.7	10,339.2	129.0	128.7	0.63	6,974.5	-31.9	833.8	732.7	8.247	
18,100.0	11,173.2	17,249.7	10,338.6	130.8	130.5	0.61	7,074.5	-32.8	833.7	731.1	8.128	
18,200.0	11,172.4	17,349.7	10,338.0	132.6	132.3	0.59	7,174.5	-33.7	833.5	729.5	8.013	

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 #3H
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 #3H	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)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
18,300.0	11,171.7	17,449.7	10,337.4	134.4	134.1	0.57	7,274.5	-34.6	833.4	727.9	7.900	
18,400.0	11,170.9	17,549.7	10,336.7	136.2	135.9	0.55	7,374.5	-35.5	833.2	726.3	7.791	
18,500.0	11,170.1	17,649.7	10,336.1	138.0	137.7	0.53	7,474.5	-36.3	833.0	724.6	7.684	
18,600.0	11,169.3	17,749.7	10,335.5	139.8	139.5	0.51	7,574.4	-37.2	832.9	723.0	7.580	
18,700.0	11,168.5	17,849.7	10,334.8	141.6	141.3	0.49	7,674.4	-38.1	832.7	721.4	7.479	
18,800.0	11,167.7	17,949.7	10,334.2	143.4	143.1	0.46	7,774.4	-39.0	832.6	719.8	7.381	
18,900.0	11,167.0	18,049.7	10,333.6	145.2	144.9	0.44	7,874.4	-39.9	832.4	718.1	7.285	
19,000.0	11,166.2	18,149.7	10,333.0	147.0	146.7	0.42	7,974.4	-40.8	832.2	716.5	7.192	
19,100.0	11,165.4	18,249.7	10,332.3	148.8	148.5	0.40	8,074.4	-41.7	832.1	714.9	7.101	
19,200.0	11,164.6	18,349.7	10,331.7	150.6	150.3	0.38	8,174.4	-42.5	831.9	713.3	7.012	
19,300.0	11,163.8	18,449.7	10,331.1	152.4	152.1	0.36	8,274.4	-43.4	831.8	711.7	6.925	
19,400.0	11,163.0	18,549.7	10,330.5	154.2	153.9	0.34	8,374.4	-44.3	831.6	710.0	6.840	
19,500.0	11,162.2	18,649.7	10,329.8	156.0	155.7	0.32	8,474.4	-45.2	831.4	708.4	6.758	
19,600.0	11,161.5	18,749.7	10,329.2	157.8	157.5	0.30	8,574.4	-46.1	831.3	706.8	6.677	
19,700.0	11,160.7	18,849.7	10,328.6	159.6	159.3	0.28	8,674.4	-47.0	831.1	705.2	6.598	
19,800.0	11,159.9	18,949.7	10,327.9	161.4	161.1	0.26	8,774.4	-47.9	831.0	703.5	6.521	
19,900.0	11,159.1	19,049.7	10,327.3	163.2	162.9	0.24	8,874.4	-48.8	830.8	701.9	6.446	
20,000.0	11,158.3	19,149.7	10,326.7	165.0	164.7	0.22	8,974.4	-49.6	830.7	700.3	6.372	
20,100.0	11,157.5	19,249.7	10,326.1	166.8	166.5	0.20	9,074.4	-50.5	830.5	698.7	6.300	
20,200.0	11,156.8	19,349.7	10,325.4	168.6	168.3	0.18	9,174.3	-51.4	830.3	697.1	6.230	
20,300.0	11,156.0	19,449.7	10,324.8	170.4	170.1	0.16	9,274.3	-52.3	830.2	695.4	6.161	
20,400.0	11,155.2	19,549.7	10,324.2	172.2	171.9	0.14	9,374.3	-53.2	830.0	693.8	6.094	
20,500.0	11,154.4	19,649.7	10,323.6	174.0	173.7	0.12	9,474.3	-54.1	829.9	692.2	6.028	
20,600.0	11,153.6	19,749.7	10,322.9	175.8	175.5	0.10	9,574.3	-55.0	829.7	690.6	5.963	
20,700.0	11,152.8	19,849.7	10,322.3	177.6	177.3	0.08	9,674.3	-55.8	829.6	689.0	5.900	
20,800.0	11,152.1	19,949.7	10,321.7	179.4	179.2	0.06	9,774.3	-56.7	829.4	687.3	5.838	
20,900.0	11,151.3	20,049.7	10,321.0	181.2	181.0	0.03	9,874.3	-57.6	829.2	685.7	5.777	
21,000.0	11,150.5	20,149.7	10,320.4	183.0	182.8	0.01	9,974.3	-58.5	829.1	684.1	5.718	
21,062.2	11,150.0	20,211.9	10,320.0	184.1	183.9	0.00	10,036.5	-59.1	829.0	683.1	5.682	
21,062.7	11,150.0	20,212.4	10,320.0	184.1	183.9	0.00	10,037.0	-59.1	829.0	683.1	5.681	



HP
Anticollision Report



Company:	COG Operating, LLC	Local/Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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)	Separation Factor	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	-90.46	-10.4	-1,289.8	1,289.8				
100.0	100.0	100.0	100.0	0.1	0.1	-90.46	-10.4	-1,289.8	1,289.8	1,289.7	5,316.797		
200.0	200.0	200.0	200.0	0.3	0.3	-90.46	-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	-90.46	-10.4	-1,289.8	1,289.8	1,288.8	1,223.561		
400.0	400.0	400.0	400.0	0.8	0.8	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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 #3H
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 #3H	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 #8H - 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)	Distance Between Ellipses (usft)	Separation Factor	Warning
5,200.0	5,200.0	5,200.0	5,200.0	11.5	11.5	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-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	-90.46	-10.4	-1,289.8	1,289.8	1,246.1	29.476	
9,857.5	9,857.5	9,857.5	9,857.5	22.0	22.0	-90.46	-10.4	-1,289.8	1,289.8	1,245.8	29.303 CC	
9,900.0	9,900.0	9,899.9	9,899.9	22.1	22.1	-90.43	-9.6	-1,289.8	1,289.8	1,245.6	29.176	
10,000.0	10,000.0	9,996.8	9,995.4	22.3	22.3	-89.75	5.7	-1,289.9	1,290.0	1,245.3	28.896 ES	
10,100.0	10,100.0	10,084.4	10,077.5	22.6	22.5	-88.41	35.8	-1,290.2	1,290.9	1,245.9	28.655	
10,200.0	10,200.0	10,159.1	10,142.2	22.8	22.7	-86.76	73.0	-1,290.5	1,293.9	1,248.5	28.478	

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 #3H
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 #3H	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 - Squires Federal Com #8H - Wellbore #1 - Design #1												Offset Well Error:		0.0 usft
Survey Program: 0-MWD default														
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning		
10,300.0	10,300.0	10,220.6	10,190.6	23.0	22.8	-85.09	111.0	-1,290.9	1,300.3	1,254.4	28.387			
10,400.0	10,400.0	10,270.7	10,226.1	23.2	22.9	-83.54	146.3	-1,291.2	1,311.0	1,264.9	28.403			
10,500.0	10,500.0	10,311.4	10,252.2	23.5	23.1	-82.17	177.5	-1,291.5	1,327.0	1,280.5	28.537			
10,600.0	10,600.0	10,350.0	10,274.3	23.7	23.2	-80.80	209.1	-1,291.8	1,348.5	1,301.6	28.787			
10,700.0	10,700.0	10,375.0	10,287.2	23.9	23.3	-79.88	230.5	-1,291.9	1,375.7	1,328.6	29.176			
10,747.5	10,747.5	10,383.6	10,291.4	24.0	23.3	-79.56	238.0	-1,292.0	1,390.7	1,343.4	29.408			
10,750.0	10,750.0	10,384.1	10,291.7	24.0	23.3	-79.10	238.5	-1,292.0	1,391.5	1,344.2	29.420			
10,775.0	10,775.0	10,390.0	10,294.5	24.1	23.3	-77.86	243.7	-1,292.1	1,399.7	1,352.4	29.550			
10,800.0	10,799.9	10,400.0	10,299.1	24.1	23.4	-76.47	252.5	-1,292.1	1,408.1	1,360.7	29.679			
10,825.0	10,824.7	10,400.0	10,299.1	24.2	23.4	-75.43	252.5	-1,292.1	1,416.5	1,369.0	29.837			
10,850.0	10,849.2	10,409.3	10,303.2	24.2	23.4	-74.09	260.9	-1,292.2	1,424.9	1,377.4	29.986			
10,875.0	10,873.5	10,416.2	10,306.1	24.3	23.4	-72.85	267.1	-1,292.3	1,433.3	1,385.7	30.152			
10,900.0	10,897.4	10,425.0	10,309.7	24.3	23.5	-71.57	275.1	-1,292.3	1,441.6	1,394.1	30.331			
10,925.0	10,920.9	10,425.0	10,309.7	24.4	23.5	-70.58	275.1	-1,292.3	1,449.9	1,402.4	30.543			
10,950.0	10,944.0	10,437.9	10,314.7	24.4	23.5	-69.25	287.0	-1,292.4	1,458.0	1,410.5	30.749			
10,975.0	10,966.5	10,450.0	10,319.1	24.5	23.6	-68.00	298.3	-1,292.5	1,465.9	1,418.6	30.980			
11,000.0	10,988.4	10,450.0	10,319.1	24.5	23.6	-67.09	298.3	-1,292.5	1,473.7	1,426.6	31.250			
11,025.0	11,009.6	10,461.0	10,322.9	24.6	23.6	-65.96	308.6	-1,292.6	1,481.3	1,434.3	31.528			
11,050.0	11,030.2	10,475.0	10,327.4	24.7	23.7	-64.82	321.9	-1,292.8	1,488.7	1,441.9	31.827			
11,075.0	11,049.9	10,475.0	10,327.4	24.7	23.7	-64.02	321.9	-1,292.8	1,495.8	1,449.3	32.163			
11,100.0	11,068.8	10,485.1	10,330.3	24.8	23.7	-63.06	331.5	-1,292.8	1,502.6	1,456.4	32.510			
11,125.0	11,086.9	10,500.0	10,334.3	24.8	23.8	-62.08	345.9	-1,293.0	1,509.2	1,463.3	32.875			
11,150.0	11,104.0	10,500.0	10,334.3	24.9	23.8	-61.41	345.9	-1,293.0	1,515.4	1,469.8	33.266			
11,175.0	11,120.1	10,510.0	10,336.8	25.0	23.8	-60.63	355.6	-1,293.1	1,521.2	1,476.0	33.662			
11,200.0	11,135.2	10,525.0	10,340.0	25.0	23.9	-59.84	370.2	-1,293.2	1,526.8	1,481.9	34.066			
11,225.0	11,149.3	10,525.0	10,340.0	25.1	23.9	-59.30	370.2	-1,293.2	1,531.9	1,487.4	34.480			
11,250.0	11,162.2	10,535.5	10,342.1	25.2	24.0	-58.59	380.5	-1,293.3	1,536.6	1,492.5	34.883			
11,275.0	11,174.1	10,550.0	10,344.5	25.3	24.1	-58.09	394.8	-1,293.4	1,540.9	1,497.3	35.269			
11,300.0	11,184.7	10,550.0	10,344.5	25.4	24.1	-57.69	394.8	-1,293.4	1,544.8	1,501.5	35.651			
11,325.0	11,194.1	10,561.5	10,346.1	25.5	24.1	-57.25	406.2	-1,293.5	1,548.3	1,505.3	35.988			
11,350.0	11,202.4	10,575.0	10,347.6	25.6	24.2	-56.85	419.6	-1,293.6	1,551.3	1,508.6	36.282			
11,375.0	11,209.3	10,575.0	10,347.6	25.7	24.2	-56.59	419.6	-1,293.6	1,553.9	1,511.4	36.555			
11,400.0	11,215.1	10,587.7	10,348.7	25.8	24.3	-56.32	432.3	-1,293.7	1,556.0	1,513.7	36.742			
11,425.0	11,219.5	10,600.0	10,349.4	25.9	24.3	-56.12	444.6	-1,293.8	1,557.7	1,515.4	36.864			
11,450.0	11,222.6	10,600.0	10,349.4	26.1	24.3	-56.00	444.6	-1,293.8	1,558.9	1,516.7	36.958			
11,475.0	11,224.4	10,614.2	10,349.9	26.2	24.4	-55.90	458.7	-1,294.0	1,559.6	1,517.3	36.923			
11,501.3	11,225.0	10,625.0	10,350.0	26.3	24.5	-55.88	469.5	-1,294.1	1,559.8	1,517.5	36.820			
11,514.7	11,224.9	10,634.1	10,349.9	26.4	24.5	-55.88	478.6	-1,294.1	1,559.8	1,517.3	36.713			
11,600.0	11,224.2	10,719.4	10,349.5	26.9	25.1	-55.89	563.9	-1,294.9	1,559.9	1,516.5	35.902			
11,700.0	11,223.4	10,819.4	10,348.9	27.7	25.9	-55.90	663.9	-1,295.8	1,560.0	1,515.3	34.856			
11,800.0	11,222.6	10,919.4	10,348.4	28.5	26.7	-55.92	763.9	-1,296.7	1,560.1	1,513.9	33.741			
11,900.0	11,221.8	11,019.4	10,347.9	29.4	27.7	-55.93	863.9	-1,297.6	1,560.2	1,512.3	32.586			
12,000.0	11,221.0	11,119.4	10,347.4	30.4	28.8	-55.95	963.9	-1,298.5	1,560.3	1,510.7	31.416			
12,100.0	11,220.3	11,219.4	10,346.9	31.4	29.9	-55.96	1,063.9	-1,299.3	1,560.4	1,508.8	30.251			
12,200.0	11,219.5	11,319.3	10,346.3	32.6	31.1	-55.98	1,163.9	-1,300.2	1,560.5	1,506.9	29.107			
12,300.0	11,218.7	11,419.3	10,345.8	33.8	32.3	-55.99	1,263.9	-1,301.1	1,560.6	1,504.9	27.995			
12,400.0	11,217.9	11,519.3	10,345.3	35.0	33.6	-56.00	1,363.8	-1,302.0	1,560.7	1,502.8	26.922			
12,500.0	11,217.1	11,619.3	10,344.8	36.3	35.0	-56.02	1,463.8	-1,302.9	1,560.8	1,500.6	25.893			
12,600.0	11,216.3	11,719.3	10,344.2	37.7	36.3	-56.03	1,563.8	-1,303.8	1,560.9	1,498.3	24.911			
12,700.0	11,215.6	11,819.3	10,343.7	39.0	37.8	-56.05	1,663.8	-1,304.7	1,561.0	1,495.9	23.976			
12,800.0	11,214.8	11,919.3	10,343.2	40.4	39.2	-56.06	1,763.8	-1,305.6	1,561.1	1,493.5	23.090			
12,900.0	11,214.0	12,019.3	10,342.7	41.9	40.7	-56.07	1,863.8	-1,306.5	1,561.2	1,491.1	22.251			

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 #3H
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 #3H	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 - Squires 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	
13,000.0	11,213.2	12,119.3	10,342.1	43.4	42.2	-56.09	1,963.8	-1,307.3	1,561.3	1,488.6	21.456		
13,100.0	11,212.4	12,219.3	10,341.6	44.9	43.8	-56.10	2,063.8	-1,308.2	1,561.5	1,486.0	20.705		
13,200.0	11,211.6	12,319.3	10,341.1	46.4	45.3	-56.12	2,163.8	-1,309.1	1,561.6	1,483.5	19.996		
13,300.0	11,210.9	12,419.3	10,340.6	47.9	46.9	-56.13	2,263.8	-1,310.0	1,561.7	1,480.8	19.325		
13,400.0	11,210.1	12,519.3	10,340.1	49.5	48.5	-56.14	2,363.8	-1,310.9	1,561.8	1,478.2	18.691		
13,500.0	11,209.3	12,619.3	10,339.5	51.1	50.1	-56.16	2,463.8	-1,311.8	1,561.9	1,475.5	18.092		
13,600.0	11,208.5	12,719.3	10,339.0	52.7	51.7	-56.17	2,563.8	-1,312.7	1,562.0	1,472.8	17.524		
13,700.0	11,207.7	12,819.3	10,338.5	54.3	53.4	-56.19	2,663.8	-1,313.6	1,562.1	1,470.1	16.987		
13,800.0	11,206.9	12,919.3	10,338.0	55.9	55.0	-56.20	2,763.8	-1,314.4	1,562.2	1,467.4	16.479		
13,900.0	11,206.2	13,019.3	10,337.4	57.5	56.7	-56.22	2,863.8	-1,315.3	1,562.3	1,464.6	15.997		
14,000.0	11,205.4	13,119.3	10,336.9	59.2	58.4	-56.23	2,963.7	-1,316.2	1,562.4	1,461.8	15.539		
14,100.0	11,204.6	13,219.3	10,336.4	60.9	60.0	-56.24	3,063.7	-1,317.1	1,562.5	1,459.0	15.105		
14,200.0	11,203.8	13,319.3	10,335.9	62.5	61.7	-56.26	3,163.7	-1,318.0	1,562.6	1,456.2	14.692		
14,300.0	11,203.0	13,419.3	10,335.4	64.2	63.4	-56.27	3,263.7	-1,318.9	1,562.7	1,453.4	14.300		
14,400.0	11,202.2	13,519.3	10,334.8	65.9	65.1	-56.29	3,363.7	-1,319.8	1,562.8	1,450.6	13.926		
14,500.0	11,201.4	13,619.3	10,334.3	67.6	66.8	-56.30	3,463.7	-1,320.7	1,562.9	1,447.7	13.570		
14,600.0	11,200.7	13,719.3	10,333.8	69.3	68.5	-56.31	3,563.7	-1,321.6	1,563.0	1,444.9	13.230		
14,700.0	11,199.9	13,819.3	10,333.3	71.0	70.3	-56.33	3,663.7	-1,322.4	1,563.1	1,442.0	12.906		
14,800.0	11,199.1	13,919.3	10,332.7	72.7	72.0	-56.34	3,763.7	-1,323.3	1,563.2	1,439.1	12.597		
14,900.0	11,198.3	14,019.3	10,332.2	74.4	73.7	-56.36	3,863.7	-1,324.2	1,563.3	1,436.2	12.301		
15,000.0	11,197.5	14,119.3	10,331.7	76.1	75.5	-56.37	3,963.7	-1,325.1	1,563.4	1,433.3	12.018		
15,100.0	11,196.7	14,219.3	10,331.2	77.8	77.2	-56.38	4,063.7	-1,326.0	1,563.5	1,430.4	11.747		
15,200.0	11,196.0	14,319.3	10,330.7	79.6	78.9	-56.40	4,163.7	-1,326.9	1,563.6	1,427.5	11.487		
15,300.0	11,195.2	14,419.3	10,330.1	81.3	80.7	-56.41	4,263.7	-1,327.8	1,563.7	1,424.6	11.238		
15,400.0	11,194.4	14,519.3	10,329.6	83.0	82.4	-56.43	4,363.7	-1,328.7	1,563.8	1,421.7	11.000		
15,500.0	11,193.6	14,619.3	10,329.1	84.8	84.2	-56.44	4,463.7	-1,329.6	1,564.0	1,418.7	10.770		
15,600.0	11,192.8	14,719.3	10,328.6	86.5	85.9	-56.45	4,563.7	-1,330.4	1,564.1	1,415.8	10.550		
15,700.0	11,192.0	14,819.3	10,328.0	88.3	87.7	-56.47	4,663.6	-1,331.3	1,564.2	1,412.9	10.338		
15,800.0	11,191.3	14,919.3	10,327.5	90.0	89.5	-56.48	4,763.6	-1,332.2	1,564.3	1,409.9	10.134		
15,900.0	11,190.5	15,019.3	10,327.0	91.8	91.2	-56.50	4,863.6	-1,333.1	1,564.4	1,407.0	9.938		
16,000.0	11,189.7	15,119.3	10,326.5	93.5	93.0	-56.51	4,963.6	-1,334.0	1,564.5	1,404.0	9.749		
16,100.0	11,188.9	15,219.3	10,325.9	95.3	94.8	-56.52	5,063.6	-1,334.9	1,564.6	1,401.0	9.566		
16,200.0	11,188.1	15,319.3	10,325.4	97.0	96.5	-56.54	5,163.6	-1,335.8	1,564.7	1,398.1	9.391		
16,300.0	11,187.3	15,419.3	10,324.9	98.8	98.3	-56.55	5,263.6	-1,336.7	1,564.8	1,395.1	9.221		
16,400.0	11,186.6	15,519.3	10,324.4	100.6	100.1	-56.57	5,363.6	-1,337.5	1,564.9	1,392.1	9.057		
16,500.0	11,185.8	15,619.3	10,323.9	102.3	101.9	-56.58	5,463.6	-1,338.4	1,565.0	1,389.1	8.899		
16,600.0	11,185.0	15,719.3	10,323.3	104.1	103.6	-56.59	5,563.6	-1,339.3	1,565.1	1,386.2	8.746		
16,700.0	11,184.2	15,819.3	10,322.8	105.9	105.4	-56.61	5,663.6	-1,340.2	1,565.2	1,383.2	8.598		
16,800.0	11,183.4	15,919.3	10,322.3	107.6	107.2	-56.62	5,763.6	-1,341.1	1,565.3	1,380.2	8.454		
16,900.0	11,182.6	16,019.3	10,321.8	109.4	109.0	-56.64	5,863.6	-1,342.0	1,565.4	1,377.2	8.316		
17,000.0	11,181.8	16,119.3	10,321.2	111.2	110.8	-56.65	5,963.6	-1,342.9	1,565.5	1,374.2	8.182		
17,100.0	11,181.1	16,219.3	10,320.7	113.0	112.5	-56.66	6,063.6	-1,343.8	1,565.7	1,371.2	8.051		
17,200.0	11,180.3	16,319.3	10,320.2	114.8	114.3	-56.68	6,163.6	-1,344.7	1,565.8	1,368.2	7.925		
17,300.0	11,179.5	16,419.3	10,319.7	116.5	116.1	-56.69	6,263.5	-1,345.5	1,565.9	1,365.2	7.803		
17,400.0	11,178.7	16,519.3	10,319.2	118.3	117.9	-56.71	6,363.5	-1,346.4	1,566.0	1,362.2	7.684		
17,500.0	11,177.9	16,619.3	10,318.6	120.1	119.7	-56.72	6,463.5	-1,347.3	1,566.1	1,359.2	7.569		
17,600.0	11,177.1	16,719.3	10,318.1	121.9	121.5	-56.74	6,563.5	-1,348.2	1,566.2	1,356.2	7.457		
17,700.0	11,176.4	16,819.3	10,317.6	123.7	123.3	-56.75	6,663.5	-1,349.1	1,566.3	1,353.1	7.348		
17,800.0	11,175.6	16,919.3	10,317.1	125.5	125.1	-56.76	6,763.5	-1,350.0	1,566.4	1,350.1	7.243		
17,900.0	11,174.8	17,019.3	10,316.5	127.2	126.9	-56.78	6,863.5	-1,350.9	1,566.5	1,347.1	7.140		
18,000.0	11,174.0	17,119.3	10,316.0	129.0	128.7	-56.79	6,963.5	-1,351.8	1,566.6	1,344.1	7.040		
18,100.0	11,173.2	17,219.3	10,315.5	130.8	130.4	-56.81	7,063.5	-1,352.7	1,566.7	1,341.1	6.943		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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 #8H - 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)	Distance Between Ellipses (usft)	Separation Factor	Warning
18,200.0	11,172.4	17,319.3	10,315.0	132.6	132.2	-56.82	7,163.5	-1,353.5	1,566.8	1,338.0	6.848	
18,300.0	11,171.7	17,419.3	10,314.5	134.4	134.0	-56.83	7,263.5	-1,354.4	1,566.9	1,335.0	6.756	
18,400.0	11,170.9	17,519.3	10,313.9	136.2	135.8	-56.85	7,363.5	-1,355.3	1,567.1	1,332.0	6.666	
18,500.0	11,170.1	17,619.3	10,313.4	138.0	137.6	-56.86	7,463.5	-1,356.2	1,567.2	1,328.9	6.579	
18,600.0	11,169.3	17,719.3	10,312.9	139.8	139.4	-56.88	7,563.5	-1,357.1	1,567.3	1,325.9	6.494	
18,700.0	11,168.5	17,819.3	10,312.4	141.6	141.2	-56.89	7,663.5	-1,358.0	1,567.4	1,322.9	6.410	
18,800.0	11,167.7	17,919.3	10,311.8	143.4	143.0	-56.90	7,763.5	-1,358.9	1,567.5	1,319.8	6.329	
18,900.0	11,167.0	18,019.3	10,311.3	145.2	144.8	-56.92	7,863.4	-1,359.8	1,567.6	1,316.8	6.250	
19,000.0	11,166.2	18,119.3	10,310.8	147.0	146.6	-56.93	7,963.4	-1,360.6	1,567.7	1,313.8	6.173	
19,100.0	11,165.4	18,219.3	10,310.3	148.8	148.4	-56.95	8,063.4	-1,361.5	1,567.8	1,310.7	6.098	
19,200.0	11,164.6	18,319.3	10,309.7	150.6	150.2	-56.96	8,163.4	-1,362.4	1,567.9	1,307.7	6.025	
19,300.0	11,163.8	18,419.3	10,309.2	152.4	152.0	-56.97	8,263.4	-1,363.3	1,568.0	1,304.6	5.953	
19,400.0	11,163.0	18,519.3	10,308.7	154.2	153.8	-56.99	8,363.4	-1,364.2	1,568.1	1,301.6	5.883	
19,500.0	11,162.2	18,619.3	10,308.2	156.0	155.6	-57.00	8,463.4	-1,365.1	1,568.2	1,298.5	5.814	
19,600.0	11,161.5	18,719.3	10,307.7	157.8	157.5	-57.01	8,563.4	-1,366.0	1,568.4	1,295.5	5.747	
19,700.0	11,160.7	18,819.3	10,307.1	159.6	159.3	-57.03	8,663.4	-1,366.9	1,568.5	1,292.4	5.682	
19,800.0	11,159.9	18,919.3	10,306.6	161.4	161.1	-57.04	8,763.4	-1,367.8	1,568.6	1,289.4	5.618	
19,900.0	11,159.1	19,019.3	10,306.1	163.2	162.9	-57.06	8,863.4	-1,368.6	1,568.7	1,286.3	5.555	
20,000.0	11,158.3	19,119.3	10,305.6	165.0	164.7	-57.07	8,963.4	-1,369.5	1,568.8	1,283.3	5.494	
20,100.0	11,157.5	19,219.3	10,305.0	166.8	166.5	-57.08	9,063.4	-1,370.4	1,568.9	1,280.2	5.434	
20,200.0	11,156.8	19,319.3	10,304.5	168.6	168.3	-57.10	9,163.4	-1,371.3	1,569.0	1,277.1	5.376	
20,300.0	11,156.0	19,419.3	10,304.0	170.4	170.1	-57.11	9,263.4	-1,372.2	1,569.1	1,274.1	5.318	
20,400.0	11,155.2	19,519.3	10,303.5	172.2	171.9	-57.13	9,363.4	-1,373.1	1,569.2	1,271.0	5.262	
20,500.0	11,154.4	19,619.3	10,303.0	174.0	173.7	-57.14	9,463.4	-1,374.0	1,569.3	1,268.0	5.207	
20,600.0	11,153.6	19,719.3	10,302.4	175.8	175.5	-57.15	9,563.3	-1,374.9	1,569.5	1,264.9	5.153	
20,700.0	11,152.8	19,819.3	10,301.9	177.6	177.3	-57.17	9,663.3	-1,375.8	1,569.6	1,261.8	5.100	
20,800.0	11,152.1	19,919.3	10,301.4	179.4	179.1	-57.18	9,763.3	-1,376.6	1,569.7	1,258.8	5.049	
20,900.0	11,151.3	20,019.3	10,300.9	181.2	180.9	-57.20	9,863.3	-1,377.5	1,569.8	1,255.7	4.998	
21,000.0	11,150.5	20,119.3	10,300.3	183.0	182.8	-57.21	9,963.3	-1,378.4	1,569.9	1,252.6	4.948	
21,062.2	11,150.0	20,181.5	10,300.0	184.1	183.9	-57.22	10,025.5	-1,379.0	1,570.0	1,250.7	4.918	
21,062.7	11,150.0	20,182.0	10,300.0	184.1	183.9	-57.22	10,026.0	-1,379.0	1,570.0	1,250.7	4.917 SF	



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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

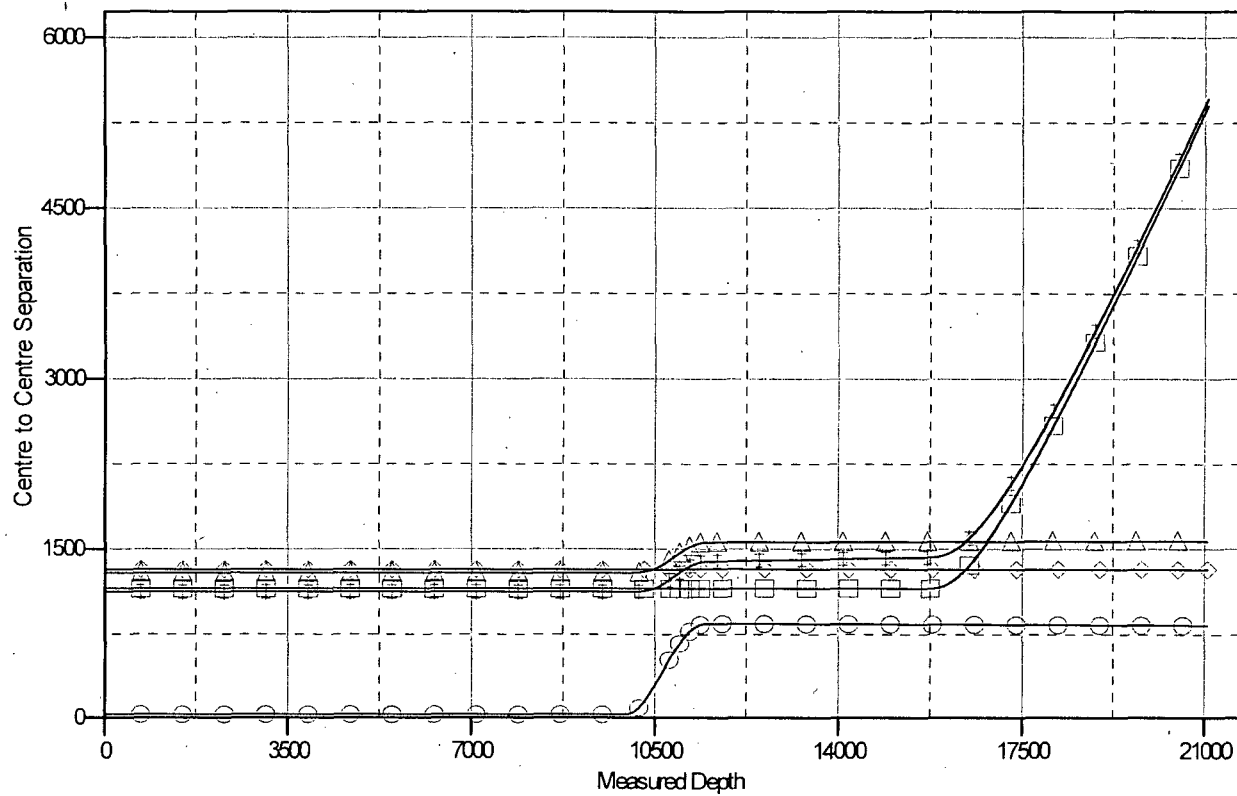
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Squints Federal Com #3H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Grid Convergence at Surface is: 0.47°

Ladder Plot



LEGEND

Squints Federal Com #8H, Wellbore #1, Design #1 V0 Squints Federal Com #2H, Wellbore #1, Design #1 V0 Squints Federal Com #4H, Wellbore #1, Design #1 V0
Squints Federal Com #6H, Wellbore #1, Design #1 V0 Squints Federal Com #7H, Wellbore #1, Design #1 V0



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #3H
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 #3H	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

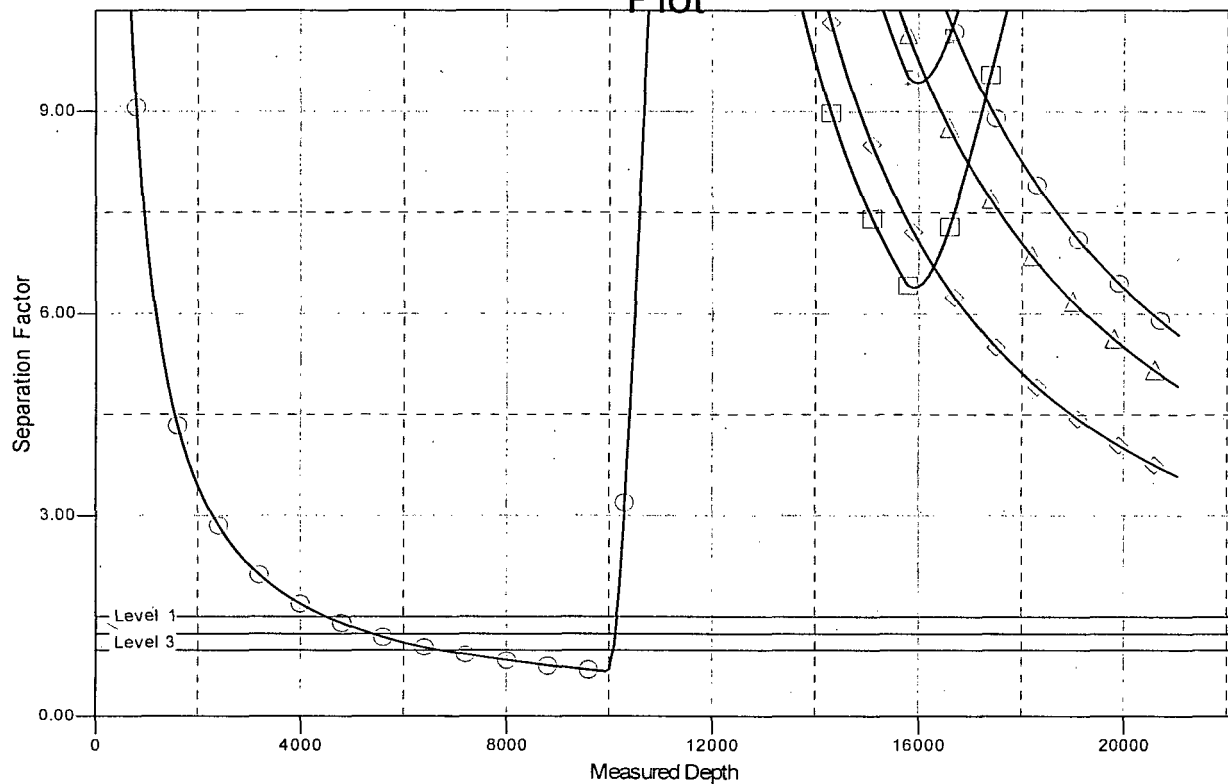
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Squints Federal Com #3H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

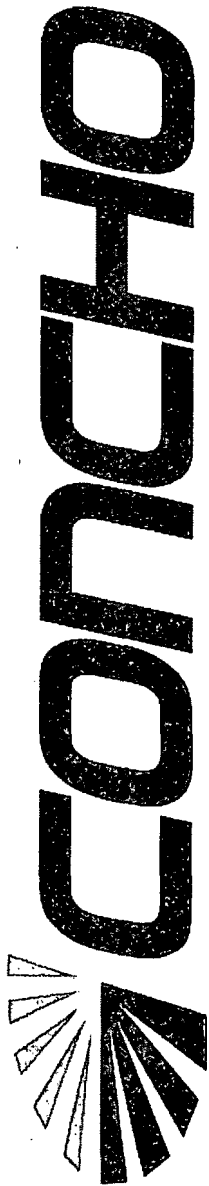
Grid Convergence at Surface is: 0.47°

Separation Factor Plot

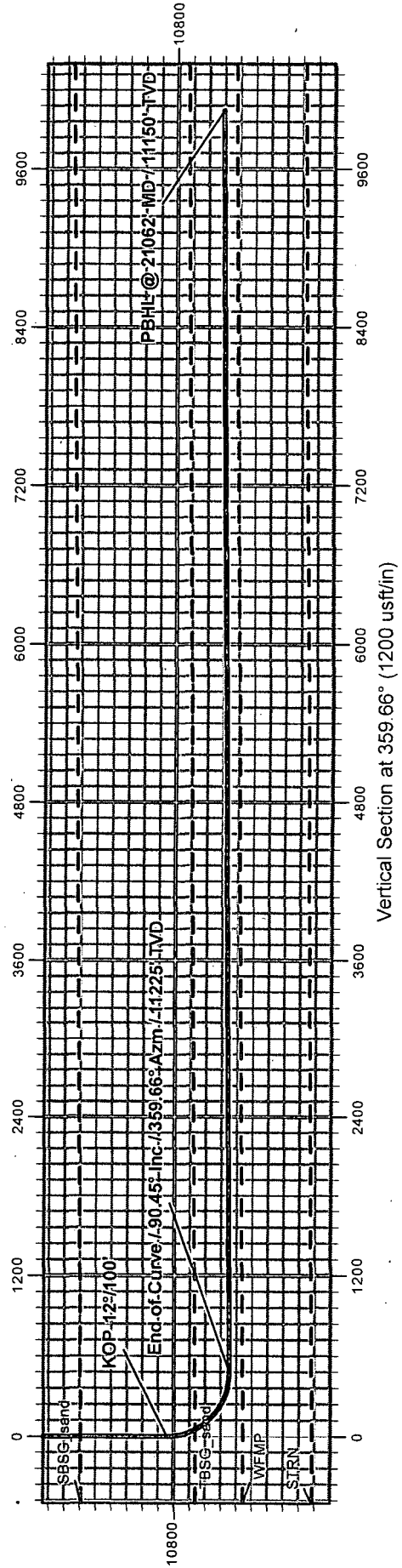


LEGEND

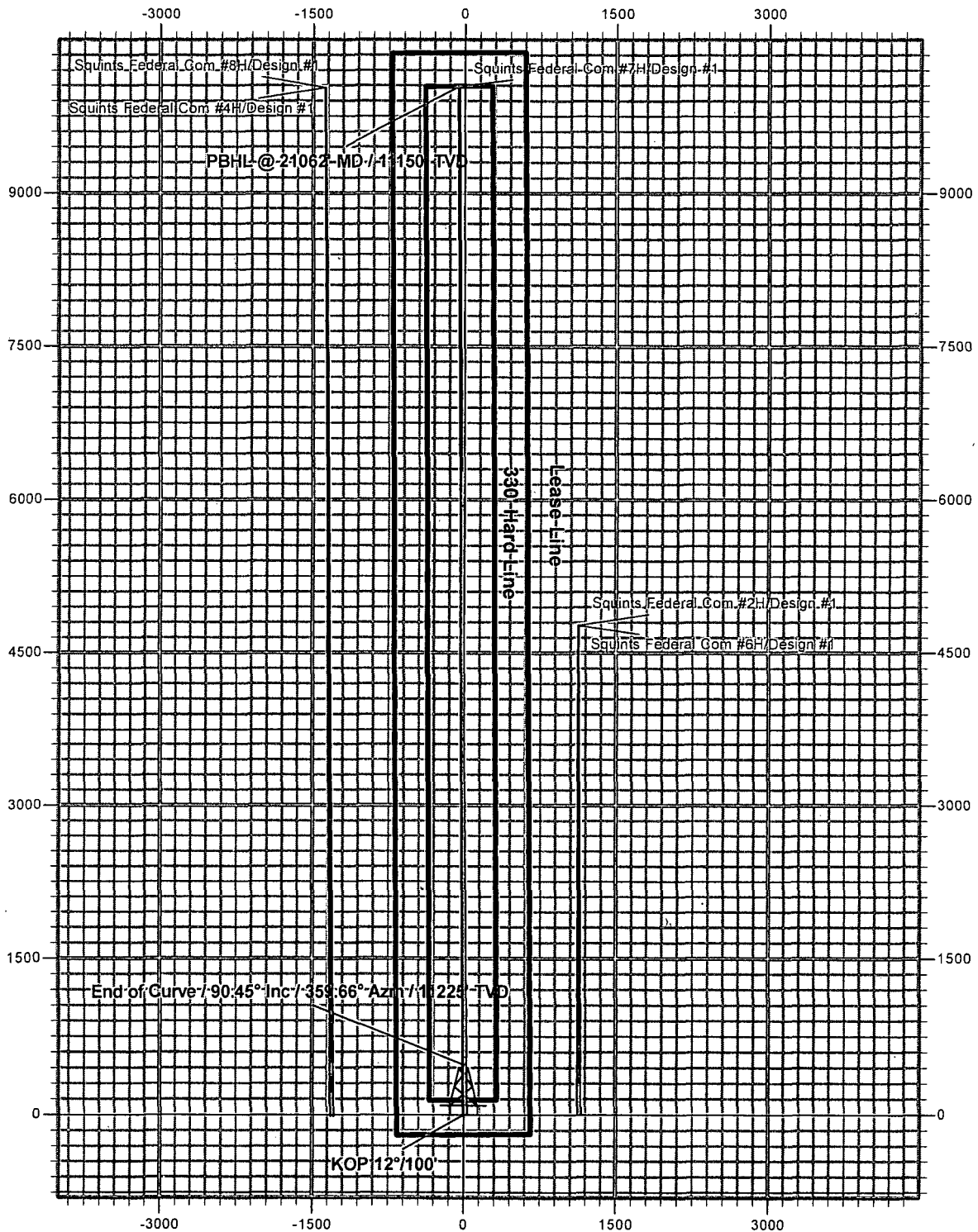
Squints Federal Com #3H, Wellbore #1, Design #1 V0 Squints Federal Com #2H, Wellbore #1, Design #1 V0 Squints Federal Com #4H, Wellbore #1, Design #1 V0
Squints Federal Com #6H, Wellbore #1, Design #1 V0 Squints Federal Com #7H, Wellbore #1, Design #1 V0



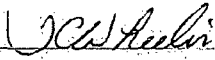
Lea County, NM
 Sec 27, T22S, R34E
 Squints Federal Com #3H
 Design #1



Lea County, NM
Sec 27, T22S, R34E
Squints Federal Com #3H
Design #1



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

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



TECHNIP Umbilicals Inc.
COFLEXIP® Products Division

Quality Control Department

Control Report Dated: 4/28/2015

COFLEXIP FLEXIBLE PIPE TEST CERTIFICATE

Customer: OFS CANADA INC

Job Number:

K12387

Address:

Line/Serial Number

K12387-202

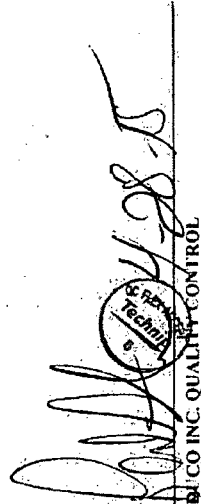
Part Number

076 60414 13-13

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

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

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


D. J. CO INC. QUALITY CONTROL

THIRD PARTY INSPECTION FIRM OR CUSTOMER REPRESENTATIVE:

DQAC 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
KI2386-202 © KI2387-202
Technician
ROY

QC Information Input

QC Insp
PAT
Witness?
Yes
Special Instructions
Third Party
BV
Test Procedure
SIC 01 60

Station Information

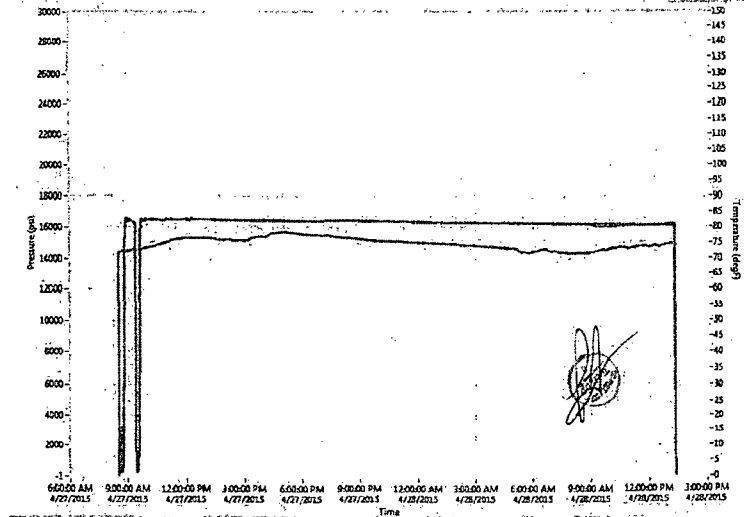
Pressure Transducer S/N
1211570
Stable Press
16500
Calib. Due
9/9/2015 8:29:12 AM
Temperature S/N
733A
Test Press
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Pressure Range
0 - 30000

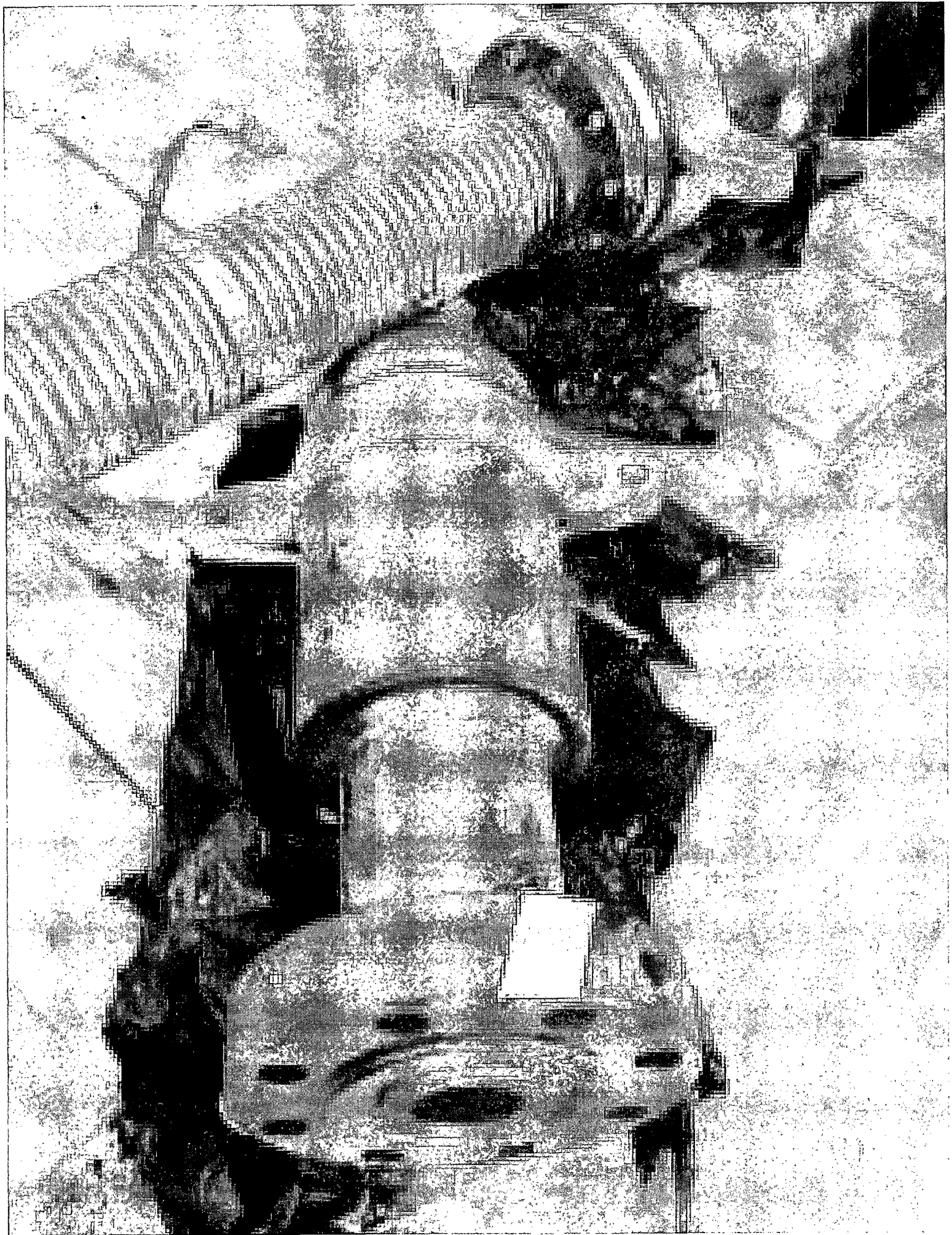
Station 04

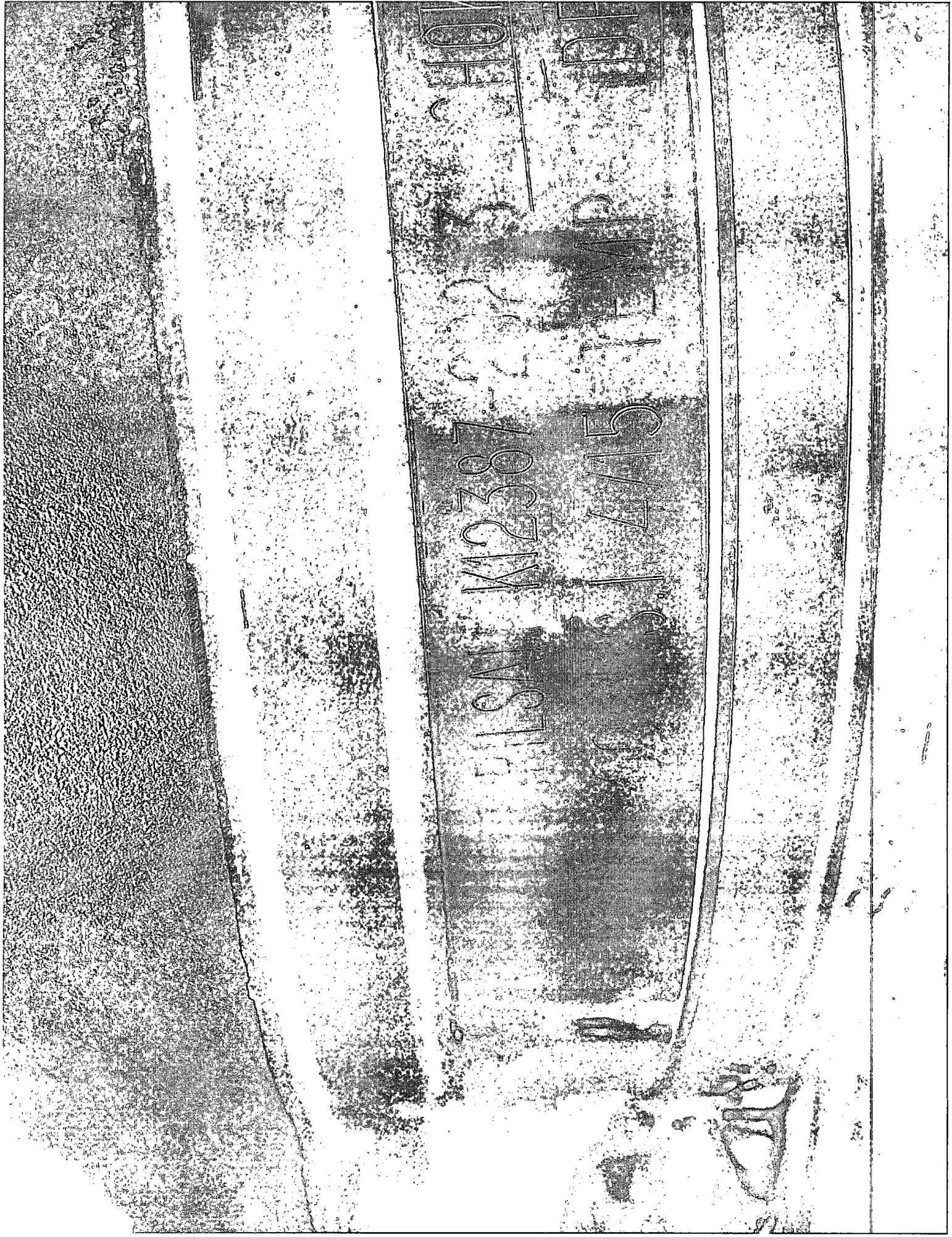
Calibration

Raw Maximum
0.004000
Raw Minimum
0.020000
Eng Maximum
0.000000
Eng Minimum
30000.000000

RT Graph







HO

EMP

18387

51/7

1/15

1/15

1/15

